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Students’ experiences with different learning pathways to higher professional bachelor programmes

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Abstract

Context: In the Dutch educational system, different learning pathways to higher professional bachelor (or HBO) programmes have been created: the regular VET route, the general secondary education route, and continuing learning pathways (such as the Green Lyceum or GL) that combine characteristics of these two traditional routes and that are specifically designed for students who combine a relatively high cognitive level with an affinity for practical, vocation-oriented assignments.

Approach: The present study aimed to compare the experiences of students coming from these three different learning pathways to HBO. 62 former GL students, 127 former middle-management VET (or MBO) students, and 81 former regular general secondary education (or HAVO) students completed an online questionnaire on their experiences in their first HBO study year and their scores on the various scales were compared.

Findings: Students from the three groups were equally satisfied with their current HBO programme. The same pattern was found for perceived study success in their HBO pro-

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Former GL students, however, mentioned that they had been better prepared in terms of development of study skills needed in HBO. Compared with the MBO route to HBO, former GL students felt better prepared in terms of the theoretical subjects addressed in their previous educational programme. In this regard, their level of theoretical preparation was comparable to that of former HAVO students. When the vocation-oriented aspects of education were concerned, however, the GL appeared to be comparable with the MBO route to HBO (in the HAVO curriculum, vocation-oriented preparation for HBO is absent). Moreover, former HAVO students scored lower than former GL and former MBO students with respect to the extent to which they felt that they had received support in choosing a particular HBO programme in their previous educational programme.

Conclusion: The GL seems to combine the advantages of MBO and HAVO programmes for this particular group of students: theoretical preparation for HBO at HAVO level combined with practical preparation at MBO level, systematic career orientation and guidance, and development of study skills required in HBO. In other words, such continuing learning pathways can be a curriculum design solution for specific student groups to promote their transition to HBO.

Keywords: Learning pathway, transition, curriculum, educational innovation, vocational education and training, VET, Green Lyceum

1 Introduction

Many countries worldwide have developed and implemented an explicit educational policy to increase student numbers in higher professional bachelor (and, as a possible follow-up, professional master) programmes, as the most advanced levels in the Vocational Education and Training (VET) system (Cedefop, 2016; see figure 1). A higher educational level is regarded as crucial for new professionals to be able to meet the ever-changing demands of their future jobs and to live as responsible citizens in modern society (Dutch Educational Council, 2014; Keeley, 2007; OECD, 2010).

In the Netherlands, the country in which the present research was carried out, higher professional bachelor programmes (or higher vocational education (HBO) programmes, as these are called in Dutch) are being offered by universities of applied sciences. The name of these HBO institutes already indicates the nature of the particular educational programmes that are being offered to the students. On the one hand, these higher professional bachelor programmes can be characterised as building on scientific insights, and, on the other hand, they focus on application of concrete competencies (i.e., integrated sets of knowledge, skills, and attitudes (Biemans et al., 2004; Biemans et al., 2009; Mulder, 2017)) in professional contexts.
HBO graduates, in other words, should be able to analyse specific professional contexts and, at the same time, to act accordingly and efficiently in practical, vocation-related situations.

Traditionally, in the Dutch educational system, two different pathways lead to higher professional bachelor programmes at EQF levels 5 or 6 (HBO; nominal duration: 2-4 years) (see figure 1; Cedefop, 2016):

1. The VET route, starting from lower secondary pre-vocational school-based programmes at EQF level 2 (VMBO; 4 years) via middle-management VET programmes at EQF level 4 (MBO; 3-4 years) to HBO;

2. The general secondary education route, i.e., integrated lower and upper general secondary programmes at EQF level 4 (HAVO; 5 years) leading to HBO.

Although the EQF levels of both routes are comparable, there are clear differences as well. The VET route to HBO is relatively long (7-8 years in total) and has a strong vocational and practical orientation on the particular sector of the labour market (e.g., engineering, communication, agriculture), while the general secondary education route is more theory-oriented, hardly focussed on specific professional domains, and relatively short in nominal duration (5 years), which makes the students younger when they enter HBO (without study delay in primary or secondary education they will be 17 or 18 years old).

There are strong indications, however, that these two traditional routes to HBO are not optimal for a considerable group of students with high potential to successfully follow HBO programmes (see also Van den Berg, 2013). First of all, this group of students can be characterised as ambitious. They see a diploma for a higher professional bachelor (or maybe even master) programme as the ultimate goal in their study career. Moreover, they have been assessed in primary education as having relatively high cognitive learning abilities (study advice for secondary education EQF level 4). Finally, a third crucial characteristic of these students is that they do not only want to be challenged cognitively but that they prefer to be engaged in practical, vocation-related assignments in their educational trajectory as well (cf. Jäppinen & Maunonen-Eskelinen, 2012). For this specific category of students, the theoretical level of the VET route to HBO might not be challenging enough and this route might also be too long to keep them focussed on reaching the HBO level in the end. The general secondary education route, however, might not be motivating enough for them either, given the highly theoretical curriculum and the lack of practical, work-related assignments. As a consequence, these students might get stuck in the two traditional pathways to HBO, with study delay and potential drop-out as a result (see also Biemans et al., 2016).
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Figure 1: VET in the Dutch education and training system (Cedefop, 2016)

Therefore, in addition to the two traditional routes to higher professional bachelor programmes mentioned above, alternative learning pathways that combine characteristics of these two already existing routes have been designed and implemented in the Netherlands during the last decade to meet the specific characteristics and preferences of this category of students (see also Biemans et al., 2013). These so-called continuing learning pathways in VET com-
bine the theoretical level of the general secondary education route to HBO with the practice-oriented nature of the VET route in a new curriculum of integrated and accelerated VMBO and MBO programmes (as shown in figure 1, these three types of learning routes including the new continuing learning pathways in VET concern educational programmes at the secondary level for students in the age of 13-20 leading to higher professional bachelor programmes at the tertiary level and should not be confused with adult learning programmes). This Dutch trend of designing and implementing continuing learning pathways is in line with the efforts many other countries are making to make access routes to higher education new and more flexible and, thus, to promote students’ transitions between successive educational levels (see e.g., Catterall et al., 2014; Harris & Rainey, 2012; Hoelscher et al., 2008).

A prototypical example of such continuing learning pathways in the Netherlands is the Green Lyceum (or GL), implemented by agricultural VET institutes, which explains the label ‘Green’. The GL curriculum combines a VMBO programme and a MBO programme at EQF4 level in an integrated learning trajectory and is characterised by a nominal duration of 6 years in total (instead of the regular 7 to 8 years; further acceleration to 5 years is an additional option for talented students).

The present study will focus on the GL as a possible alternative pathway to HBO. Previous research (Biemans et al., 2019) already demonstrated that former GL students more often proceeded with an HBO programme than comparable students coming from regular MBO. The central aim of the present study was to examine former GL students’ experiences in HBO and to compare those with the experiences of students coming from the two traditional routes to HBO mentioned above. After all, a successful HBO career could be considered as the ultimate goal of continuing learning pathways such as the GL. In this way, the present study aimed to contribute to knowledge on students’ learning experiences in different pathways to higher professional bachelor (HBO) programmes at the tertiary level (see figure 1) and to lead to deeper insights in how students’ transitions to this educational level can be promoted through learning pathways with specific educational design features.

2 Theoretical background

2.1 Transition to and drop-out from higher professional bachelor programmes

Transitions between successive educational levels of the VET system (but also in other segments of the educational system) appear to be problematic for many students. As described by Biemans et al. (2019), this phenomenon has been analysed in the international literature
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on the permeability of educational systems (e.g., Bathmaker & Thomas, 2009; Bradley, 2008; Gorard et al., 2006; Watson, 2006).

One of the key aspects of permeability of educational systems is the ‘capacity of education and training systems to enable learners to access and move among different pathways (programmes, levels) and systems’ (Cedefop, 2014, p. 193). In many cases, the permeability of educational systems is suboptimal and even if there are hardly any institutional barriers between successive levels, it is often very difficult for students to relate and integrate the educational programmes of the different levels or to adjust to the particular requirements of the new programme. Such transition problems may lead to highly stressful experiences of the students and feelings of disconnection with their new educational programme and learning environment (Mulder, 2016), resulting in less successful study careers and substantial drop-out rates (Wheelahan, 2008). The personal and societal costs of these drop-out rates are substantial and hamper governmental policies to enhance the general educational level and the upward educational mobility and limit future study and job opportunities of the students (Cedefop, 2014; Keeley, 2007; SCP, 2016).

Transition problems between educational levels resulting in relatively high student drop-out rates have been reported in many countries. For example, Hoelscher et al. (2008) discussed students’ transitions from vocational education and training to higher education (HE) in the United Kingdom and examined whether participation in VET provides a successful progression route into tertiary education. In this regard, it should be noted that UK VET policy has as one of its explicit aims to increase access to higher education via this route. Based on their research, they concluded (p. 150) that, so far, ‘neither attempts to create stronger links between HE and VET programmes, nor to change perceptions of potential applicants through outreach, have resulted in evenly distributed access to HE [...] and that policy instruments need to intervene earlier in individuals’ educational pathways’ to achieve this goal and to really foster students’ transitions to tertiary education.

Comparable conclusions were drawn with respect to learning pathways from vocational education and training to higher education in Australia by Catterall et al. (2014) and Harris and Rainey (2012). Catterall et al. (2014) reported that, although an increase in students who entered HE following their studies in the VET sector could be determined, ‘the transition period, particularly the first semester of study, is an unnecessarily stressful time for many students’ (p. 242). In line with this conclusion, Harris and Rainey (2012) claimed that, although seamless pathways for learners between successive educational levels are being promoted by governments in many countries, learners’ actual experiences in their educational journeys have been neglected to a high extent, both in policy and in research.

This article especially deals with the transition to higher professional bachelor (HBO) programmes at the tertiary level in the Netherlands (see figure 1) and the experiences of students in their first HBO study year, which can be regarded as indications for their study careers in
Mulder and Cuppen (2018) did an extensive study on the transition to HBO, student drop-out from HBO programmes and possible factors that could explain this phenomenon. When the influx of students in Dutch HBO in the last 5 years (2013-2018) was concerned, about 30% had done their previous education in regular MBO at EQF4 level and about 53% in regular general secondary education at EQF4 level (HAVO) while the remaining 17% had followed other, less conventional routes (e.g., pre-university education at EQF4 level).

Of the students with a background in MBO, about 22% appeared to have dropped out after the first year (i.e., did not appear to follow any educational programme after the first HBO year). According to the Association of Universities for Applied Sciences (2016), this drop-out rate of 22% after one year even increased to a drop-out rate of about 31% of the former MBO students after three years (see also Sneyers & De Witte, 2016). In many cases, these students decide to enter the labor market with their MBO diploma. With respect to the former HAVO students, drop-out rates after one year and after three years were 12% and 16% respectively (if they are not successful, these students tend to switch to another educational programme). Thus, in the first phase of the HBO trajectory, the drop-out rates from HBO of former MBO students were considerably higher than the drop-out rates of former HAVO students. Study success rates of former MBO and HAVO students after five years, however, were comparable: Only 45% of the students from both groups had finished their HBO programme with a diploma within a period of five years (the nominal study period of these professional bachelor programmes is 4 years). These figures appeared to depend on different factors such as gender and ethnical background of the student, educational level of the parents, performance and effort level of the student, and type of HBO programme (Association of Universities for Applied Sciences, 2016; see also Mulder & Cuppen, 2016; Sneyers & De Witte, 2016).

Thus, the conclusion can be drawn that drop-out and study delay are serious problems in HBO programmes, both for former MBO students and for former HAVO students, although the reasons may differ for both groups. For former HAVO students, the practical, work-related aspects of the curriculum might cause difficulties because they have hardly had any experience with comparable tasks in their previous educational programme, as opposed to former MBO students. For them, on the other hand, the theoretical level of the HBO curriculum might be hard to handle because their previous education had been more practical and less theory-oriented by nature. Thus, both groups of students seem to experience their own challenges in HBO. Crucial issues in this regard are the lack of curriculum continuity between the respective curricula and the absence of integration of these educational programmes (see also Biemans et al., 2019).

Mulder and Cuppen (2018) identified additional factors that are related to drop-out from HBO. Students who dropped out from an HBO programme (or switched to another educational programme) felt much less at home with their teachers, educational programme, fellow-students, and educational institute than students who decided to proceed. This ap-
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appeared to be true both for former MBO and for former HAVO students. Moreover, drop-out students reported that they would have preferred more contact with their fellow students, teachers, study coach and advisor, and their mentor. In short, they felt less connected with their educational programme (see also Mulder, 2016). They reported that, already at the beginning of their HBO study programme, they had more doubts regarding their study choice and had given this process less consideration, had collected less information on their study programme and felt less motivated to complete their educational programme (see also Mulder, 2018; Kuijpers et al., 2011; Winters, 2012).

Regarding the didactical methods adopted in HBO, the required study skills, and the content of their HBO subjects, both former MBO and HAVO students reported to experience a poor alignment with their own specific skills (see also Jäppinen & Maunonen-Eskelinen, 2012). In addition, as compared to former HAVO students, former MBO students reported that they felt less prepared with respect to calculation skills, writing skills, Dutch language, and the way of testing in HBO. During their HBO programme, students who would drop out later, reported that they experienced more difficulties to spend efforts on subjects they considered to be less interesting, showed the tendency to postpone study tasks, and had more problems with planning their learning tasks (Mulder, 2018; Mulder & Cuppen, 2018).

To summarize, various factors might give an indication of a student’s study career in HBO such as motivation, wellbeing, and satisfaction of the student regarding his or her present HBO programme, (perceived) study success in HBO, (perceived) quality of the previous educational programme and the extent to which students feel that they have been prepared for HBO, and to what extent they have developed necessary study skills, reached the required theoretical level, had sufficient practical preparation, and received support in choosing their present HBO programme. These factors might be different for different categories of students in HBO, in particular for students coming from different routes such as MBO and HAVO. Former MBO students might feel less prepared for the theoretical level of the HBO curriculum but better prepared for the practical, vocation-oriented aspects while, for former HAVO students, it might be the other way around.

2.2 Continuing learning pathways to HBO: the best of both worlds?

As mentioned in the Introduction section, in addition to the two traditional routes to HBO, namely the VET route (MBO) and the general secondary education route (HAVO), alternative learning pathways that combine characteristics of these two pathways have been designed and implemented to meet the characteristics and preferences of a specific and significant student category: students who combine a relatively high cognitive level (as indicated by a primary school advice for follow-up education at EQF 4 level) with an outspoken affinity for practical, vocation-oriented assignments and who have clear ambitions to proceed with
an HBO programme. For these students, HAVO would fit with their cognitive level but this type of education lacks a specific vocational orientation and does not allow students to apply their knowledge and skills in practical situations. MBO, on the other hand, does provide this practical orientation but might not offer enough cognitive challenges for them to keep them motivated and to prepare them for the theoretical level of an HBO programme.

To solve the above-mentioned problems of discontinuity and disintegration and to improve transition to and promote study success in higher education, continuing learning pathways have been introduced in educational systems worldwide as curriculum design solutions (e.g., Harris & Rainey, 2012; Jäppinen & Maunonen-Eskelinen, 2012; Sneyers & De Witte, 2016). Continuing learning pathways can be defined as ‘sequential educational programmes combined into a new [integrated] educational programme: Continuing [learning] pathways are characterised by curriculum continuity in particular competence areas or subjects lasting several years, and encompassing more than one qualification level’ (Biemans et al., 2013, p. 109). According to Biemans et al. (2016, p. 316), ‘the aim of these continuing [learning] pathways is to ensure curriculum continuity [and integration] of successive educational programmes and, thus, to promote and streamline students’ knowledge and skill acquisition and competence development’ (cf. Brockmann et al., 2008). In this way, so-called competence progression models for specific content domains can be implemented to ensure students’ continuing competence development (Biemans et al., 2019). For example, Lilleväli and Täks (2017, p. 3) elaborated on the concept of a competence progression model within the context of entrepreneurship education (or EE) as ‘a step-by-step advancement in various contexts and with learning outcomes and roles of EE throughout the education system’ (see also Rasmussen & Nybye, 2013).

In the Netherlands, many educational innovations have been carried out stimulated by governmental policy (see e.g., Dutch Educational Council, 2014; Sneyers & De Witte, 2016) to create continuing learning pathways aimed at connecting various VET levels (see also figure 1). A critical and prototypical example is the so-called Green Lyceum or GL, which was implemented by agricultural (or ‘green’) VET institutes as one of the first continuing learning pathways in the Dutch educational system in 2007 and is currently offered by 13 schools of 6 agricultural VET institutes to about 1,300 students (see also Van den Berg et al., 2017). The GL as an experimental pathway to promote the transition of students to HBO will be the focus of this article. In other sectors of the Dutch VET system, more or less comparable initiatives in terms of educational design characteristics can be found, such as the programme Talent Development Technical Sciences (or TOT), the Professional HAVO Human Technology, and the Top Trajectory Social Work (see also Imandt et al., 2016).

The GL is characterised by a combination of educational design features (see for detailed information on GL design features and theoretical embedding Biemans et al., 2016; 2019). As mentioned above, this learning pathway combines a VMBO programme and a MBO pro-
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Programme at EQF4 level in an integrated learning trajectory with a nominal duration of 6 years (instead of the regular 7 to 8 years). Further acceleration of the GL programme to 5 years is possible, depending on the progress of the individual student as shown by his or her portfolio. The ultimate goal of the GL is to prepare the students for a successful study career in HBO. Therefore, already during the GL intake procedure, the students’ ambitions and competencies are being questioned. Moreover, the theoretical level of the GL and the specific learning and research competencies that are being developed, are attuned to HBO to facilitate a future transition. In addition, vocation-oriented assignments in different sectors depending on the student’s preferences and future plans are being offered throughout the GL trajectory and career orientation and guidance play a central role in this decision-making process to be able to design a tailor-made programme for the individual student. Although the GL is offered by institutes for agricultural education, it is characterized by a broad focus on all possible HBO domains and students are free to choose their own preferred sector.

2.3 Study aim and research questions

Previous research (Biemans et al., 2019) already demonstrated that former GL students more often proceeded with an HBO programme than comparable students coming from regular MBO. In line with the broad focus of the GL, former students from this learning route less often chose for ‘green’ HBO programmes than comparable students coming from regular agricultural MBO. Instead, they opted for a follow-up study in almost all possible HBO sectors.

In the present research, former GL students were subject of study in the first year of their HBO programme. As mentioned in the Introduction, the central aim of this study was to examine former GL students’ experiences in HBO and to compare those with the experiences of students coming from the two traditional routes (i.e., regular MBO at EQF4 level and regular general secondary education at EQF4 level (HAVO)). As mentioned in the Introduction, the present study aimed to contribute to knowledge on students’ learning experiences in different pathways to higher professional bachelor (HBO) programmes at the tertiary level (see figure 1) and to lead to deeper insights in how students’ transitions to this educational level can be promoted through learning pathways with specific educational design features.

To be specific, this study aimed to provide answers to the following research questions:

1. Do these three categories of students (former GL, former MBO, and former HAVO students) differ in motivation for and perceived success in their present HBO programme?

2. Do these three categories of students differ in appreciation for and satisfaction with their previous educational programme?
3. Do these three categories of students differ in the extent to which they feel prepared for their HBO programme in their previous educational programme?

3 Method

3.1 Participants and groups

The group of former GL students is only a small subgroup of all students who start a higher professional bachelor (HBO) programme. Yearly, almost 50,000 students start a study at HBO level after completing general secondary education at EQF4 level (HAVO) and more than 30,000 after graduating from the highest level of secondary vocational education (MBO EQF4), thus providing broad samples to select two groups of students who resemble the former GL students as much as possible. Both in 2016 and in 2017, a group of 600 students was selected who had completed HAVO. Moreover, a group of 238 students who had completed MBO was invited to participate. The selected former HAVO students had all attended a school in the same region as the GL students, and the selected former MBO students came from the same institutes as the 84 former GL students. All students were asked to complete an online questionnaire on their experiences in the first year of their HBO study (former GL and MBO students received a reminder by phone as their phone numbers were available, which explains the higher response rates for these groups).

Participants in the present study were 270 students (131 males, 139 females; average age: 19.5 years old) who had all chosen an HBO programme after graduating from their previous educational programme and who were in the second half of the first year of their HBO programme during data collection in 2016 or 2017. To be specific, 62 former GL students from 2 Dutch agricultural VET institutes (28 males, 34 females; average age: 18.1 years old) were compared with 127 former regular EQF4 MBO students (73 males, 54 females; average age: 21.0 years old) and 81 former HAVO students (30 males, 51 females; average age: 18.2 years old) who had chosen for a follow-up study in comparable domains at the same HBO institutes as the former GL students.

3.2 Instrument and analyses

Students’ experiences in the first HBO programme year were collected through an online questionnaire that consisted of nine scales. Several scales had already been composed and verified in previous research (see e.g., Biemans et al., 2013). The items corresponding with the various scales were presented to the students in separate blocks. Students had to use five-point Likert scales (1=minimal score; 5=maximal score) to respond to the various items.
Afterwards, the structure of the scales was empirically verified through factor analysis and reliability analysis. The reliability of the various scales turned out to be satisfactory to very high (see α values mentioned below). The scales of the questionnaire were:

- Motivation for school (2 items, e.g., ‘If I had to select an educational programme all over again, I would choose this particular programme; α=0.71) (RQ1);

- School wellbeing (15 items, e.g., ‘I enjoy attending this educational programme; α=0.88) (RQ1);

- School satisfaction (3 items, e.g., ‘I am supported well if I experience learning problems; α=0.78) (RQ1);

- Perceived study success in HBO programme (5 items, e.g., ‘I am well on track in my educational programme; α=0.85) (RQ1);

- Satisfaction with previous educational programme (11 items, e.g., ‘My previous educational programme was a good preparation for my present HBO programme; α=0.83) (RQ2);

- Extent to which specific study skills required in their HBO programme were developed in their previous educational programme (10 items, e.g., presenting, using ICT, reflecting; α=0.83) (RQ3);

- Extent to which students feel prepared for their HBO programme in their previous educational programme with respect to specific theoretical subjects (8 items, e.g., Dutch and English language, mathematics; α=0.77) (RQ3);

- Extent to which students feel supported in choosing a specific HBO programme in their previous educational programme (7 items, e.g., contacts with study coach and advisor; α=0.80) (RQ3);

- Extent to which students feel prepared for the vocation-oriented aspects of their HBO programme in their previous educational programme (5 items, e.g., internships; α=0.66; only relevant for former GL and MBO students) (RQ3).

Mean scores of the three groups (former GL, former MBO, and former HAVO students) were compared for eight questionnaire scales mentioned above through a MANOVA procedure with Gender as a covariate to control for possible gender differences (see Howell, 2010) (for the scale Vocation-oriented aspects, a separate univariate analysis of variance with the two groups former GL and former MBO students was carried out because former HAVO stu-
students did not have scores for this scale since vocation-oriented aspects had been absent in their educational programme). If an overall significant difference between the three groups was found for a particular scale, simple contrast analyses were carried out to make pairwise comparisons between the various groups.

4 Results

With respect to the first research question (‘Do the three categories of students (former GL, former MBO, and former HAVO students) differ in motivation for and perceived success in their present HBO programme?’), no significant differences in mean scores between students from the three groups were found for the scales Motivation for school (F(2, 269)=2.12; p=0.12), School wellbeing (F(2, 269)=0.57; p=0.57), School satisfaction (F(2, 269)=1.17; p=0.31), and Perceived study success in HBO programme (F(2, 269)=2.36; p=0.10). Students from the three groups all scored relatively high on the various scales but no significant differences were found between former GL, former MBO, and former HAVO students in motivation for and perceived success in their present HBO programme (see also table 1).

Table 1: Mean scores (M) and standard deviations (Sd) of former GL, former MBO, and former HAVO students for the questionnaire scales Motivation for school, School wellbeing, School satisfaction, and Perceived study success in HBO programme

<table>
<thead>
<tr>
<th></th>
<th>Motivation for school</th>
<th>School wellbeing</th>
<th>School satisfaction</th>
<th>Perceived study success in HBO programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former GL</td>
<td>4.19 (1.07)</td>
<td>3.88 (0.50)</td>
<td>3.88 (0.60)</td>
<td>3.87 (0.77)</td>
</tr>
<tr>
<td>Former MBO</td>
<td>4.42 (0.92)</td>
<td>3.83 (0.53)</td>
<td>3.80 (0.72)</td>
<td>3.67 (0.86)</td>
</tr>
<tr>
<td>Former HAVO</td>
<td>4.15 (0.92)</td>
<td>3.78 (0.51)</td>
<td>3.70 (0.75)</td>
<td>3.91 (0.81)</td>
</tr>
</tbody>
</table>

Regarding the second research question (‘Do the three categories of students differ in appreciation for and satisfaction with their previous educational programme?’), the three groups of students indeed appeared to differ in their mean score on the corresponding scale of the questionnaire (F(2, 269)=3.33; p≤0.05). Post hoc tests revealed significant differences between former GL students and former MBO students (p≤0.05), and between former HAVO students and former MBO students (p≤0.05). Both former GL students and former HAVO students appear to be satisfied to a higher extent with their previous educational programme than former MBO students were, although this last category of students scored on the positive side of the scale as well. No significant differences were found in this regard between former GL and former HAVO students (p=0.81) (see also table 2).
Table 2: Mean scores (M) and standard deviations (Sd) of former GL, former MBO, and former HAVO students for the questionnaire scale Satisfaction with previous educational programme

<table>
<thead>
<tr>
<th></th>
<th>Satisfaction with previous educational programme (GL/MBO/HAVO) M (Sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former GL</td>
<td>3.57 (0.59)</td>
</tr>
<tr>
<td>Former MBO</td>
<td>3.35 (0.67)</td>
</tr>
<tr>
<td>Former HAVO</td>
<td>3.54 (0.53)</td>
</tr>
</tbody>
</table>

With respect to the third research question (‘Do the three categories of students differ in the extent to which they feel prepared for their HBO programme in their previous educational programme?’), significant differences in mean scores between students from the three groups were found for the scales Study skills (F(2,269)=11.28; p≤0.001), Theoretical subjects (F(2,269)=28.89; p≤0.001), and Support in choosing HBO programme (F(2,269)=7.39; p≤0.001).

With respect to the extent to which students felt prepared for their HBO programme in terms of study skills developed in their previous educational programme, former GL students scored higher than former MBO (p≤0.001) and former HAVO students (p≤0.001). No differences in this regard were found between former MBO and former HAVO students (p=0.78) (see also table 3).

Regarding the extent to which students felt prepared for their HBO programme in terms of theoretical subjects addressed in their previous educational programme, former MBO students scored lower than former GL (p≤0.001) and former HAVO students (p≤0.001). No differences in this respect were found between former GL and former HAVO students (p=0.36) (see also table 3).

With respect to the extent to which students felt that they had received support in choosing a particular HBO programme in their previous educational programme, former HAVO students scored lower than former GL (p≤0.001) and former MBO students (p≤0.01). No differences in this regard were found between former GL and former MBO students (p=0.16) (see also table 3).

Regarding the extent to which students felt prepared for their HBO programme in terms of vocation-oriented aspects of their previous educational programme, no differences were found between former GL students and former MBO students (F(1,188)=0.69; p=0.41). Given the nature of their educational programme (general secondary education), for former HAVO students, vocation-oriented aspects were not applicable in their previous education; Therefore, former HAVO students were not included in this particular analysis (see also table 3).
In the analyses, no significant effects of the covariate Gender were found for the various scales of the questionnaire.

Table 3: Mean scores (M) and standard deviations (Sd) of former GL, former MBO, and former HAVO students for the questionnaire scales Study skills, Theoretical subjects, Support in choosing HBO programme, and Vocation-oriented aspects

<table>
<thead>
<tr>
<th></th>
<th>Study skills</th>
<th>Theoretical subjects</th>
<th>Support in choosing HBO programme</th>
<th>Vocation-oriented aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (Sd)</td>
<td>M (Sd)</td>
<td>M (Sd)</td>
<td>M (Sd)</td>
</tr>
<tr>
<td>Former GL</td>
<td>3.59 (0.54)</td>
<td>3.34 (0.62)</td>
<td>2.99 (0.73)</td>
<td>3.65 (0.78)</td>
</tr>
<tr>
<td>Former MBO</td>
<td>3.15 (0.68)</td>
<td>2.70 (0.80)</td>
<td>2.84 (0.85)</td>
<td>3.55 (0.83)</td>
</tr>
<tr>
<td>Former HAVO</td>
<td>3.19 (0.52)</td>
<td>3.46 (0.74)</td>
<td>2.48 (0.81)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

5 Conclusions and discussion

The present study aimed to compare the experiences in the first HBO study year of students coming from different learning pathways to HBO (i.e., the continuing learning pathway GL, regular MBO at EQF4 level, and regular general secondary education at EQF4 level (HAVO)). One could argue that the more positive students are regarding their present HBO programme and the preparation for HBO in their previous educational programme, the higher their chances for a successful future HBO study career will be (cf. Mulder & Cuppen, 2016; 2018; Mulder, 2018). Of course, in future research, these three learning pathways leading to HBO should be compared in terms of study success at HBO level as well, in order to be able to draw more definite conclusions on the effectiveness of the respective learning routes but the present study might already provide a first indication.

With respect to their motivation for school, school wellbeing, and school satisfaction, the three student groups had comparable mean scores. On average, students from the three groups were equally satisfied with their current HBO programme. The same pattern was found for perceived study success in their HBO programme. Former GL, former MBO, and former HAVO students reported that they were equally successful in their first HBO study year so far. Whether these perceptions are justified, should be checked through future research on students’ learning performance and drop-out rates after one HBO study year.

Differences between the groups, however, were found when the experiences and perceptions of the students regarding their previous educational programme (either GL, or MBO, or HAVO) as preparation for HBO were concerned. These differences were especially clear for specific aspects of their previous education. Compared with students from the other two routes, former GL students mentioned that they had been better prepared in terms of development of study skills needed in HBO. Examples of study skills that had received more
attention in the GL trajectory were e.g., presenting, doing research, reflecting, analysing, and using ICT. This finding is fully in line with the strong focus of the GL on developing learning and research competencies as required in HBO.

Compared with the traditional VET (MBO) route to HBO, former GL students felt better prepared in terms of the theoretical subjects addressed in their previous educational programme. In this regard, their level of theoretical preparation was comparable to that of former HAVO students. This pattern was found for almost all theoretical subjects (e.g., English and German languages, mathematics, biology, physics, and chemistry). In other words, when the theoretical level of education was concerned, the GL appeared to be highly comparable with the general secondary education (HAVO) route to HBO.

When the vocation-oriented aspects of education (cf. Jäppinen & Maunonen-Eskelinen, 2012) were concerned, however, the GL appeared to be comparable with the MBO route to HBO. Thus, the strong focus of the GL on study skills and theoretical level of the programme did not appear to be realized at the cost of the practical preparation of the students for their possible future jobs. At this point, it should be realized that the HAVO route does not offer any kind of vocation-oriented preparation given the nature of the educational programme (i.e., general secondary education). Moreover, former HAVO students scored lower than former GL and former MBO students with respect to the extent to which they felt that they had received support in choosing a particular HBO programme in their previous educational programme (cf. Kuijpers et al., 2011).

If one would combine the conclusions drawn above regarding the theoretical and the vocation-oriented aspects of the educational programme, one can indeed conclude that the GL integrates the best of both worlds (HAVO and MBO) for this specific category of students (students who combine a relatively high cognitive level with an affinity for practical, vocation-oriented assignments) as a preparation for an HBO programme (as already assumed in the section Theoretical Background) (see also Biemans et al., 2019). For these students, it is crucial that they are continuously challenged at the theoretical level and are confronted with assignments that refer to authentic professional contexts at the same time.

To summarize, the continuing learning pathway GL seems to combine the advantages of MBO and HAVO programmes for this particular group of students: Theoretical preparation for HBO at HAVO level combined with practical preparation at MBO level and systematic career orientation and guidance (cf. Kuijpers et al., 2011). Moreover, GL students seem to acquire study skills needed in HBO programmes to a higher extent than MBO and HAVO students. Thus, continuing learning pathways such as the GL can be a curriculum design solution for specific student groups to promote their transition to HBO (see also Biemans et al., 2019).

These conclusions are not just relevant for the Dutch VET context, but also for international policies and initiatives to increase the flexibilisation of transitions between educational
subsystems. As mentioned in the Theoretical Background section of this article, this is an aspect that has attracted a great deal of attention in many countries for some time now (e.g., Hoelscher et al., 2008; Catterall et al., 2014; Harris & Rainey, 2012). Our research shows the potential added value of integrating successive educational programmes and accelerating learning trajectories for specific target groups of students. Moreover, the combination of particular design features of these pathways should be attuned to the characteristics of these specific student subgroups (see for more details Biemans et al., 2019). In this respect, Jäppinen and Maunonen-Eskelinen (2012) also stressed the importance of student intake procedures and of shortening and integrating students’ learning pathways as characteristics of effective learning routes. Thus, continuing learning pathways can facilitate and support students’ transitions to higher educational levels within the VET system (and other educational systems) in other countries as well (see also Bradley, 2008; Catterall et al., 2014; Gorard et al., 2006; Watson, 2006).

As announced above, future research will focus on the effects of the previous educational pathway on the learning results and study careers of the students in HBO (see also Bradley, 2008; Gorard et al., 2006; Watson, 2006). Moreover, educational design principles and characteristics of the GL will be compared with those of other continuing learning pathways in (Dutch) VET to determine their effectiveness. In this way, further insights can be developed in the specific educational design characteristics that are most crucial for the effectiveness of these learning routes.

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Students’ experiences with different learning pathways


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SCP (2016). Wikken en wegen in het hoger onderwijs [Considerations in higher education]. SCP.


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Upper secondary education for youth at risk: A comparative analysis of education and training programmes in Austria, Norway, Sweden and Switzerland

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Abstract

Context: Vocational education and training (VET) plays a key role in reducing early leaving from education and training, and integrating youth at risk in upper secondary education. To ensure that more young people complete upper secondary education, the OECD suggests designing interventions that address the specific needs of youth at risk such as changes in the standard duration, preparatory programmes or personalised support measures. Based on a comparative analysis of such programmes tailored to the needs of youth at risk in Austria, Norway, Sweden and Switzerland, the objective of this article is to identify the different education and training models these countries employ to include youth at risk in upper secondary education.

Approach: The study is based on document analysis; the documents studied are public documents such as law texts and white papers from the education authorities as well as research publications. The interventions proposed by the OECD to adapt training programmes to the specific needs of youth at risk were chosen as a basis for the comparative analysis. Further structural characteristics of the programmes complemented the analysis.

Findings: The study found four different types of education and training models for youth at risk in Austria, Norway, Sweden and Switzerland: Short-track (Norway, Switzerland), prolonged (Austria), individualised (Austria, Norway and Sweden) and preparatory program-
mes (Sweden). Preparatory and prolonged programmes aim to help young people to achieve upper secondary qualifications through preparatory measures, more time or more support. Individualised or short-track programmes aim to adapt education and training programmes to young people’s needs by reducing the programmes’ demands. In all four countries, young people have the opportunity to conclude their education with a certificate at a level lower than ‘regular’ upper secondary education.

**Conclusion:** The four countries surveyed differ widely in terms of educational traditions and the position of VET at upper secondary level. Regarding the integration of disadvantaged youth into education and work, the differences concerning access to upper secondary education, the importance of VET at upper secondary level and the recognition of training programmes for youth at risk may be of particular relevance. Further research is needed to empirically investigate the effectiveness of the identified education and training models as a means of integrating youth at risk into upper secondary education.

**Keywords:** VET, vocational education and training, dropout, youth at risk, social inclusion, comparative analysis

1 **Introduction**

Early leaving from education and training is linked to unemployment, social exclusion and poverty. Combating early school leaving has been a priority for the European Union since 2000, and its current aim is to reduce dropout to below 10 percent by 2020 (European Parliament, 2011). As VET is presented as both a means of preventing early school leaving and a safety net for those who drop out of general education (Cedefop, 2016), it will play a key role in achieving this goal. Current figures show that, on average, 19 percent of people under 25 across OECD countries and the EU leave education without an upper secondary qualification (OECD, 2018a). Although most of the countries have a long way to go to reach the EU’s goal, most of them ensure the majority of young people achieve an upper secondary qualification. However, the education system fails a small group of young people in every country by not providing adequate programmes to enable them to complete upper secondary education (Markussen, 2011). This group varies from 10 to 40 percent in most countries.

In every country, issues relating to the inclusion of potentially marginalised young people will make requirements of how diversity is handled. In order to ensure that more young people complete upper secondary education, the system must include young people with different preconditions, needs, abilities and wishes. Getting more young people at potential risk to continue and complete upper secondary education places a great deal of pressure on the flexibility and institutional structures of the education system (Hoffman, 2011; Lamb & Markus-
This applies in particular to VET, which has to educate a far more educationally and socially differentiated target group than previously (Larsen & Persson Thunqvist, 2018).

This article focuses on young people who are most at risk of dropping out of upper secondary education without achieving qualifications at this level. Based on the different practices in Austria, Norway, Sweden and Switzerland, the objective of this article is to identify the strategies these countries employ to adapt upper secondary level education to youth at risk.

2 Background and literature review

Early school leaving is a result of the interplay of multiple risk factors linked to both the individual and the system. Based on individual and social characteristics, dropout is defined as the culmination of a long and problematic school career. Dropout is not thus a one-off event, but the result of a long process of low engagement in schooling. In the international research literature, there is a strong consensus regarding the factors that affect this process and thus the probability of young people leaving school before completion. These factors can be summarised as follows: 1) individual background characteristics such as gender, ethnicity or health; 2) social background characteristics such as family context, peers and networks; 3) institutional characteristics such as school structures, school and classroom climate as well as policy settings; and 4) personal dispositions such as the students’ engagement, aspirations and achievements (Cedefop, 2016; Lamb, 2011c; Rumberger, 2011).

A lot of research shows that socially disadvantaged youth represent a particular risk group. Young people from disadvantaged social backgrounds and young people with migrant backgrounds have an increased risk of not completing upper secondary education (Archambault et al., 2017; Lamb, 2011c; Rinne & Järvinen, 2011; Rumberger, 2011). In addition, in many countries, boys are more likely to leave education early than girls (Jørgensen, 2015; Traag & van der Velden, 2011). Furthermore, young people with health problems have a higher risk of leaving school before completion (De Ridder et al., 2013; Quiroga, Janosz, Bisset & Morin, 2013).

In addition to individual and social background factors, research has identified poor educational outcomes as one of the strongest predictors of early school leaving (Janosz et al., 2011; Lamb, 2011b; Rumberger, 2011). However, as already mentioned, it is important to emphasise that the various risk factors are interrelated and affect each other, and socio-economic disadvantage and educational disadvantage are particularly closely interrelated. Research shows that social background factors such as parents’ education and labour market status, their attitude to education and their support, have a major impact on how students identify with school, their engagement and ambitions (Alexander et al., 2001; Finn, 1989; Rumberger & Rotermund, 2012). Young people who do not complete upper secondary education thereby constitute a particularly vulnerable group. They are often socially disadvan-
taged and lack social resources such as support and networks, they often have a long and difficult school career behind them, many have performed poorly and have had a low sense of mastery over time, and many struggle with learning difficulties and social and mental health challenges.

At a political level, VET is recognised as playing a key role in combating early leaving from education and training (Cedefop, 2016; European Commission, 2014). There are several reasons why efforts to reduce early school leaving especially applies to VET: for one thing, VET shows higher dropout rates than general education in many countries. One of the reasons for this is the selectiveness of education systems, which tend to direct those who are at greater risk of early school leaving towards VET. In most countries, VET hosts a much larger share of students from disadvantaged backgrounds. Other reasons may be the perceived quality or the attractiveness of VET programmes which for many young people are considered a second choice (Cedefop, 2016; European Commission, 2014). However, the important role of VET in preventing early school leaving is not only related to reducing dropout from VET, but also to its potential to attract and reintegrate young people in education and training, including those who drop out of general education (Cedefop, 2016; European Commission, 2014). For many young people, VET may constitute a positive alternative to general education. It offers a more practical way of learning and the opportunity to work towards a specific profession. Moreover, vocational courses represent a community of practice, which the students recognise and value, and where their previous knowledge is recognised (Korp, 2012).

Research confirms that VET plays an important role with respect to the inclusion of youth at risk. A number of studies show that the percentage of young people in VET programmes has a positive effect on the upper secondary education completion rate (e.g. De Witte et al., 2013; Lamb, 2011a; Lavrijsen & Nicaise, 2015). A well-developed range of VET programmes thus appears to increase the level of completion by acting as a ‘safety net against dropout’ (Lavrijsen & Nicaise, 2015, p. 307) for less academically-oriented young people. However, youth at risk may struggle to gain access to upper secondary education training places. In school-based systems, access to the programmes may be regulated by admission requirements based on grades from lower secondary school or entry exams. Low-achieving youth who do not meet these goals may thus not gain a place in upper secondary education or be at the back of the queue when it comes to choosing programmes. Young people who suffer from low motivation and learning difficulties thus risk being placed in programmes they are not interested in, and research shows that not getting in to your first choice is a risk factor in relation to completing upper secondary education (Markussen et al., 2008).

Finding an apprenticeship place in apprenticeship-based systems can also be a challenge for youth at risk. Research shows that socially and educationally disadvantaged youth encounter difficulties in gaining apprenticeship places (e.g. Hupka-Brunner et al., 2010; Solga & Kohlrausch, 2013). The reasons for this may be diverse: Firstly, youth with low skills tend
to need more instruction time and may be less productive at work. Taking on a young person at risk as an apprentice is thus costlier for employers (OECD, 2018b). Moreover, youth from disadvantaged families often lack a relevant social network with respect to careers of interest. Finally, research shows that disadvantaged youth and especially those with migrant backgrounds face the risk of discrimination when applying for an apprenticeship place (Imdorf, 2017).

To ease the transition into apprenticeship training and to help youth at risk complete upper secondary education, the OECD (2018b) suggests designing interventions that address the specific needs of youth at risk that are also attractive to employers. These include changes in the standard duration – either shorter or longer than normal –, preparatory programmes or personalised support measures to tackle the problems apprentices face during apprenticeships (OECD, 2018b). Such programmes tailored to the needs of youth at risk, both in apprenticeship-based and school-based VET systems, are the focus of this paper.

3 Data and method

Comparative studies contribute to social science by identifying common challenges and different ways of dealing with them. Interest in comparative studies has increased in recent decades, including in VET. However, the range of VET programmes available to youth at risk has not been the focus of comparative research to any extent. Therefore, the study aims to expand the research focus on this area of upper secondary education. Four countries were selected – Austria, Norway, Sweden and Switzerland –, and the study describes the range of programmes available to youth at risk in these countries. Based on the recommendations of the OECD (2018b) to adapt upper secondary education programmes to the abilities and needs of youth at risk, the aim is to identify strategies which these countries apply and to identify different education and training models for youth at risk. The study addresses thus the following research question:

*What education and training models do Austria, Norway, Sweden and Switzerland employ to include youth at risk in upper secondary education?*

The educational programmes included in the study are at upper secondary level, programmes in the transition between lower and upper secondary education are not included. Programmes at a regional or school level are also not included, the study focuses only national programmes.

Given that the study aims to identify different education models for youth at risk, it is natural to choose countries with different training traditions (Busemeyer & Trampusch, 2012). Austria and Switzerland were chosen as two examples of apprenticeship-based systems, where business and industry and their organisations play an important role, and where training
is alternately conducted in a company and at a school. In both countries, about two thirds of young people at upper secondary level enrol in vocational programmes. These two countries are thus among the countries with the highest proportion of young people in VET programmes at upper secondary level across OECD countries and the EU (OECD, 2018a). In Switzerland, the vast majority of them enrol in apprenticeship-based programmes, whereas in Austria combined school and work-based, and school-based programmes make up roughly equal parts (see table 1). Sweden was chosen as an example of a school-based training model, where VET is an integral part of the general school system and is largely conducted at school. Compared to Austria and Switzerland, VET in Sweden has a significantly weaker position at upper secondary level with only 37 percent of young people enrolling in vocational programmes (OECD, 2018a; see table 1). In contrast to Austria and Switzerland, it has been a priority in Sweden to provide all young people with access to higher education in an integrated, full-time upper secondary school, while giving low priority to work-based learning of vocational skills (Jørgensen, 2018).

Norway’s model, with two years of school-based preparation followed by a two-year apprenticeship, has characteristics common to both apprenticeship-based and school-based models (Nyen & Tønder, 2015). Half of all young people at upper secondary level enrol in vocational programmes. However, due to dropout and students changing from VET to general education programmes, the proportion of young people in apprenticeship training in the third year is much lower (OCED, 2018a; see table 1).

Furthermore, according to an American study, Austria, Norway and Switzerland are among the six best countries in the world with respect to VET (Hoffman, 2011), while Norway and Sweden are highlighted as having a high degree of inclusive training at school (OECD, 2013).

The study is based on document analysis. According to Bowen (2009, p. 29), document analysis ‘is particularly applicable to qualitative case studies – intensive studies producing rich descriptions of a single phenomenon, event, organisation, or program’. The cases of interest in this study are countries, or more specifically education and training programmes in four countries. The documents studied are primarily law texts and white papers from the education authorities. Public documents are shaped by the political context in which they are produced and reflect thus the state’s interests (Scott, 1990). This information is supplemented with relevant figures from research publications. Based on the information about the programmes available to youth at risk, a table containing structural characteristics was developed. The structural characteristics to be examined were defined on the basis of the interventions proposed by the OECD (2018b), which include the length of the programme and whether they include personalised support measures or not. These characteristics were supplemented by other characteristics which proved to be essential while analysing the documents: admission requirements, standardised training plans and standardised final tests,
separate professional titles, number of different programmes/professions and whether the programme counts as completion of upper secondary education or not. Finally, statistical information on the percentage of a year group in the programmes, the rate of upper secondary completion, the percentage of students in VET programmes at upper secondary level and the percentage of students in combined school and work-based VET was added. The table forms the basis for comparing the practices in the different countries and for identifying different education and training models (see table 1).

4 Results: Education and training programmes available to youth at risk in Austria, Norway, Sweden and Switzerland

The study found seven different training schemes at national level for youth at risk in Austria, Norway, Sweden and Switzerland: A prolonged apprenticeship scheme and a partial qualification scheme in Austria, a training candidate scheme and a training practice certificate scheme in Norway, the introduction programme in Sweden, which consists of four different programmes, one of them being vocational introduction, and two-year apprenticeships with Federal VET Certificate in Switzerland. The following table 1 gives an overview of the investigated characteristics of these education and training programmes. A description of each of the programmes follows in the following subchapters on the individual countries.
### Upper secondary education for youth at risk

**Table: Structural features of education and training programmes for youth at risk in Austria, Norway, Sweden and Switzerland**

<table>
<thead>
<tr>
<th></th>
<th>Austria</th>
<th>Norway</th>
<th>Sweden</th>
<th>Switzerland</th>
</tr>
</thead>
</table>
| **Name of the training scheme (in the language of the country)** | 1) Lehrausbildung in verlängerter Lehrzeit gem. 8b Abs. 1 BAG  
2) Teilqualifikation gem. 8b Abs. 2 BAG | 1) Lærekgendidatoordning  
2) Praksisbrevordning | 1) Introduktionsprogram  
2) Yrkesintroduktion | Zweijährige berufliche Grundbildung mit eidgenössischem Berufsattest EBA |
| **Name of the training scheme in English** | 1) Prolonged apprenticeship scheme  
2) Partial qualification scheme | 1) Training candidate scheme  
2) Training practice certificate scheme | 1) Introduction programme (4 programmes)  
2) Vocational introduction (1 of the programmes under 1) | Two-year apprenticeship with Federal VET Certificate |
| **Percentage of a year group in the programme(s)** | 3% | 2.1% | 1) 24.8% in the first year, 17.5% of all the students in upper secondary education (all programmes)  
2) 1.9% of all the students in upper secondary education | 5.9% |
| **Admission requirements** | 1) Yes  
2) Yes | 1) No  
2) No | 1) No (in 3 of 4 programmes)  
2) No | No |
| **Length of training** | 1) 3-6 years  
2) 1-3 years | 1) 1-4 years, usually follows the 2+2-model  
2) 2 years | 1) Not defined at the national level, usually 1-3 years  
2) Not defined at the national level, at most schools 3 years | 2 years |
| **Standardised training plans and final test** | 1) Yes  
2) No | 1) No  
2) Yes | 1) No  
2) No | Yes |
| **Personalised support measures** | 1) Yes  
2) Yes | 1) No  
2) No | 1) No  
2) No | Yes |
<table>
<thead>
<tr>
<th>Separate professional titles</th>
<th>1) Concludes with a trade certificate 2) No</th>
<th>1) No 2) No</th>
<th>1) No 2) No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of different programmes/ professions</td>
<td>Approx. 200</td>
<td>1) Possible for all education programmes and approx. 200 recognised trades 2) All the county authorities shall have at least one training practice certificate programme</td>
<td>1) 4 2) Possible for all vocational programmes</td>
<td>Approx. 57</td>
</tr>
<tr>
<td>Does the programme count as completion of upper secondary education?</td>
<td>1) Yes 2) No</td>
<td>1) No 2) No</td>
<td>1) No 2) No</td>
<td>Yes</td>
</tr>
<tr>
<td>Upper secondary completion rate (2016) (OECD, 2018a; BFS, 2018a)</td>
<td>80.56%</td>
<td>80.16%</td>
<td>77.43%</td>
<td>90.90%</td>
</tr>
<tr>
<td>Percentage of students in VET programmes at upper secondary level (2016) (OECD, 2018a)</td>
<td>69%</td>
<td>50%</td>
<td>37%</td>
<td>65%</td>
</tr>
<tr>
<td>Percentage of students in combined school and work-based VET (2016) (OECD, 2018a)</td>
<td>32%</td>
<td>17%</td>
<td>2%</td>
<td>58%</td>
</tr>
</tbody>
</table>
4.1 Austria

In 2003, Austria introduced two types of schemes for youth at risk: a prolonged apprenticeship scheme and a partial qualification scheme. They target learners with special needs, people with disabilities, those without a basic school-leaving certificate and youth who are difficult to place in training companies (Section §8b of the Austrian Vocational Training Act). These two schemes account for more than six percent of apprentices in VET. This corresponds to about three percent of a year group (Dornmayr, 2017).

Apprentices in a prolonged apprenticeship scheme follow the same competence goals as apprentices in ‘regular’ programmes, and take the same trade or journeyman’s certificate. However, training is normally extended by one, or, in some cases, two years, making the training pathway between three and six years. These apprentices are also entitled to a “vocational assistant” who follows and guides them throughout their education. The goal of this training pathway is thus to offer young people with special needs a full VET by giving them more time and support (Dornmayr, 2017). Apprentices in the partial qualification pathway follow individualised curricula. A training contract defines the competence goals, selected from a pathway towards a full vocational qualification. The training has a duration of between one and three years and concludes with an individual competence test. These young people are also entitled to a “vocational assistant” (Section §8b of the Austrian Vocational Training Act).

Both VET in the form of a prolonged apprenticeship and pathway towards partial competence are mainly practice-based pathways with training taking place both at school and in a company or training institution. The majority of young people are trained in private apprenticeship companies (Dornmayr, 2017). These young people generally join regular classes at school. Both schemes can be implemented in each of the around 200 vocations on offer in Austria (Heckl et al., 2008).

Around half of the apprentices who undergo training in a prolonged apprenticeship or in a partial competence pathway, complete the training and pass the final test. The dropout rate is thus higher for these pathways than for apprenticeships in general (Dornmayr et al., 2017). Three years after the completion of training, 67 percent of those who completed a prolonged apprenticeship, and 56 percent of those who took a partial competence pathway, were in employment. Labour market integration is thus more difficult for these young people than for VET graduates in general, but the employment rate is significantly higher than for those who dropped out of education (Dornmayr, 2017).

VET for young people with special needs provided through these two schemes is considered a success: The young people receive a formal diploma, a trade certificate or a vocational training certificate, gain the possibility for individualisation and close follow-up, at the same time as they have the greatest possible freedom of choice (Heckl et al., 2008). Defined admission criteria also ensure that these education pathways do not replace but rather supplement regular pathways (Dornmayr, 2017).
4.2 Norway

Upper secondary education in Norway comprises five general education and eight vocational programmes that either lead to a university admissions certification or a trade- or journeyman's certificate. The reform of 1994 also introduced a third form of competence known as “documented partial competence” (Section 3-3 of the Norwegian Education Act). Documented partial competence is competence that is at a lower level than full vocational or university admissions certification, and can be achieved by completing a training candidate or a training practice certificate scheme (Vilbli, 2018).

The training candidate scheme became statutory in 2001. The target group is youth “who wish to take upper secondary education and training in a company but are unable to meet the requirements of a trade and journeyman's certificate” (Utdanningsdirektoratet, 2015, p. 1). An individual training plan is based on the individual’s needs, in which the training candidate's wishes and abilities are emphasised. There are no requirements of subjects or the number of competence goals, and the duration of the apprenticeship can vary from one to four years. The training generally follows the 2+2 model, where two years at school are followed by two years in a company. The training candidate's training plan forms the basis for the individual competence test, which is less comprehensive than a regular trade or journeyman's certificate (Section 4-1 of the Norwegian Education Act).

The training practice certificate scheme was introduced in 2016 following a trial period of several years in various counties. The target group is youth “who may have poor grades, high school-absence, but who do not have learning difficulties or special training needs, and who are assumed to be able to reach the competence goals over time through more practical training in a company” (Utdanningsdirektoratet, 2017, p 1). The pathway is two years, and the majority of the education and training takes place in a company. Unlike the training candidate scheme, the training practice certificate scheme is not individually adapted, but based on a common local curriculum that comprises a range of competence goals from the corresponding national education programme. Full goal achievement is also required in the common core subjects Norwegian, mathematics and social studies. After two years, the training practice certificate candidates take a standardised training practice certificate test (Utdanningsdirektoratet, 2017).

Training candidates made up 0.8 percent of all students and apprentices in upper secondary education in 2017. The biggest percentage is made up by training candidates in healthcare, childhood and youth development, and building and construction (Markussen et al., 2018). Boys are overrepresented among training candidates, compared to apprentices. Training candidates also have notably lower grades from compulsory education than apprentices and have considerably more absence in lower secondary school. Training practice certificates have yet

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1 As of the 2020-2021 school year, new educational programmes, programme areas and subject curricula will be introduced for upper secondary education in Norway.
to be included in official statistics. As of January 2018, there were only 32 training practice candidates in five counties (Markussen et al., 2018). Both training candidates and training practice certificate candidates have the possibility to continue their training after they pass their individual competence test respective training practice certificate test and work towards a full trade certificate. However, the figures show that very few training candidates continue their training and achieve a trade or journeyman’s certificate (Markussen et al., 2018). There are no national figures at present showing the transition to a regular pathway for training practice certificate candidates, and the figures from individual counties show different results (Høst, 2016; Markussen, 2014). With respect to the transition to the labour market, research shows that both training candidates and training practice certificate candidates are in a worse position than young people with a trade or journeyman’s certificate, but in a considerably better position than young people who have dropped out (Markussen, 2014).

The percentage of a year group who end up with documented partial competence is 2.1 percent (SSB, 2018a). However, documented partial competence is not included in the completion rate statistics. In Norway, only those who achieve a trade- or journeyman’s certificate or a university admissions certification are considered to have completed upper secondary education (SSB, 2018b).

4.3 Sweden

In Sweden, both general education and vocational upper secondary programmes have admission requirements based on the grades from compulsory education. There are four introduction programmes at upper secondary level for students who do not pass all the required subjects at lower secondary school. These programmes were introduced in the Upper Secondary Reform of 2011\(^2\) (Education Act, SFS, 2010: 800), which replaced the individual programme introduced in 1993. Introduction programmes aim to facilitate access to and participation in a national education programme or transition into employment. They do not lead to graduation (Skolverket, 2014).

The introduction programmes have no nationally defined structure, curriculum or length. The Swedish Education Act encourages local variation that enables education to be adapted to students with different needs. After having assessed the student’s needs, schools are tasked with developing an individual study plan, which defines the objective, length and content of the education. The four introduction programmes have different target groups, e.g. students who lack approved grades in a few subjects, students who want to start working or newly arrived immigrants who primarily need to learn Swedish. Depending on the programme and the students’ needs, the programmes generally have a duration of one to three years (Skolverket, 2014). Students who do not wish to or have the opportunity to take a national programme,

\(^2\) Until 1 July 2019 there were five different introduction programmes.
can take VET under the introduction programme “vocational introduction”. This education is also individually adapted and follows an individual study plan: The education can include whole or parts of VET programmes included in national programmes, as well as compulsory education subjects that the student lacks. The education must also include practical training (Henning Loeb, 2014). At most schools, this education takes three years (Statens offentlige utredningar, 2016).

Increased immigration and higher admission requirements to national programmes have led to a continuous increase in the percentage of young people starting an introduction programme: For the school year 2016/2017, the percentage of students in the first year of an introduction programme was 24.8 percent (Skolverket, 2017). Compared to national upper secondary education programmes, students with foreign backgrounds, boys, students whose parents have a low level of education and students with poor grades from compulsory education are overrepresented in the introduction programmes (Statens offentlige utredningar, 2016).

Five years after the start-up of the introduction programmes, 19.6 percent of the students had completed upper secondary education and completed a national programme (Skolverket, 2018). In addition to these students, a further 7.9 percent had gained a study certificate – a certificate for students who have completed a national programme, but who have not met the requirements of completion of upper secondary school (Skolverket, 2018). Some students also start working. Around 25 percent of the students who took “vocational introduction” were in work one year after they completed the programme. However, the largest group (41%) were unemployed (SCB, 2014). The percentage who go on to take national programmes and complete upper secondary education after the introduction programme was lower than expected after the reform. The Swedish Ministry of Education and Research emphasises that the introduction programmes are an important means of encouraging more young people to complete upper secondary education. Measures are therefore being planned to improve these programmes (Utbildningsdepartementet, 2018).

### 4.4 Switzerland

In Switzerland, a two-year apprenticeship was established in 2002 aimed at increasing the employability of low-achieving school leavers. The educational pathway follows standardised training plans and concludes with a standardised certificate (Federal VET Certificate), and it replaces a previously individualised educational pathway. Despite standardised training plans and final tests, the pathway shall also take the individual abilities of the apprentices into account. The goal is for as many young people as possible to complete upper secondary education. As well as standardised qualification requirements, the apprentices’ individual rights to support measures are also defined, which do not only include school-related aspects, but
all aspects of relevance to education in the learner’s environment (Vocational Training Order, Swiss Confederation, 2003, art. 10, par. 5). The structure of two-year apprenticeships is similar to three-year and four-year apprenticeships with a combination of company-based and school-based components (Wettstein et al., 2017). However, two-year apprenticeships are less demanding regarding complexity and the apprentices’ autonomy than three-year and four-year apprenticeships. According to the responsible ministry, the target group for two-year apprenticeship is “particularly practically gifted young people and adults” (SBFI, 2014, p. 4). Apprentices in two-year programme come almost exclusively from lower levels of lower secondary school or from classes with adapted curricula, i.e. classes with students who require special education facilitation or newly arrived immigrant youths (BFS, 2016). Compared with the three-year and four-year apprenticeships, young people with minority backgrounds and young people whose parents have a low level of education are over-represented in the two-year apprenticeships (Fitzli, 2017).

Around 57 two-year programmes have been introduced in almost all industries up until 2017, and the number of apprenticeship contracts has increased each year. The two-year apprenticeships in sales and construction is particularly popular. In 2016, the Federal VET Certificates made up around nine percent of all VET certificates (Kammermann, 2017). This corresponds to around six percent of the year group (BFS, 2018a). The trade associations decide whether this type of competence is needed in the labour market. The two-year apprenticeships have their own vocational titles (Kammermann, 2017).

95 percent of the apprentices who take the final test pass it, around 75 percent within the nominal length of study of two years. Apprentices who do not pass the final test receive an individual attestation of competences (Scharnhorst & Kammermann, 2017). Those who complete may progress to three-year or four-year apprenticeships. On average, about a third do so across all professions (BFS, 2018b). The opposite perspective is also useful: Around 15 percent of the young people taking the two-year pathway had left a three-year or four-year programme (Fitzli, 2017). Regarding the transition to the labour market, research shows that labour market entry is more difficult and takes more time after a two-year apprenticeship than after a three-year or four-year apprenticeship. However, these differences become smaller with increasing observation time. Two to four years after completion of a two-year apprenticeship, around 85 percent are either in employment or further education (Fitzli, 2017).

5 Discussion

The study has described seven different training schemes for youth at risk in Austria, Norway, Sweden and Switzerland. Based on the programmes’ structure and objective, the study distinguishes between four different education and training models for youth at risk: individually adapted, short-track, prolonged and preparatory programmes (see table 2). The intro-
duction programme in Sweden has a twofold objective – in addition to preparing students for a national programme on upper secondary level it also aims to prepare them for the labour market – and is therefore assigned to two different education and training models. The four identified education and training models are described in the following subchapters.

Table 2: Four education and training models for youth at risk in Austria, Norway, Sweden and Switzerland

<table>
<thead>
<tr>
<th>Norway</th>
<th>Switzerland</th>
<th>Sweden</th>
<th>Austria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individually adapted</td>
<td>Training candidate scheme</td>
<td>Vocational introduction programme (targeting the labour market)</td>
<td>Partial qualification scheme</td>
</tr>
<tr>
<td>programmes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-track programmes</td>
<td>Training practice certificate scheme</td>
<td>Two-year apprenticeships with Federal VET Certificate</td>
<td></td>
</tr>
<tr>
<td>Prolonged programmes</td>
<td></td>
<td></td>
<td>Prolonged apprenticeship scheme</td>
</tr>
<tr>
<td>Preparatory programmes</td>
<td></td>
<td>Introduction programmes (targeting upper secondary level)</td>
<td></td>
</tr>
</tbody>
</table>

5.1 Individually adapted programmes

Individually adapted programmes neither have a defined length nor content, the training in its entirety is adapted to the students’ abilities, needs and wishes. No standardised competence requirements therefore have to be followed, and the final test is also individually adapted in accordance with the content of an individual training plan or training contract. After passing the final test, the students receive a vocational training certificate showing the competence demonstrated by the student. The programme is linked to a ‘regular’ upper secondary programme, and the competence goals selected will be made up by some of the competence goals for the corresponding programme to the full vocational qualification. The objective is to prepare the student for working life. This type of training model is found in Norway (training candidate scheme) and Austria (partial qualification scheme). The introduction programme “vocational introduction” in Sweden is also an individually adapted programme that can have a labour market focus. The examples in Norway, Austria and Sweden show that individually adapted training programmes can take place in a school, workshop or in a training company. It depends on the training tradition in the country in question, and the training is adapted to the student’s abilities and needs within the given framework. This also applies to the length of training, which is based on the training content and planned competence requirements. This can vary from just a few competence requirements
to almost the entire curriculum for a pathway to a full vocational qualification. This is the major strength of an individually adapted programme: There are few guidelines, and it is the student’s needs and abilities that form the basis for and have to be taken into account in the training. This type of approach provides a good basis for getting students through upper secondary education, who otherwise would not have been able to take and complete upper secondary level education.

One of the challenges of individually adapted programmes is ensuring they are recognised by youths, parents, teachers, advisers and, not least, employers. In Switzerland, individually adapted pathways were replaced in 2002 by standardised two-year programmes. The individualised training scheme was not attractive enough to youths and their parents, and the level of recognition in the labour market was considered to be too low (Kamermann, 2017). This is also a major challenge in Norway. The introduction of a type of formal competence at a lower level than a full vocational qualification and the introduction of the training candidate scheme were not welcomed by the labour market. Seventeen years after the scheme became statutory, the number of training candidates in this pathway – in relation to the number of students who drop out of upper secondary education due to inadequate performance – is still very low. The scheme does not thus appear to be an attractive option among youths and parents (Markussen et al., 2018). Labour market prospects are vital to the support that individually adapted programmes enjoy among youths, parents, teachers, advisers and in the labour market. The transition to the labour market appears to be more difficult for those who have completed an individually adapted pathway than for those with a full vocational qualification, in both Norway and Austria. The majority are nonetheless in employment, in both Norway and Austria, three years after completion (Dornmayr, 2017; Markussen, 2014). This shows that this type of certificate has value in the labour market. In the examples studied, these pathways do not qualify as completed and passed upper secondary education. Young people who have completed this type of upper secondary education are thus not included in national and international completion rate statistics but end up in the category “early leaver from education and training”.

5.2 Short-track programmes

Short-track programmes are both shorter and at a lower level than a ‘regular’ vocational programme. Unlike individually adapted programmes, short-track pathways follow nationally or locally defined curricula. This means that there are standardised competence requirements, and that the training concludes with a standardised test. Usually there will be a corresponding programme that leads to a certificate at a higher level. Like regular vocational pathways, the objective of short-track programmes is also to prepare young people for the labour market. In the current sample, the study found short-track programmes in Norway (training
practice certificate scheme) and in Switzerland (two-year apprenticeships with Federal VET Certificate). These pathways have a duration of two years in both Norway and Switzerland.

In Norway, the county authorities, together with local business and industry, decides which education programmes are to offer a training practice certificate scheme (Utdanningsdirektoratet, 2017). The county authorities are obliged to offer a training practice certificate scheme in at least one VET programme. There are thus local curricula, rather than a national curriculum, which means that the schemes vary depending on where the students live. There is no overview of the training practice certificate schemes available in Norway. As of January 2018, there were only 32 training practice candidates (Markussen et al., 2018). In Switzerland, trade associations are responsible for assessing the need for this type of competence in the labour market, and whether to introduce a two-year apprenticeship. With around 57 vocations covering almost all industries, young people have a wide range of two-year options to choose from. The two-year pathway in Switzerland also has its own professional titles (Kammermann, 2017). In Norway, professional titles have yet to be established for training practice certificates, but this is under debate (Markussen et al., 2018).

In Switzerland, two-year apprenticeships appear to be an important option for young people who are unable to complete a three- or four-year apprenticeship, and those who need a lower threshold into VET to continue on a ‘regular’ pathway. There is satisfactory recognition of this programme in the labour market, and the majority of those with this type of qualification are in work (Fitzli, 2017). Around six percent of a year group complete a two-year apprenticeship (BFS, 2018a), and are deemed to have “completed and passed” upper secondary education.

In Norway, there has been little research on the training practice certificate scheme since it was first introduced in 2016. The evaluation of a trial period in three counties concluded however that the scheme was “a very successful measure to reduce dropout” (Host, 2016, p. 196). These schemes are not currently considered to be equivalent to completed upper secondary education, but this has recently been placed on the agenda and has support among the parties in the labour market (Markussen et al., 2018).

5.3 Prolonged programmes

Prolonged programmes lead to the same total competence as ‘regular’ upper secondary education. The apprentices in these pathways follow the same competence goals and take the same final test at the end of the training as apprentices in a ‘regular’ pathway. They have more time however, and, in the case of Austria, they also receive guidance from a “vocational assistant”. In Austria, only young people who meet certain special needs criteria are entitled to this type of training. Nonetheless, the aim is for these young people to take a full trade or journeyman’s certificate. This apparent balancing act is addressed by extending the period of
training and close follow-up. It is thus not surprising that this pathway has a higher dropout rate than ‘regular’ apprenticeships. Those who complete and pass the training however have good job prospects. The scheme is therefore considered a success in Austria. Particular emphasis is given to the fact that it has an 'anti-discriminatory' effect (Dornmayr, 2017, p. 30) by giving youth at risk more time, rather than less time. It should also be mentioned that other countries are considering this option. Students and apprentices have the right to prolonged training in both Norway and in Switzerland (Section 3-1 fifth paragraph and Section 5 of the Norwegian Education Act; Vocational Training Act, Swiss Confederation, 2002, art. 18, par. 1). This is based however on individual decisions in both Norway and Switzerland.

5.4 Preparatory programmes

Unlike the three other training schemes outlined above, preparatory programmes do not aim to prepare young people directly for the labour market, but for regular upper secondary education. Students who, for various reasons, are not ready for regular upper secondary education, receive more training to reach the level required by upper secondary education. In the current sample, the study found a preparatory programme in Sweden: Four introduction programmes are available that aim to enable students to start a national upper secondary programme. The introduction programmes give students the opportunity to take a number of courses and improve their grades, and students complete the courses they need based on an individual study plan. The programmes also have different focuses and target different target groups. These target groups reflect the heterogeneity of students who lack qualifications for national upper secondary programmes. A number of countries have various transitional options to make the transition from lower to upper secondary education easier (for Switzerland, see e.g. ‘Transitional options’ in Wettstein et al., 2017). Unlike these, the introduction programme in Sweden is a part of upper secondary education.

6 Conclusion

The aim of this article was to identify education and training models for youth at risk of dropping out of upper secondary education without achieving qualifications at this level. For this purpose, the study selected four countries with different educational traditions at upper secondary level – Austria, Norway, Sweden and Switzerland – and compared the education and training programmes for youth at risk in these countries. The background for the study is an increased focus on the completion of upper secondary education in recent years and, at

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3 The introduction programme ‘vocational introduction’ aimed at the labour market is not considered preparatory in the present classification, but an individually adapted programme (see individually adapted programmes).
the same time, an increasingly heterogeneous VET target group. VET is thus required to have
different goals, which are sometimes contradictory. On the one hand, VET must meet labour
market requirements of efficiency, quality and competence, and ensure it is related to high-
er education and lifelong learning. On the other hand, however, VET must include young
people with different educational performances and social backgrounds to a greater extent
than previously (Larsen & Persson Thunqvist, 2018). When the target group changes, the
education system’s structures must be adapted accordingly. The four countries studied have
different approaches to adapting upper secondary training schemes for youth at risk. The
study distinguishes between two strategies at an overriding level: While one strategy aims to
encourage and support students and apprentices so that they can conclude their education
with an ‘regular’ vocational qualification or a university admissions certificate, the other stra-
tegy aims to adapt the training to a level lower than a ‘regular’ vocational qualification. Some
young people will not be able to complete and pass ‘regular’ upper secondary education, even
with more preparation, time or follow-up and guidance. In all the countries included in this
study, these young people have the opportunity to conclude their education with a certificate
at a level lower than ‘regular’ upper secondary education.

Based on this study, it is not possible to determine which of the four identified education
and training models for youth at risk is best suited to including vulnerable youth in upper
secondary education and the labour market. This issue will require longitudinal data. The
comparison of the training programmes for youth at risk of dropping out in Austria, Nor-
way, Sweden and Switzerland, however, identifies some differences between these countries,
which are assumed to be relevant in terms of the inclusion of disadvantaged youth. Three
of them are explained in the following. Firstly, it is obvious that the percentage of young
people in programmes tailored to the needs of youth at risk varies widely between the four
countries studied (see table 1). This is related to the different admission requirements to up-
per secondary education: In Sweden, the admission requirements to national programmes
exclude almost a fourth of any year group, such that the percentage of students in preparatory
introduction programmes is very high. In Norway, on the other hand, all young people have
a statutory right to a place in upper secondary education (Nyen & Tønder, 2015), and the
percentage of young people in training candidate and training practice certificate schemes is
very low. In Austria and Switzerland, the apprenticeship market regulates access to vocatio-
nal education and training and thus has a decisive influence on the criteria for the allocation
of training places.

These countries thus regulate access to upper secondary education in very different ways,
and, for disadvantaged youth in particular, these regulations can be very decisive. The second
point concerns the different importance assigned to VET at upper secondary level in the
countries studied. This can be seen, among other things, in the percentage of young people
in VET programmes at upper secondary level and the percentage of students in combined
school and work-based VET (see table 1). Since education policy emphasises the importance of VET in getting early school leavers and disadvantaged youth into education and employment, it is natural to look at the position of VET in these countries. There is a lot of evidence that indicates that a well-developed VET system has a positive effect on the inclusion of potentially at-risk youth (e.g. De Witte et al., 2013; Lamb, 2011a; Lavrijsen & Nicaise, 2015). Various actors also emphasise the positive significance of work-based learning on motivation and professional identity (Cedefop, 2016; OECD, 2010). This is not necessarily a question of whether VET is organised as apprenticeship training or a school-based programme. A short, structured workplace learning component in classroom-based VET has for example in Australia been associated with higher school completion rates and better employment transitions (Polidano & Tabasso, 2014).

Finally, the last difference to be highlighted concerns the recognition of training programmes for youth at risk. To date, Switzerland is the only country in the current sample that issues certificates after a two-year apprenticeship as completed and passed upper secondary education. This practice contributes to high completion rates in Switzerland (see table 1). If training schemes for youth at risk are to attract vulnerable young people, it is vital that they lead to recognition in society and that the certificate is valued in the labour market. Furthermore, research from Austria, Norway and Switzerland shows that young adults with a vocational training certificate at a lower level than a ‘regular’ vocational qualification are in a better position in the labour market than people without any upper secondary education (Dornmayr, 2017; Fitzli, 2017; Markussen, 2014). Further research must include longitudinal data and investigate which type of education and training is best suited to including youth at risk in upper secondary education and the labour market. Furthermore, further research must extend the work to a larger geographical area. Systematic mapping of the training schemes available to youth at risk is particularly important for countries with a high dropout rate, which often have ‘weak VET systems and lack attractive non-academic programmes’ (European Commission, 2014, p. 13). VET plays a key role with respect to securing work for youth at risk and measures to ensure more of them complete upper secondary education and make good transitions to working life.

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Understanding informal jewellery apprenticeship in Ghana: Nature, processes and challenges

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Abstract

Context: The processes of acquiring education in jewellery in Ghana has been dominated by the informal apprenticeship system and it forms the backbone of the workforce of the jewellery industry in Ghana. However, the patronage of informal jewellery apprenticeship in Ghana in recent times has been on decline even though it has the potential of training human resources to transform Ghana's precious mineral resources sector. This is based on the belief that jewellery trade and its training are shrouded in secrecy, in other words, the jewellery trade is considered to be a sacred profession where information on its operating systems are not allowed to be shared easily. It is believed to be associated with cult and magic, hence the reluctant to admit people who are from outside the family of particular jewellery enterprise. This study is sought to bring to fore the understanding nature, processes and challenges of the informal jewellery apprenticeship in Ghana.

Approach: The study adopted the descriptive and phenomenology research designs (qualitative research methods). Jewellers who own a jewellery business and who are training other people through apprenticeships as well as people who are trained are observed and interviewed. A sample size was selected through purposive and convenience sampling techniques

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Understanding informal jewellery apprenticeship in Ghana from four jewellery enterprises in Accra, Ghana. A thematic analysis plan was adopted to generate findings of the study.

**Findings:** The results show that for a person to train as a jeweller, s/he has to enrol by going through induction, furthermore fees (money and perishable items) are to be paid. The training content is driven by orders received by the master jeweller, thereby making it unstructured and lacking criteria for assessing the performance and progress of apprentice jewellers. Teaching and learning methods are usually on-the-job training that rely on demonstrations and observation.

**Conclusion:** Informal jewellery apprenticeship in Ghana uses a flexible, cost-effective approach for transferring jewellery making skills from masters to apprentice jewellers, and it has substantial potential for improving skills training in the country. Sometimes the reluctant of some jeweller to train others is to keep the trade to family members only.

**Keywords:** Informal education, apprenticeship, jewellery, jewellery education, master and apprentice jewellers, vocational education and training, VET, TVET

### 1 Introduction

Over the years, informal jewellery apprenticeship has been the avenue for people to acquire knowledge and skills in jewellery making in Ghana. Information available shows that between 80–90% of jewellers practicing in the jewellery industry in Ghana are products of informal jewellery apprenticeship (Atchoarena & Delluc, 2001). Acquiring vocation in jewellery through traditional apprenticeship method is only possible through family members because the jewellery trade is considered to be a legacy preserved for particular family and could only be passed on to its generation with women being excluded from practicing (Kotoku, 2009; Palmer, 2009). The belief is that jewellery trade and its training are shrouded in secrecy, in other words, the jewellery trade is considered to be a sacred profession whose information about its operating systems are not allowed to be shared easily because it is believed to be associated with cult and magic, hence the reluctant to admit people who are from outsiders the family of particular jewellery enterprise (Wilson, 2002).

Patronage of informal jewellery apprenticeship in recent times has been in a decline (Kotoku, 2009; Fening & Asomaning, 2014). According to Palmer (2009) lack of regulatory framework enforcement was a contributing factor of the decline. Buttressing his point, he asserted that a law passed by Parliament of Ghana in 1970, Act 351 (the National Vocational and Technical Institute (NVTI)) to regulate Technical and Vocational Education Training (TVET) including formal and informal apprenticeship was not effective until 2006 when another Act of parliament, Act 718 was passed to mandated the government of Ghana to
establish a Council for Technical and Vocational Education and Training (COTVET) to co-ordinate and oversee all aspects of technical and vocational education and training in the formal, non-formal and informal sectors of the country. Despite the passing of Act 718, apprenticeship in jewellery is still not regulated in Ghana (A. R. O. Addo, personal communication, December 14, 2015). Therefore, the sought to bring to fore the understanding of the informal jewellery apprentice in Ghana. This is an empirical study that discusses the understanding of informal jewellery apprenticeship in Ghana (nature, processes and challenges) which is imperative for the development of jewellery education in Ghana. The structure of the paper is made up of a review of related literature, methodology used, results, discussions and the conclusion that have been drawn from the study.

2 Informal apprenticeship system

Traditional apprenticeship as a means of transmitting and acquiring vocational skills has existed especially in African for a very long time. According to Fluitman (1994), the practice has its roots in socio-cultural traditions where it was only meant for developing skills of a family members in particular trade that they practice whose activities were mainly regulated by social customs. However, in recent time apprenticeship has evolved a lot, where the once family restricted skills development sector has now been opened up to admit all those who are interested in work-based learning, through ‘informal apprenticeship’(IA). The IA also give room for adaptations to response to the changes of socio-economic conditions of a community.There has been a diverse way of defining informal apprenticeship by international organizations such as UNESCO, ILO, World Bank and others. Some of the definitions given by these institutions are: ‘system of skills transmission for a trade from a master craftsperson to a young apprentice who learns the trade on the job by way of observation, imitation, repetition as well as trial and error, thus by working and assisting their master craftsperson’(Gwengwe, 2015, p.5). Similarly, Aggarwal et al., (2010) states that the sole purpose of informal apprenticeship is to acquire a set of requisite and practical skills from master crafts (wo)man (MC) through a process that falls in line with norms and practices of the community where the training is taken place.

Although different terms such as informal apprenticeship, traditional apprenticeship or even apprenticeship in the informal economy have been given to this system of training, the focus of all of these terminologies is to impart people especially young persons with knowledge and skills to build careers. A practice, which is prevalence in developing countries, with majority of the practice being done in countries where they have large informal economy (Aggarwal et. al., 2010). There are varied reasons that account for the establishment of informal apprenticeship as a preferred skills development path as compared to formal education system. Among them are, many families have large number of children but they
are low income earners and therefore they are unable to educate such children through the formal education system (Nübler et al., 2009). As a result of that IA serves as a viable source of acquiring skills in the absence of them having the educational requirements to enrol on Technical and Vocational Education and Training (TVET). Also, some families in their quest to keep their trades among themselves, they introduce their male youth to learn the trades. This system is such that knowledge and skills of a particular crafts or trades are mostly passed on from one group to another through family lineages. The training is such that a father will teach his sons the rudiments of his craft and the sons also train their sons in the same way as they were taught and the cycle continues. Example of this can be found in the gemstone cutting trade which is considered as one of the early crafts making. A particular one that comes in mind immediately is the story of Paul Revere, who was a member of popular silversmiths business in America. Paul had a brother by name Thomas, both of them trained as silversmith by their father. After them two of the children of Paul served their father as apprentice in a shop that belong to the family at Boston (Triber, 1998).

2.1 Apprenticeship in jewellery in Ghana

Apprenticeship in jewellery in Ghana, used to be possible through once direct relationship with a goldsmith. This means that it was only by inheritance that one can have access to learn and practice the trade of jewellery. Kotoku (2009) postulates that the basic requirement for any person to enrol as apprentice jeweller is to belong to the family of the jeweller, that is either the potential apprentice is his son or nephew. The only outside person that is allowed to learn jewellery is son of another Jeweller. This has been supported by Wilson (2002), who further states that apart from not allowing non-family members to enrol as apprentice jewellers, women were not permitted at all to learn the jewellery trade in Ghana. They were not even allowed to enter the jewellery shop let alone touch any of the jeweller’s tools. If for any reason a woman touches the tools of the jeweller while she is in her menses, then certain rituals will have to be performed to cleanse the tools.

Although Ghana has joined the rest of the world in modernizing how skills in jewellery are acquired through the introduction of the school-based jewellery programmes and subjects at various levels of her education system, apprenticeship in jewellery still plays a vital role of developing the manpower needs for nation-building in the area of value addition to the various mineral resources such as gold, silver and diamonds. For instance, there are only two tertiary institutions that offer jewellery related programmes at the undergraduate and post-graduate levels, whiles about 20 out of over 400 senior high schools.
2.2 Economic significance of informal jewellery apprenticeship

An empirical study identified traditional apprenticeship as the most significant training system that provides skills including jewellery making to young people in many informal economies of African countries. By so doing a master craftsperson satisfies a social and economic obligation to his community by transferring his/her skills to the next generation. Unfortunately, many developing countries including Ghana pay more attention to promoting the formal apprenticeship in the form of technical and vocational education training system (Nübler et al., 2009). Some of these countries virtually have no training policies that give credence to indigenous skills training system which is considered as the major movers of economies.

The rapid growth of any nation is largely dependent on the quality of its human capital (Anokye & Afrane, 2014). It is estimated that between 80 to 90% of career men and women in jewellery in Ghana acquired their trade through informal apprenticeship system (Atchoarena & Delluc, 2001). This gives them control of Ghana’s economy and therefore, the means or process of the country’s developmental growth. Despite the economic relevance of informal jewellery apprenticeship to Ghana’s developmental agenda, enough has not been done by governments and other policy makers to improve and sustain it. For instance, Ghana is the second-largest producer of gold in Sub-Sahara Africa, with the country producing over 2.5 million ounces of gold annually. Out of this, about 90% of these are exported in the raw state without any value addition, because the country lacks enough of qualified jewellers who will add value to the raw gold, which causes the country to earn less revenue from the raw gold that are exported (Moran, 2015).

This would not be the case if the country commits herself to informal jewellery apprenticeship, because the content for training is usually hands-on whereby apprentices learn by working alongside the experienced master jeweller at a low cost. Also, training is integrated into the production process which is rooted in the jewellery industry. Additionally, informal jewellery apprenticeship is more relevant to labour market demands, particularly informal economy, where apprentice jewellers are provided with soft technical and business skills, establish business networks and link with business development services particularly in the field of jewellery. Beside these benefits as stated, informal jewellery apprenticeship also gives avenues to apprentice jewellers to earn some income whiles undergoing the training after they mastered in certain jewellery making techniques.

2.3 Informal jewellery apprenticeship process in Ghana

Ghana has a long tradition of informal jewellery apprenticeships among other trades such as: carpentry, masonry, auto-mechanics, welding and fabrication, foundry and casting, Tailoring, dressmaking and beautician, blacksmithing, shoemaking and repair. According to Palmer (2009) these informal apprenticeship system has widely been used to train skilled
personnel for families and communities. Relating apprenticeship training to other skills development system Anokye and Afrane (2014) opine that apprenticeship (informal) training is an art and depend on the level of expertise of the master craftsman and the methodologies he/she uses to transfer the skills to the apprentice.

The process of commissioning master jeweller (MJ) to train someone to become a jeweller in Ghana involves entering into an agreement between the MJ and the parents of the prospective apprentice jeweller, which is mostly done verbally. The agreement usually spells out the responsibilities and conditions of the MJ and that of the apprentice. Another issue that the agreement highlights is the remunerations to the MJ. Some MJs collect training fees, while others do not. Instead they let the apprentice work for them without any wage and where wage is paid to the apprentice, he/she is under paid. Some master jewellers offer the apprentices free accommodation, clothing food and pocket money in addition to free materials and facilities for the training (Fening, 2015).

The process of knowledge and skills acquisition in jewellery through informal apprenticeship has been described by Frazer (2006) as a four-phase process, which usually require a period of three or four years to complete. These involve the introductory stage (IS), tools, equipment and materials (TEM), manufacturing process (MP) and business management (BM) skills. After completing his/her training the graduation of an apprentice is often a community affair. This shows the social importance of apprenticeships.

3 Methodology

The study adopted the descriptive and phenomenology research designs under the qualitative research methods. These research methods were employed to enable the researchers to describe as accurately as possible the phenomena of the nature, processes and challenges of informal jewellery apprenticeship in Ghana (Saunders et al., 2003). In other words, the interest of the researchers as far as this study is concerned is to gather the thoughts, impressions, feelings, interpretations, understandings and representations of both master and apprentice jewellers (Sutton & Austin, 2015). The population of the study (as shown in table 1) were made up of jewellers who own jewellery business and are training other people to become jewellers through apprentice as well as people who are undergoing jewellery training. A sample size of 46 were selected through purposive and convenience sampling techniques from four jewellery enterprises in Accra. The inclusions of these jewellery shops were based on the fact that the owners agreed to provide information about their jewellery trade which other jewellers felt the trade was sacred whose information on their operating systems are not to be exposed to outsiders.
Table 1: Matrix of the population for the study (authors’ construct).

<table>
<thead>
<tr>
<th>Jewellery Enterprise</th>
<th>Master Jeweller</th>
<th>Jewellers</th>
<th>Apprentice Jewellers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jewellery Shop A</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Jewellery Shop B</td>
<td>1</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Jewellery Shop C</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Jewellery Shop D</td>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4</strong></td>
<td><strong>12</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Observation and interviews were used as tools for data collection. The use of observation and interviews was based on the fact that the respondents that were involved in the study were not many so as some of the master and apprentice jewellers were unable to read or write effectively. Observation as data collection tool allowed the researchers to generate a richly detailed account, whose interpretations confirmed or otherwise of the descriptions of behaviours, intentions, situations and events that the researchers got from the respondents through interview (DeWalt & DeWalt, 2002). The researchers adapted *Thematic Analysis plan* to generate findings from the data collected through observation and interview that best answer the research questions. Braun and Clarke (2006, p.6) describe Thematic Analysis as ‘a method for identifying, analysing and reporting patterns (themes) within data.’ In applying the thematic analysis, the transcripts of each respondent (master and apprentice jewellers) and the notes made from the observation were initially read and re-read side by side of the interview guide and the observation checklist to familiarise with the contents. From these multiple rounds of reading and with the use of *HypeResearch* Software, some codes generated from the data that were collected. The codes were noted against the relevant sentences or passages of text. Among the coding system that were used are In-Vivo coding, values coding and others. These codes were then categorised seven (which includes, characteristics, enrolment & induction; content, teaching & learning and challenges). The seven categories were further grouped into 3 themes to obtain nature, processes and challenges in informal jewellery apprenticeship in Ghana.

4 Profiles of the jewellery enterprises used for the study

Jewellery shop A

The first jewellery shop is a sole proprietorship jewellery business established in 2012 and located at Gbawe Zero near the Gbawe cemetery in the Ga West municipal assembly of the Greater Accra region. It has a work-force of 9 which is made up of the master jeweller, 3 Jewellers and 5 apprentice jewellers. In all, 6 jewellers have been trained by the master jeweller
and all of them are practising as jeweller with 3 of them working as employees of the shop. The kind of jewellery that is produced at the royal signet jewellery is fine jewellery (jewellery produced with precious minerals) mainly in gold and silver. They also use both locally fabricated jewellery tools and foreign types. Their annual production of jewellery stands at 2 kilograms of gold and 5 kilograms of silver. They are specialized in hand-crafts and do not produce cast jewellery.

**Jewellery shop B**

The second jewellery shop that was used for the study is a sole proprietorship jewellery enterprise that was established in 1989. It is located at the premises of art centre opposite national lottery in the Accra metropolitan assemble in the Greater Accra of Region. This jewellery enterprise is registered with the Registrar General of Ghana under the registration of Business names Act-1962 (Act 151). The shop a work-force of 6 which is made up of a master jeweller, 3 jewellers and 2 apprentice jewellers. In all the master of this jewellery enterprise has trained 36 jewelers through informal jewellery apprenticeship of which all of them are practising as jewelers. The jewelers at this shop combine both traditional and modern methods of jewellery production with their product specialization being precious minerals (gold, silver diamonds, ruby, etc) jewellery. Their annual production of jewellery turnover stood at 6 kilos gold (18ct) and about 20kilos of silver jewellery.

**Jewellery shop C**

The third jewellery enterprise that was used for the study is also a sole proprietorship jewellery business established in 2009. The jewellery enterprise is registered with the Registrar General of Ghana under the Registration of Business Names Act-1962 (Act 151). It is located at Ashiaman roundabout adjacent to bank of African in the tema metropolitan assembly of Greater Accra. It has a work-force of 5 which is made up of a master jeweller, 2 jewelers and 3 apprentice jewelers. So far 4 jewelers have been trained by the master jeweller through informal jewellery apprenticeship. Out of the 4 trained jewelers 3 of them are practising as jewelers while the other one has entered into a different trade. The jewellery production line includes fine, fashion and costume jewellery. The annual jewellery production output stand at 2 kilograms of gold, 5 kilograms of silver and unspecified amount of brass, copper and beads jewellery.

**Jewellery Shop D**

The fourth and final jewellery shop that was used for the study has been in operation since 2005 but has not been registered with the Registrar General of Ghana under the Registration of Business Names Act-1962 (Act 151). The jewellery shop is located at Dzowulu, a suburb of Accra. It has a work-force of 7 consisting of 5 jewelers and 2 apprentice jewelers. A total of
4 jewellers have been trained since the commencement of its operations. The jewellery shop D specialises in fine jewellery productions with their annual production estimated to be 3 kilograms of gold (in various carats) and 4 kilograms of silver.

5 Results

5.1 Background of the respondents

The characteristics of the master jewellers as shown in table 2 were made up of 4 male master jewellers who own jewellery enterprises with collective apprentice jewellers totalling 15 and 12 qualified jewellers. Two of the MJs had their jewellery training school. The ages of the MJs ranges from 34 to 61 years with the longest practising jeweller having 27 years of experience, whereas the least practised jeweller among the respondents being 5 years. Two of the MJs belong to Federation of Ghanaian jewellers, one is a member of jewellers Association of Ghana, whereas the remaining one does not belong to any association. The MJ2 who is not a member of any jewellery association indicated that:

... we don't have any effective jewellery association in Ghana here, I only saw some WhatsApp group that they are trying to do some but, it's freedom of association if you like you decide. So, until we see anything serious coming from them, I will not join yet.

Collective the study shown that the 4 MJs had trained a total of 47 jewellers and with the exception of two, all of them are practising as jewellers in Ghana.

Table 2: The characteristics of the master jewellers respondents.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Sex</th>
<th>Age</th>
<th>Mode of training</th>
<th>Years practiced as jeweller</th>
<th>Trained jewellers</th>
<th>Apprentices</th>
</tr>
</thead>
<tbody>
<tr>
<td>*MJ1</td>
<td>**M</td>
<td>61</td>
<td>school/apprenticeship</td>
<td>27</td>
<td>36</td>
<td>8</td>
</tr>
<tr>
<td>MJ2</td>
<td>M</td>
<td>42</td>
<td>apprentice</td>
<td>15</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>MJ3</td>
<td>M</td>
<td>35</td>
<td>apprenticeship</td>
<td>12</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>MJ4</td>
<td>M</td>
<td>34</td>
<td>school</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

*master jeweller  **male

On the part of the apprentice jewellers (AJ), their characteristics as indicated in table 3 shows that all the 15 respondents were males with their ages ranged between 20 and 27 years. The educational background of 7 AJs had completed junior high school. Again, 4 AJs had completed either a senior high school or technical school. Meanwhile, 2 of the AJs were tertiary education graduates but 3 of them had not gotten any formal education. The period that the
Understanding informal jewellery apprenticeship in Ghana

apprentices had spent on their training as at the time of the study ranged from 6 months to 5 years. It was revealed in the study that 12 out of the 15 apprentices that were interviewed related to their master in one way or the other.

Table 3: The characteristics of the apprentice jewellers respondents.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>Education level</th>
<th>Duration in training</th>
<th>Relationship with MJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>*AJ1</td>
<td>male</td>
<td>21 <strong>JHS</strong></td>
<td>6 months</td>
<td>brother-in-law</td>
</tr>
<tr>
<td>AJ2</td>
<td>male</td>
<td>23 JHS</td>
<td>3½ years</td>
<td>uncle</td>
</tr>
<tr>
<td>AJ3</td>
<td>male</td>
<td>21 ****TECH</td>
<td>3 years</td>
<td>brother</td>
</tr>
<tr>
<td>AJ4</td>
<td>male</td>
<td>23 NON</td>
<td>1 year</td>
<td>not a relative</td>
</tr>
<tr>
<td>AJ5</td>
<td>male</td>
<td>22 JHS</td>
<td>8 months</td>
<td>not a relative</td>
</tr>
<tr>
<td>AJ6</td>
<td>male</td>
<td>24 ***SHS</td>
<td>5 years</td>
<td>father</td>
</tr>
<tr>
<td>AJ7</td>
<td>male</td>
<td>27 JHS</td>
<td>3 years</td>
<td>father</td>
</tr>
<tr>
<td>AJ8</td>
<td>male</td>
<td>22 NON</td>
<td>2 years</td>
<td>uncle</td>
</tr>
<tr>
<td>AJ9</td>
<td>male</td>
<td>21 SHS</td>
<td>1 year</td>
<td>brother</td>
</tr>
<tr>
<td>AJ10</td>
<td>male</td>
<td>21 NON</td>
<td>2 years</td>
<td>cousin</td>
</tr>
<tr>
<td>AJ11</td>
<td>male</td>
<td>21 JHS</td>
<td>3 years</td>
<td>brother-in-law</td>
</tr>
<tr>
<td>AJ12</td>
<td>male</td>
<td>21 SHS</td>
<td>4 years</td>
<td>father's friend</td>
</tr>
<tr>
<td>AJ13</td>
<td>male</td>
<td>25 TETIARY</td>
<td>2 ½ years</td>
<td>uncle</td>
</tr>
<tr>
<td>AJ14</td>
<td>male</td>
<td>21 JHS</td>
<td>4 years</td>
<td>not a relative</td>
</tr>
<tr>
<td>AJ15</td>
<td>male</td>
<td>26 TERT</td>
<td>2 years</td>
<td>brother</td>
</tr>
</tbody>
</table>

*apprentice jeweller, **junior high school, *** senior high school, ****technical school

5.2 Enrolment, fees and induction processes in jewellery apprenticeship

The study revealed that the process of enrolling people in the informal jewellery apprenticeship programme is categorised into two forms. These are indigenous process (informal) and non-formal format. The first one is done through the traditional method whereby a relative, being an uncle’s son or auntie’s son or any other member of the MJ’s close family is brought to him for training. In explaining the process, MJ1 said:

so if I want an apprentice I go to the village just as we followed Kwame [his master who trained him] or any time I go to the village somebody will definitely come that my son is growing he cannot just be there so I want him to follow you then we give them the rules and regulations if they are able to follow it or if the boy or the girl is willing to [follow] that one is most important because the mother can suggest but if the buy comes and he can’t fit he will go back a lot of people who come and they
don’t fit they go back then it becomes fight because it is a family matter so hahaa so that is it.

According to two of the MJ respondents, almost 80% of all that they have enrolled as apprentice jewellers in the past and presently are people who in one way or the other have relationship with their family. It was also noticed from the interview that hardly will people just walk to a goldsmith to apply to be trained as Jewellers. Citing an example MJ3 said:

if you are a carpenter by the road side nobody will come until somebody who knows your character brings his/her son to come and stay with you because he is coming to copy everything about you but anything short of that the parents will not bring their son to you for training.

Three of MJs use traditional/social method to enrol apprentice jewellers. However, one Master Jeweller does not enrol people based on their family relationship. He said ‘I don't do the traditional way of bring drinks and that I prefer to take people through full interview’. What he does is anybody who expresses interest in being train as a jeweller has to submit informal jewellery apprenticeship application form and then go through an interview before he or she is enrolled. It emerged from the study that the process of enrolling as apprentice jeweller through the traditional method is not complete until the prospective apprentice is inducted into the jewellery shop. It is during the induction process that fees, vital information, advice and direction on the training are made known to prospective apprentice jeweller and his/her guardian. The researchers through the interview also found out that the induction process involves entering into agreement and initiation.

On the issue of fees, the apprenticeship fees are in two forms; there is cash component and perishable items. The payment schedule of the fees is such that whatever is paid on the induction day, it is doubled and paid on graduation day. The items that the MJs demands from the prospective apprentice jeweller include: two bottles of Whiskey, two bottles of Schnapps, a Crate of Beer, two Fowls (a cock and a hen), a packet of cigarettes, and a specified amount of money. The money to be paid is normally determined by how far or how close the apprentice is to the family of the Master Jeweller. The researchers also found out that the initiation ceremony usually happens in the morning and it involves all those who matter most in the family of the prospective apprentice jeweller come along with him to serve as witnesses, whiles the MJ also invites some of his colleague goldsmiths to witness the induction which normally lasts for less than an hour. The process was described by MJ2 as:

. . . the whiskey is shared to the people who gather, they share the money and the drink. Normally the mother, father, uncles and all those who matter in their family will come they are the prime witnesses before the agreement takes off. Normally there is no paper hahaa then me too I will gather 1 or 2 people then they will also
come and witness so the drinks you bring that is what we drink before you are accepted [as a sign of witnesses] yes as a sign of witness. I also tell you what you must do and you must not do that and your parents have agreed that after the four years you pay this amount.

Among the responsibilities of the MJs accommodation for apprentices, findings of the study show that 3 of the master jewellers indicated that they were responsible for providing feeding and accommodation and all other resources (such as tool, equipment, materials etc.) needed for the apprentice’s training. Narrating how he accommodate his apprentices, MJ3 said:

. . . all of my apprentices stay with me because they are one way or the other related and if they are from the community fine but if they are from far away, I have to find a place for them to live so if you cannot accommodate them you cannot take them.

On the part of the apprentice, the study revealed that their responsibilities to be providing services including domestic chores such as going on errands for their master, his wife and senior apprentices. In describing what he does for his master, as an apprentice jeweller, AJ3 said: ‘I usually provide other household service to my master and his wife who I am staying with. I sometime wash his cloths and do other things’. During the observation at the jewellery shop, the researchers observed that the wife of the MJ who sell food around the shop often came to the shop to call some of the apprentice and send on errands.

The actual initiation process as indicated by three of the MJs are that the Master Jeweller slaughters the cock that was presented and allow its dripping blood to fall onto some of the main jewellery making equipment such as, anvil and the furnace (heath) at the shop, followed by pouring some of the gin into a crucible to perform libation by dropping the gin into the furnace. While the pouring of the drink is going on the MJ will be chanting simultaneously about things that the apprentice jeweller is going to learn. The chanting ends with a threat of curses that should befall the apprentice if he deliberately refuses to go by the tenets of the job, the fire which is burning in the heath should destroy the apprentice’s life. The initiation continues as the apprentice jeweller is made to sit on the anvil again and the MJ will use a crucible to fetch some of the gin and pour it on the apprentice to seek blessing for him to the extent that he is told whenever he comes into contact with any metal, such metal should turn to gold for the apprentice. Once the initiation is over and the agreement is accepted by both parties, the apprentice is required to stay with his master for three or four years, depending on how fast the he/she absorbs whatever is taught him/her.

5.3 Subject matter and duration for the jewellery apprenticeship

Three of the master jewellers indicated that the subject matter for apprenticeship in jeweller is determined by the demand of the jewellery market. The MJ2 enumerated it as:
The apprentice learns on-the-job, so the apprentice comes to work after the enrolment he comes to work when it is s-chain that you are weaving, that is what the person is going to learn. But basically by all means every day by all means you will set the heath to melt so he will start seeing those things.

This makes the jewellery items that people order from the master jeweller at a particular time the determinant of what master teaches the apprentice. For example, MJ2 said ‘when I’m commissioned to produce Curb-chain then it is that particular type of item that the apprentice will be learning at that moment’. He added that:

... if I realised that after the whole period that the person has been there some of the processes would not have been done because there was no order for instance for an embossing, filigree, granulation, or gilding, when things like that happen may be a month or 2 to the person’s graduation you can take the person through those things you feel he has not learn he or she has not learned.

Three of the MJs said that an apprentice jeweller requires four years on-the-job training to become a qualified bench jeweller, while one MJ said those who come to him for training spend 3 years, but the actual time spent by an apprentice jeweller to graduate depends largely on the effort of the apprentice. For instance, MJ1 said that a sharp-eyed apprentice stands the chance of learning jewellery much faster as compared to a non-observant apprentice jeweller. This was supported by majority (9) of the apprentice. In supportive of this AJ1 said ‘I was expected to undergo the training for three years, but as on now I have already spent four years and still do not know when I am going to graduate’. Concerning the hours that an apprentice jeweller spends at the shop each day, 11 of the apprentices said they report to work by 7:00 am and close at 6:00 pm from Monday to Friday, except on Saturday that they close at 12:00 pm. One of the interviewees (MJ3) alluded that the long hours spent at the shop can be attributed to the fact that the apprentice jeweller is mostly in the same house with his master therefore the time the apprentice spends at the shop depend on the dictates of his master.

5.4 Methods of teaching and learning in jewellery apprenticeship

The outcome of the study as it was indicated by three of the master jewellers was that teaching in informal jewellery apprenticeship is not structured and therefore lack clarity and defined methodologies. MJ1 describing the teaching process as ‘... it is a seamless way of learning, there is no syllabus, there is no break, nothing, there is nothing like holidays. Anytime the workshop is opened the person is there until the period it was closed’. For that matter, the apprentice jeweller is not consciously taken to the classroom to be taught how to make jewellery. The researchers also observed that actual teaching of an apprentice jeweller does not begin immediately the initiation ceremony is done, instead he/she is made to go to work for...
three months without being taught anything. This period which is considered as a probation period, is used to assess the apprentice’s capabilities and readiness for learning. This account on the teaching method was stated by all the four master jewellers. According to all the master jewellers, during the probation period, the apprentice jeweller is required to watch his master (figure 1 & 2) whenever he is working (for example, milling wires, melting, pickling, and many more). He is also most of the times sent on errand to buy charcoal for setting the hearth which is usually spearheaded by their senior apprentices who are available to guide them on how to go about it and cleaning of the workshop and its environs.

After the probation, apprentice jeweller is allocated a workbench (figure 3) and then he is expose to the various safety, tools, equipment and machine at the shop. A claim that was supported by the other three MJs.
The researchers noticed from the interviews that the Master Jewellers do not assemble the tools and equipment and teach the apprentices their names one after the other, rather what they do as MJ4 put stated as:

ver the MJ4 put: whenever I’m working on jewellery item and I need a particular tool I tell the apprentice bring a plier he will be looking at me, then you say that thing over there is called a plier, bring the tong ok he doesn’t know so you say that thing over there bring it that is a tong so after sometime you would realize that he had known all the names of the tools and seen how it is being used, then he can start the basis by drawing wire until he learns how to make jewellery.

This method of teaching the names of the tools continue in that form and after sometimes the apprentice will learn the names of all the tools and equipment at the shop as well as their uses (figure 4). The first practical jewellery item that the apprentice jewellers said they learnt was chain making. Responses from fourteen out of the fifteen apprentice jewellers indicated that it took them between three to six months to learn various chain making techniques before they were progressed to learn piercing. This was collaborated by AJ3 who indicated that ‘after my probation I was allocated a workbench and was taught how to make chains with silver.

I spent about 6 months on learning different types of chains.’ The explanations given by three MJs were that the process of making chain entails a lot of processes in jewellery making which could demoralise or scare an apprentice who is not committed to learn and cannot perform the task the first few times. It is therefore, a way of assessing how determine an apprentice is in learning how to make jewellery. If he does not quit during this training period, then it means he is ready for the training.

![Figure 4: Three AJs practising the use of jewellery tools](image)
5.5 Challenges in informal jewellery education in Ghana

The responses of all the four master jewellers and the fifteen apprentice jewellers highlighted two major challenges that affect the apprenticeship in jewellery programme. The foremost challenge as enumerated by all the four master jewellers was lack of jewellery policy that regulates the informal jewellery apprenticeship in Ghana. Expressing his dismay about unavailability of the situation MJ1 who has been practicing jewellery for more than two and half decades opined that ‘the Government of Ghana hasn’t gotten any fine policy for jewellery apprentice and the industry as a whole. As a result of that the industry is not regulated as it exists in other vocations’. He cited an example as:

other systems had regulatory body like dressmakers their national associations were seeing to the standards and things like that. There is a hair and Beauticians things like that but for goldsmithing [jewellery] there is nothing like that there is no supervisory, this thing the final last lies with the master craftsman ee that was what was happening.

The second problem that emanated from the study as it was expressed by all master jewellers and ten of the apprentice jewellers were access to funds, cost of tools and materials. Expressing the difficulty in training his apprentice jewellers, MJ2 stated that:

the biggest one is the cost of the tools if you don't have money and you are trained as a jeweller you can’t do anything by the time you set up your shop maybe you have to sell your family property hahaa so the cost of the tools, the cost of material it is even sold higher than the world market price to us, you get the point {hahaa} if you want to go and buy one pound ride now it is Ghs1,700 (Ghana Cedis) which is one pound is 7.75g 23 [that is a quarter of an ounce] that is 23 carat but it is not like that in the world market that is if you calculate it that means we are buying it more expensive.

The researchers discovered that per the ‘apprenticeship agreement’, the MJ is required to provide the needed resources (such as tools, materials etc.) to the apprentice to learn.

6 Discussions

Background of the respondents

The nature of informal jewellery apprenticeship in Ghana is the type that are individually own where the master jeweller provide all the needed resource for training his apprentice. Despite the fact that the jewellery shops are usually mane by on master jeweller, collectively the informal jewellery apprenticeship sector has been able to train over 90%
of the jewellers in the jewellery industry in Ghana as the study findings indicate (Kotoku 2009). Again, the finding that demonstrates that the AJ provides other services including domestic chores such as, going on errands for master jeweller, senior apprentice as well as the wife in a way supports Donkor’s (2006) assertion that some master craftsmen use apprentices to do all sorts of work that are not related to the area of jewellery apprenticeship. Buttressing Donkor’s assertion, Kotoku (2009) declares that ‘the Master Jewellers use apprentices for all sorts of menial work; even some go to the extent of using them to work for them at home or on their farms’ (p. 233) In the researchers’ opinion this kind of thing happens because the Master Jewellers are not under anybody’s control.

**Enrolment, fees and induction processes in jewellery apprenticeship**

The widely used process of enrolling and inducting into jewellery trade through the apprenticeship is refer to by the researchers as Only Relation Enrolment Method (OREM), because the jewellery trade is considered to be sacred. The finding replicates and supports a similar claim by Palmers (2009, however, the researchers reject the claims by Kotoku (2009) that because the jewellery trade is sacred that is why its operating system and information are not allowed to be shared with outsiders. Therefore, only family members are accepted to enrol as apprentice jewellers. The researchers are with the view that the jewellers deliberately tag the jewellery trade as sacred so that they can keep others away from the jewellery trade in order to keep its fortunes within the family.

**Subject matter and duration for the jewellery apprenticeship**

The content of what is taught at the informal jewellery apprenticeship lacks clarity and defined structure. This inference is based on the result of the study which shows that the content that the Master Jeweller teaches the apprentice jeweller is driven by the demand from the jewellery market. The finding goes contrary to the claims by Abban and Quarshie (1993); Frazer (2006) who postulate that apprentice training in (Ghana) general is undoubtedly segmented into modules which are to be covered at different time frame within the entire duration for the apprenticeship; notwithstanding the fact that they are not formally written. Possible effect of unstructured content for jewellery apprenticeship, is that an apprentice jeweller cannot predict what he is going to be taught in advance. This in a way makes tracking his/her performance and progress very difficult. Also, because the content is not well organised, it becomes difficult to determine whether they are spread evenly for the training period to bring balance in the training. This create the possibility of either overloading or less packed content within particular period of time in the training. It is interesting to note from the findings that the duration for pursuing jewellery through apprenticeship is four years, the actual time spent by apprentice jeweller to complete his/her training depends largely on his effort and how obedient s/he to the master.
Methods of instruction and learning in jewellery apprenticeship

The strength of what the master jewellers teach apprentice jewellers is largely depend on the skilfulness of the MJ and the efficiency of the tools, techniques and methods that are used in the skill transfer. This in no doubt the determinant for the quality of jewellers likely to be produced. The finding clearly supports the study of Anokye and Afrane (2014) who state that apprenticeship training is an art and depends on the level of expertise of the MJ and the methodologies he/she uses to handover the knowledge and skills to the apprentice, which at the end establish the type of Craftsman he/she produces. However, lack of specific structure for the contents of the informal jewellery apprenticeship cause gaps within the flow of the training process. Meanwhile, if the content is organised well, then the apprentice will be made to progress in his learning by going through simple jewellery making techniques at the initial stages while he/she undertakes more in-depth and complex jewellery techniques as s/he advances in the training.

The learning process also involves a lot of repetition of the same job for several times, a process known as observational learning. The learning processes in apprenticeship in jewellery can be likened to Bandura’s (1977) Social Theory of learning where all the four components (attentional, retention, reproduction and motivation as cited in Bandura (1997)) are present in the process of learning jewellery by informal jewellery education.

It could be inferred from the findings that the apprentice jeweller begins his jewellery learning by watching and paying attention to what the master does. His next step in the learning process is to make sure he retains the processes and methods employed by his master. He then has to puts in an effort to reproduce what he saw his master do. When he is able to reproduce the item with little instruction from his master, he gets the opportunity to watch more activities that the MJ does which motivates him to reproduce more of the jewellery made by the MJ. The learning process in informal jewellery apprenticeship programme as the study revealed fall in line with the assertions of Johanson and Adams (2004) who say that skills transfer in apprenticeship occurs mainly by watching and imitating the master. This is comparative to the views of Anokye and Afrane (2014). Per their understanding on the learning process in apprenticeship, they posit that skills, knowledge and attitudes are transmitted through observation, imitation and on-the-job experience. This is strongly evidenced in the interview which determined that the apprentice jeweller learns jewellery making from their MJ at the workshop through observation, hands-on-the-job activities as well as following instructions from the master.

Challenges in informal jewellery apprenticeship in Ghana.

An empirical study identified traditional apprenticeship as the main provider of skills to young people in African countries. This reflects skills development in the jewellery sector. It is estimated that between 80 to 90% of jewellers in Ghana acquired their jewellery ma-
king skills through informal apprenticeship system (Atchoarena & Delluc, 2001). Compared to school-based jewellery education, apprenticeship in jewellery system is rather affordable, which mostly occurs through on the job training.

In as much as learning by doing creates a relaxed learning environment, lack of jewellery policy for regulating the training process gives rise to master and apprentice jewellers taking advantage to engage in activities that has nothing to do with jewellery training. This finding confirms a similar claim made by Palmer (2009), who claims that lack of regulatory framework for apprenticeship training in Ghana has led to the exploitation of the training process by some Master Jewellers (MJ) and their apprentices. For instance, Donkor (2006) asserts that some MJs use the apprentices to do all sorts of work, including domestic chores such as, laundry, fetching water, farming and other household chores that are not related to training to become jeweller. Also, some MJs use their apprentices as a source of cheap labour to undertake some hazardous activities such as gold refining. In supporting this assertion Anokye and Afrane (2014) opine that some MJ deliberately refuse to teach the apprentices what they are supposed to know in order for them to become effective Jewellers, because there are mechanisms that has been put in place to monitor the activities of Informal Apprenticeship in Ghana. The ripple effects of all these on the apprentices are that they are not able to acquire the needed skills and knowledge to become jewellers. These challenges push some apprentices who are not able to cope with the hardship to abandon the training entirely and thereby become liability on the society. Moreover, in a situation where there is no effective associative body for the jewellers and every jewellery shop is generally operated as sole proprietorship and the fact that apprentices are mostly family members, if for any reason the MJ abuses the apprentice, hardly will such an apprentice lodge a complaint. The only option he has in such circumstances if he cannot cope with the situation is to abandon the training. This in a way confirms Kotoku’s claim that ‘. . . this has therefore led to many, if not most of the apprentices abandoning the training’ (2009, p. 223).

The finding that indicates that jewellers do not have access to funds, high cost of tools and materials cause ineffective jewellery training. An outcome that falls in consonant with Wilson’s (2002) work. This has a rippling effect due to the fact that the MJ is required to provide all the needed resources such as gold and silver to the apprentices for their training. This means that if the MJ is unable to have access to material at a reasonable price, providing same to the apprentices to learn become very problematic. Failure to do so by the master too will mean that the apprentice will have to find his own resources for his/her training which will go contrary to the apprenticeship agreement.
7 Conclusion

The purpose of the study was to analyse the nature, processes and challenge in the informal jewellery apprenticeship in Ghana for its advancement in the country. Against these parameters, the researchers have come to the conclusion that: the nature of informal jewellery apprenticeship in Ghana is the type that are individually own where the Master Jeweller provide all the needed resource for training his apprentice. For a person to train as a jeweller through Apprenticeship system, s/he has to enrol by going through induction, pay fees which are made up of money and perishable items.

Content taught is driven by orders received by the MJ thereby making it unstructured and lacked criteria for assessing the performance and progress of apprentice jewellers. Teaching and learning methods are usually on-the-job training that rely on demonstrations and observation. Lack of policy to regulate informal jewellery apprenticeship in Ghana is indeed causing non-standardisation of informal jewellery apprenticeship in Ghana. Informal jewellery apprenticeship in Ghana has over the years proven to be a viable system that provides the needed skills to become a jeweller which is also cost-effective as compare to formal education. By advancing it in the informal economy of Ghana will improve young people’s employability status which at the long round boost the fortunes of local economies.

In the absence of the government agencies coming up with policies to regulate informal jewellery apprenticeship in Ghana, the researchers are suggesting that jewellers in Ghana should come together to form a strong association that will make their present felt in the skill provision in the informal economy of the country.

To advance the informal jewellery apprenticeship in the informal economy of Ghana the researchers are with the view that there is the need to capitalize on the existing system to strengthen the agreement process between master and apprentice jewellers. Finally, there is the need to bring new skills into the informal jewellery apprenticeship by introducing the use of state-of-the-art jewellery making facilities to enhance the quality and reputation of informal jewellery apprenticeship.

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Building a skilled workforce: Public discourses on vocational education in Thailand

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Abstract

Context: Thailand is facing skilled labour shortages, which has prevented the country from achieving significant economic progress. This paper examines Thailand’s vocational education policy discourses from 1992 to 2014 and how successful such policies were in building the country’s skilled labour force.

Approach: This study utilised a qualitative approach, using documentation analysis as a key research method. We also used data triangulation and thematic analysis to categorise the public discourses. In order to examine the vocational education policy discourses in Thailand, secondary data such as the five National Economic and Social Development (NESD) Plans (7th, 8th, 9th, 10th, and 11th) and other government policy statements were investigated and triangulated, along with data from newspaper articles, other public documents, reports from international organisations, and academic journal articles.

Findings: Based on the findings of the study, we identified three key policy discourses regarding vocational education in Thailand during the period 1992 to 2014: (1) increasing the vocationally skilled workforce, (2) the role of private vocational providers, and (3) collaboration between vocational providers and industry.

Conclusion: We argue that there are five key policy themes in building a vocationally skilled workforce: (1) dedication of government in increasing the vocationally skilled workforce, (2) encouraging collaboration between vocational colleges and industries, (3) fostering a
greater role for private vocational providers, (4) promoting a positive image for vocational education, and (5) maintaining the continuity of policy implementation.

Keywords: Vocational education and training, Thailand, skilled workforce, skilled labour shortages, public policy, VET

1 Introduction

Cheap labour costs used to be a competitive advantage for Thailand; however, the country has lost this edge to other countries such as China, India, Vietnam and Indonesia. The ideal solution is to move up the economic-value chain from labour-intensive to technology-intensive industries in which a skilled workforce plays a significant part. However, Thailand is currently facing skilled labour shortages, which is preventing the country from achieving significant economic progress (International Labour Organization, 2013; Jitsuchon, 2012). Thailand is in desperate need of a skilled workforce, especially vocationally skilled workers. This phenomenon has led to the research question: in order to achieve economic progress, can the Thai government and society respond to the skilled labour shortages by using vocational education as a means to train students with skills that industry need? Therefore, this paper explores the public discourses on vocational education in Thailand by examining how thoroughly the Thai government and society have debated vocational education policy in responding to the country’s skilled labour shortages.

The timeline of this study is the period from 1992 to 2014. This timeframe was chosen due to the significant changes in Thailand’s economic and political landscape during this period. The term ‘skilled labour shortages’ was first recognised by policymakers in the early 1990s when it was mentioned in the National Economic and Social Development (NESD) Plan 7 (1992-1996) and Prime Minister Anand Panyarachun’s Policy Statement (1991). Between September 1992 and May 2014, Thailand was governed by a number of elected governments, marking a long period of democratic rule, where the policymaking process was implemented democratically through debates and discussions in the Cabinet, parliament and public arena. There were various discussions and debates in Thai society about how to utilise vocational education to build a skilled workforce. The period of this study ends in May 2014 when the government of Yingluck Shinawatra was overthrown in a military coup. At present, Thailand continues to remain under the control of the military junta and, as a result, the policymaking process is characterised by a lack of public debate and discussion. The importance of a skilled workforce is emphasised by the Human Capital Report (2015, p.3), which states that, ‘a nation’s human capital endowment—the skills and capacities that reside in people and

1 Democratic rule was interrupted for a short time by a military coup in September 2006. Since that time, an interim military-backed government governed Thailand until a general election was held in December 2007.
that are put to productive use—can be a more important determinant of its long term economic success than virtually any other resource. This is further reinforced by the World Bank (2012), which suggests that a skilled workforce is an important factor driving both the creation and application of knowledge that underpins economic development. The Organisation for Economic Co-operation and Development (OECD) (2013) also adds that a skilled workforce is a critical factor in structural economic change, especially when a country is moving from labour-intensive industries to technology-intensive industries. Bennell and Segerstrom (1998) point out that in the early stage of industrialisation, a country does not need a highly skilled workforce. A labour workforce with satisfactory basic education and some on-the-job training would be sufficient for industrial development. However, when a country moves to higher skilled industry, appropriate vocational education is needed.

2 Skilled labour shortages in Thailand

From the 1970s, Thailand started to develop its economy through labour-intensive industries, with cheap labour costs being the country’s main competitive advantage. Since the 1997 Asian financial crisis, however, Thailand’s competitive advantage of cheap labour has been directly challenged by other countries in the region (World Bank, 2012). This is due to the increase in labour costs in Thailand causing labour-intensive industries to relocate their production lines from Thailand to other countries in the region. Accordingly, in order to remain competitive, Thailand needs to transition away from its reliance on labour-intensive industries and do more to promote skilled-intensive industries in areas such as computing, telecommunications, and electronics (Szirmai, 2012).

However, Thailand does not have enough vocationally skilled workers to offer to the labour market. In 2012, the Federation of Thai Industries (FTI) predicted that many businesses such as the automotive, electronic, and construction industries would need a significant amount of skilled labour; however, educational institutions would not be able to provide enough skilled labour as required (‘The need of skilled labour’, 2012; ‘Auto industry needs skilled labour’, 2012). From the perspective of foreign investors, a survey was conducted by the Japan External Trade Organization (JETRO) (2006), which stated that the demand by Japanese firms in Thailand for engineers has increased, especially in the automotive industry. However, most Japanese businesses have not been satisfied with the quality of the labour supply. For example, many Thais in the labour force do not have proficiency in foreign languages, which is required by Japanese firms.

These examples indicate a mismatch between education policy and the skills requirements of the business sector, which represents a key obstacle contributing to Thailand’s skilled labour shortages (Egawa, 2013; Phongpaichit & Benyaapikul, 2013). The shortage of engineers and technicians is not a recent phenomenon—these shortages have been occurring
for an extended period of time. Paron Issarasena, the former President of FTI, stated in 1989 that Thailand did not have a sufficient number of engineers and technicians to meet industry demand ('Shortage of engineers', 1989). He contended that this problem could affect the country’s industrial growth. This observation from over 20 years ago raises questions about how the Thai government has dealt with the problem so far, and why the problem of skilled labour shortages continues to remain an issue.

3 Role of vocational education in building a skilled workforce

Education has played a crucial role in improving the quality of the labour workforce. After basic education, higher advanced skills are learnt at the vocational level—skills that are necessary for a country’s development (Kim, 2012; Montague, 2013). More advanced and appropriate skills are provided through vocational education to suit specific industrial needs (Chong, 2014). In particular, countries in the industrialisation stage of economic development, with a middle-income status, should prioritise educational development in both vocational and technical areas (International Labour Organization, 2008). The importance of vocational education has been recognised in the extant literature as an effective tool for reducing youth unemployment (Baldi et al., 2014; Cabus, 2015; Eichhorst, Rodriguez-Planas, Schmidl, & Zimmermann, 2015), increasing the productivity of firms (Agrawal, 2013), and providing goods and services for society (Billett, 2014). Vocational education teaches specific trades and practical skills that students can apply in their future careers (Agrawal, 2013). There are three types of vocational education (see figure 1): vocational and technical schools, formal apprenticeships, and dual apprenticeships that combine school training and formal work experience (Eichhorst et al., 2015).

![Types of vocational education](image)

Figure 1: Types of vocational education
Firstly, the vocational and technical school model is based on a combination of general and vocational education as part of an upper secondary education (Eichhorst et al., 2015). Students are provided with academic knowledge as well as practical skills. Secondly, the concept of a formal apprenticeship is based on learning through workplace training with minimal formal education (Eichhorst et al., 2015). Countries that follow this model include the US, the UK, and Australia. Each of these countries has its own conditions for participating in apprenticeship programs. Thirdly, the dual apprenticeship model is based on the notion of combining formal education and workplace training (Eichhorst et al., 2015). Countries in northern Europe such as Germany, Switzerland, Denmark, and Austria follow this system. The training must be based on centrally accredited occupational qualifications in order to meet marketplace requirements (Eichhorst et al., 2015). The formal apprenticeship and dual apprenticeship models have provided students with opportunities to learn practical skills bolstered by experience from workplace training.

4 Vocational education system in Thailand

Vocational education was first recognised in Thailand in 1898 for the practice of trade and agricultural skills. In 1910, the first vocational college was established. Currently, there are 428 public vocational colleges and 486 private vocational colleges in the country. The Office of the Vocational Education Commission, attached to the Ministry of Education, is responsible for vocational education in Thailand. In addition, vocational education is also offered by the Office of Non-Formal and Informal Education for students outside the formal school system such as the unemployed and adult learners (Changdacha & Larpkesorn, 2017). There are three levels of vocational education in Thailand: a Certificate (Por Wor Chor); Diploma or Associate Degree (Por Wor Sor); and Degree (Parinya-Tree).

Currently, the Thai education system falls under the mandate of the National Education Act (B.E.2542; 1999), which covers nine years of compulsory basic education. In addition, 12 years of free basic education is offered to all children in Thailand regardless of their ethnic background. This free basic education starts from pre-primary education for children aged three to five, then from Grade 1 to 6 in the primary level, and Grade 7 to 9 in the lower secondary level (Changdacha & Larpkesorn, 2017). From Grade 9, students have two pathways from which to choose: upper secondary level (Grade 10 to 12) or vocational education (Bureau of International Cooperation, 2008). Since the beginning, the Thai vocational system has been following the vocational and technical school approach, providing students with academic knowledge as well as practical skills. This approach clearly indicates the vital role of the teacher in the Thai vocational education system.
5 Global vocational education policies

According to the extant literature, there are two key aspects to improving vocational education: (1) the dedication of the government and, (2) industrial requirements. Figure 2 displays the conceptual framework for improving vocational education.

On the one hand, the government’s dedication to improving vocational education involves formulating policies aimed at affecting the quality and quantity of institutions, teachers, and the broader curriculum (Allais, 2012; Chong, 2014; Kim, 2012). During the 1960s and 1970s, the Park Chung Hi government in South Korea made a strong determination to achieve the nation’s development goals through vocational education (Kim, 2012). A significant number of vocational schools and skills-based training centres were established during this era. This was also evidenced in the rapid growth and development in Singapore during its industrialisation phase. From the mid-1960s through to the 1990s, the Singaporean government focused on developing its manufacturing industry while, correspondingly, working to develop the country’s vocational education system as a whole. Teachers were sent to industrialised countries such as Germany, Japan, Australia, and the UK for vocational training (Chong, 2014). Vocational education was expanded to the secondary school curriculum, with vocational schools established with the intent of providing necessary skills for this sector. Consequently, the number of vocational students increased from 12,000 in 1971 to 18,000 by the end of 1970s (Ho & Ge, 2011). In addition, in order to improve both the quality and quantity of vocational education in the long run, one particular policy response had emerged, which
was aimed at addressing negative societal attitudes towards vocational education (Billett, 2014; Ling, 2015). This was a major obstacle during the early period of national development in Singapore. Parents preferred their children to go to universities rather than vocational schools due to the prestige attached to a university education (Chong, 2014). The Singaporean government applied programs and incentives such as the 'Use your hands' program—launched in 1976—to encourage students and their families to have a more positive attitude towards manual work. Another example was the 'Top of the Trade' TV competition. It was a challenge in woodwork, automotive trades, electronics, mechanics, and construction, all of which aimed to enhance the image of vocational skills. On the other hand, because industrial needs must be the focus, policymaking should involve all stakeholders (Lashley, 2009; Montague, 2013; Stone, Kaminski, & Gloeckner, 2009). Abelman, et al., (2001) argue that policies relating to vocational education should be market-driven. It should be a coordinated effort between vocational colleges and industry which, accordingly, would help to produce a skilled workforce that supports both economic policy and the actual needs of employers.

Each government should collaborate with its business and education sectors to ascertain the types of skills needed and to instigate an appropriate human development plan (Hawley & Paek, 2005). In particular, countries that are at the industrialisation stage of economic development need to establish strong vocational education systems (ILO, 2008). In Europe, the approach to skills development involves stakeholders such as trainees and their families, trade unions, employers, and educational institutions (Lashley, 2009). Cameron and O’Hanlon-Rose (2011) point out that in Australia the main reason for shortages in tradespersons (skilled labour) is the under-investment in apprenticeships, which reflects the lack of focus on addressing industrial needs.

6 Research methods

The research is based on a qualitative approach, which provides an in-depth understanding of social problems (Robson, 2011). The key research method is documentation analysis. This involves a process of studying a particular phenomenon by examining, analysing, and interpreting various documents (Marshall & Rossman, 1999; Schwandt, 2007). The data sources are secondary data, which include both raw and published materials such as reports, government documents, academic articles, newspaper articles, journal articles, letters, diaries, minutes of meetings, and memoirs (Saunders et al., 2007).

We adopted a triangulation and a thematic analysis to identify and analyse themes from the data collected. Triangulation is a research technique using data from different sources in a study in order to strengthen the validity of research findings to help promote a more in-depth understanding of a study (Robson, 2011). Thematic analysis is an analytical method that reflects and discloses the reality of the study, and a theme represents an important concept in
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the data, related to the research questions (Braun & Clarke, 2006). Thus, in order to answer
the research question, documentation analysis, triangulation, thematic analysis and narrate
ive inquiry formed the basis of the investigative techniques adopted to examine the role
of vocational education in Thailand. To examine the vocational education policy discourses in
Thailand, the five NESD Plans (7th, 8th, 9th, 10th, and 11th) and other government policy
statements were investigated and triangulated, along with data from newspaper articles, other
public documents, reports from international organisations, and academic journal articles.

7 Findings—policy discourses on vocational education in
Thailand 1992-2014

The findings were derived from the five NESD Plans (7th, 8th, 9th, 10th, and 11th), prime
ministers’ policy statements, and other government documents. These documents were in
vestigated and triangulated, along with data from English newspaper articles on vocational
education such as news, public debates, disputes, and recommendations. Also, other public
documents, international organisation reports, and academic journal articles were discussed,
analysed and triangulated as well. Three key policy discourses on vocational education in
Thailand during the period 1992 to 2014 were identified: (1) increasing the vocationally
skilled workforce, (2) the role of private vocational providers, and (3) collaboration between
vocational providers and industry.

7.1 Policy discourse 1: Increasing the vocationally skilled workforce

It was noted in the NESD Plan 7 (1992-1996) that the expanding role of the industrial and
service sectors had revealed a shortage of skilled manpower such as technicians and professi
ons, especially in the areas of science and technology. Thailand needed to improve the skills
of its labour workforce beyond the basic education level. Even though an awareness of skilled
manpower shortages was disclosed in the NESD Plan 7, neglect by the Thai government in
improving vocational education was evident. There was no reference to the term ‘vocational
education’ in the Plan; instead, the Plan focused more on basic and higher education. This
indicates a high level of apathy by the Thai government towards vocational education. Inter
estingly, the lack of public debate on vocational education was also evident at the time. For
instance, during the period of the NESD Plan 7, there was a complete lack of news coverage
about vocational education in the English newspapers throughout Thailand.

Neglecting vocational education is also evidenced in other public documents. In his poli
cy statement, Prime Minister Anand Panyarachun mentioned the problem of skilled labour
shortages; however, he did not mention the term ‘vocational education’. His successor, Prime
Minister Suchinda Kraprayoon (1992) mentioned the importance of encouraging a greater
role for the private sector in vocational education. However, both Anand and Suchinda were in power for a short period due to political conflict at the time. The short duration of these two prime ministers highlights the phenomenon of policy interruption and discontinuity in Thai politics. Following on, Prime Minister Chuan Leekpai also did not refer to vocational education in his policy statement. Prime Minister Bunharn Silpa-archa was the only prime minister during this time who made serious statements about addressing the issue of vocational education. In his policy statement (1995), Bunharn recommended the enhancement of vocational institutes such as increasing teacher numbers, developing curriculums and encouraging cooperation with foreign institutes to improve the nation's competitiveness. Between 1992 and 1996, even though vocational education was neglected by successive governments, the number of vocational students increased from about 600,000 in 1992 to around 970,000 in 1996, and continued to rise to more than one million by 1997. This might have been due to Thailand's steady economic growth during this period. The GDP growth rates of the country were very high in the early 1990s—from 1991 to 1995 the GDP was 8.6%, 8.1%, 8.3%, 9.0%, and 9.2% respectively. This economic growth no doubt created a demand for a vocationally skilled workforce in Thailand's labour market.

In contrast to the NESD Plan 7, the role of vocational education was formally recognised in the NESD Plan 8 (1997-2001). The objective of Plan 8 was to develop the vocational skills of the workforce, especially with an eye to expanding the number of technicians, as well as a middle-level skilled workforce, to enable the country to adapt to the changing social and economic environment. The aim to develop a vocationally skilled workforce was evidenced when the government approved the cancellation of gender quotas in the vocational education entrance exam (Cabinet Resolution 26 November, 1996). This decision led to an increase in the number of female vocational students; it also showed the attempt to provide equal opportunity for women in the workforce. However, obstacles emerged for the vocational education sector due to inconsistencies in the policymaking process. Prime Minister Chuan Leekpai, who returned to office for a second time, again made no mention of vocational education in his policy statement. In addition, the National Education Act of B.A. 2542 (1999), which covered all areas of the education system, also made little mention of vocational education. The Act only specified that vocational education would be provided for by state-owned institutes, private institutes and other enterprises (Abelman et al., 2001).

During the period of the NESD Plan 8, there was a report from the World Bank suggesting several issues for vocational education improvement (Abelman et al., 2001). The report recommended that the Thai government should set clear standards for vocational graduates and establish an assessment system for students, teachers and schools. The report also suggested that Thailand implement content standards to be used as guidelines on what and how subjects should be taught in each year level; that is, a framework serving as a guide for the nation's curriculum. It was deemed important to ensure that the curricula across all of
Thailand’s vocational colleges comply with the same education standards—students would then better understand what they could achieve from a course. In 2004, the Cabinet took further steps to improve the quality of vocational education, including the establishment of the Professional Qualification Institute to better coordinate the tasks of government agencies from different ministries on the national strategy for skilled labour policy (Cabinet Resolution 26 October, 2004b), and the implementation of the National Education Standard (Cabinet Resolution 26 October, 2004a).

In the NESD Plan 9 (2002-2006), increasing the quantity of vocationally skilled workers was the key focus. In line with this focus, Prime Minister Thaksin Shinawatra established the Income Contingency Loan (ICL) program, aiming to provide funding to both higher education students and vocational students for study purposes (‘Thai government provides’, 2005). In this program, students could start to pay the loan back when they were employed. Even though this ICL program was an attractive concept, it was reported that within a year of its implementation, the number of students enrolled in vocational education had dropped by almost 30% (‘Vocational school enrolment’, 2006). This drop may have been due to the perceived financial limitations of this program for vocational students. That is, based on the regulations of the loan program, vocational students could not borrow the same amount of money as university students. For example, vocational students could only borrow 25,000-30,000 baht a year compared with 60,000 baht for social science and 70,000 baht for science and engineering university students. Hence, many students applied to universities rather than vocational colleges for their continued education.

In the next NESD Plan 10 (2007-2011), it was stated that Thailand’s labour workforce, as a product of the country’s vocational education system, was deficient in both quantity and quality. The Plan superficially mentioned that it was very important to produce a workforce with vocational skills to feed the market’s needs in order to increase the country’s competitiveness. However, based on various public documents and newspaper articles, there were obstacles in improving vocational education such as: unclear frameworks and policy; budget constraints; a shortage in both the quality and quantity of teachers; a lack of cooperation between education institutes, communities, and the requirements of the labour market; the decreasing birth rate; students’ lack of knowledge in foreign languages; and the bad reputation of vocational students (‘Better graduates needed’, 2007; Na Mahachai, 2007; Office of the Education Council, 2011; Sornnil, Boonyasopon, Utakris, & Chokepipat, 2005; Vocational Education Commission, 2012).

Due to the high degree of negative public sentiment towards vocational education, the most widely discussed obstacle was the image of vocational education as being a second-rate choice (Ekachai, 2011; ‘Thailand must’, 2011; ‘Wage moves’, 2011). Both students and parents showed a preference for a university rather than vocational education. Often upon graduating, most vocational students, rather than enter the workforce, continued to study at
the higher education level, even in fields unrelated to what they had studied as part of their vocational education. It was recommended that the government concentrate on changing society’s attitude towards vocational education, such as by providing clearer guidelines on career paths for vocational education graduates (‘Educators comment’, 2011). The negative reputation of vocational education within Thai society may also explain the lack of success experienced by the ICL program in its efforts to promote Thailand’s vocational education sector.

In the NESD Plan 11 (2012-2016), the goal of increasing the number of vocational students aimed to adjust the ratio of vocational and secondary students to 60:40. However, the government did not succeed in these vocational education policies as expected. Figure 3 shows the percentage of graduates in secondary education (Year 12) and vocational education (Vocational Certificate or Por Wor Chor) between 1992 and 2013. The figure clearly indicates the increasing gap between these two types of graduates, in which the number of secondary education graduates is higher than vocational education graduates.

![Figure 3: Percentage of graduates in secondary education (Year 12) and vocational education (Vocational Certificate or Por Wor Chor) between 1992 and 2013](http://social.nesdb.go.th/SocialStat/StatReport_Final.aspx?reportid=43&template=1R2C&yeartype=M&subcatid=23)
In addition, figure 4 shows the numbers of vocational education students and higher education students (including postgraduates) between 1992 and 2008. The graph illustrates the significant gap between these two sectors of education. It indicates that the Thai government has focused more on higher education at the expense of vocational education.

![Figure 4: The number of vocational education students and higher education students (including postgraduates)](http://www.moe.go.th/data_stat/)


A senior government officer argued that the aim of increasing the proportion of vocational students would not be successful due to the negative attitude of Thai society towards vocational education (Wongsamuth, 2012). However, a newspaper article suggested that Singapore could serve as an example of changing societal attitudes (Khaopa, 2012). The country used to be in a similar position to Thailand, with a negative attitude towards vocational education; but since the Singapore government enhanced the image of vocational education via improved student quality, industrial involvement had increased. The key factor was 'learning by doing', with teaching staff updating and improving their skills based on feedback from industry-experienced workers, and acquiring specific employment knowledge and skills that could be passed onto the students. Accordingly, Singapore’s vocational students gained skills that accurately matched the needs of the labour market. This had a positive influence on the country’s economic growth, thereby shining a more positive light on the country’s vocational education system.
7.2 Policy discourse 2: The role of private vocational providers

The importance of encouraging private vocational providers to take a greater role in skilled workforce development was highlighted in the NESD Plan 8 (1997-2001). However, the key obstacle discouraging an increased role by private vocational providers was the negative attitude of Thai society towards these private institutions. In Thailand, private vocational providers are often seen as a second-rate choice with students preferring to apply for public vocational colleges. Due to limited places in public vocational institutes, admissions were processed via an entrance examination, where those students who did not pass then had the option to enrol in a private vocational school (Johanson & Wanasiri, 2001). This entrance exam generally meant that the educational performance of private vocational students was often not as high-quality as public vocational students. In addition, some students in private vocational schools were of lower socioeconomic status than those in public vocational schools (Abelman et al., 2001; Johanson & Wanasiri, 2001). In these cases, families had to pay off their children's school fees via instalments ('Thailand's private schools,' 1997). In 1997, during the Asian Financial Crisis, the household financial situation became even more severe; some parents had to ask their children to drop out of school. At this time, many private vocational schools were forced to ask the government for financial assistance to help their students stay in school. The Thai Cabinet approved a loan fund from the Asian Development Bank to financially assist private vocational students in need of support (Cabinet Resolution 28 March, 2000).

Moreover, it was argued that the government did not support private vocational providers to the same degree as it did with public vocational providers. For example, private vocational institutions did not receive subsidies from the government as was the case with public vocational institutions. As a result, the costs for education at a private vocational institute were much higher than at public vocational institutes. For example, in 1997 the cost of tuition at a private vocational education provider was about 13,320 baht compared with 3,033 baht for a public institution (Johanson & Wanasiri, 2001). There was also a complaint from private vocational schools that enrolment numbers were decreasing due to the government offering greater support for public vocational colleges (Private colleges, 2002). This was confirmed by the Deputy Education Minister that the Ministry did not have a policy to limit enrolment numbers in the public vocational sector. Figure 5 shows the ratio of the number of vocational students in public and private vocational colleges.
7.3 Policy discourse 3: Collaboration between vocational providers and industry

During the period of the NESD Plan 8 (1997-2001), Prime Minister Chavalit Yongchaiyudh declared in his policy statement that he would reform vocational education by encouraging cooperation between educational institutions and the major industries to meet the requirements of the labour market. The role of industry involvement in improving vocational education was also discussed in newspaper articles at the time. For example, the President of the Confederation of Thai Employers (CTE) urged the government to review the vocational education syllabuses in order to develop a labour workforce that matched the requirements of industry through collaboration between educational providers and industries (Pongvutitham, 1998).

In 1999, CP All, which operates 7-Eleven throughout Thailand, and the Informal Education Department joined a program to provide training to students who were particularly interested in the services sector (Pongvutitham, 1999). This program was later expanded with CP All establishing its own vocational college to produce students with the specific skills it required (Amornvivat, 2012; Saengpassa, 2012). In 2001, ASEAN's first automotive training college was opened in Thailand (Wiriyapong, 2001), which was a cooperative project.
between the Ministry of Education’s Department of Vocational Education and the Honda Group.

During the NESD Plan 10 (2007-2011), the need for a skilled workforce at the vocational level was a major concern for the industrial sector in Thailand (Marukatat, 2008), especially in the automotive industry (Ongdee, 2007). This tremendous demand led to the collaboration between different industries and vocational education providers. It was reported that major car manufacturers General Motors and Chevrolet Sales had jointly established an Automotive Service Educational Programme (ASEP) that was focused on producing highly skilled technicians in the automotive industry (Scheme adds, 2008). Under the ASEP program, students from 11 vocational colleges across Thailand were trained for six days a week for three months to develop the necessary skills for the automotive industry.

Another example of collaboration was in Phuket, a popular tourist destination. A local vocational college and the Phuket Spa Association jointly established a spa training course for vocational students due to the growth of the spa industry (Nottingham, 2008). Another example involved the Siam Cement Group (SCG), one of the leading conglomerates in Thailand, which signed an agreement with the Office of the Vocational Education Commission (OVEC) to provide on-the-job training to about 200 vocational students (‘Siam Cement Group’, 2009).

Based on this education agreement, students from Rayong Technical College who are trained in SCG’s petrochemical plants are generally hired by SCG when they graduate (Prachyakorn, 2009). The Vocational Education Commission also later signed an agreement with TOA Paint (Thailand) to train vocational students in painting and spray-coating skills as there was a shortage of workers in that industry (Ongphet, 2011).

Accordingly, the collaboration between the Thai government and industry led to the introduction of new skills and technologies to Thailand. The OVEC was responsible for keeping up-to-date on the requirements of the labour market by maintaining ongoing cooperation with industries. The importance of collaboration between vocational providers and industry was also affirmed by Yingluck Shinawatra’s government; in her policy statement, Yingluck stated that aligning vocational education with the requirements of the labour market, and supporting the ICL program, were the two key cornerstones of the government’s vocational education policy. These collaborations between the Ministry of Education and industries were also reported in various newspaper articles (Chalamwong, & Suebnusorn, 2012; Education reform, 2013).
8 Discussion

The findings have shown that there were three key policy discourses in Thai society regarding vocational education during the period 1992 to 2014: increasing the vocationally skilled workforce; the role of private vocational providers; and collaboration between vocational providers and industry. Based on the data analysis of these three policy discourses, we argue that there are five key policy themes in building a vocationally skilled workforce: (1) dedication of government in increasing the vocationally skilled workforce, (2) encouraging collaboration between vocational colleges and industries, (3) fostering a greater role for private vocational providers, (4) promoting a positive reputation for vocational education, and (5) maintaining the continuity of policy implementation (see figure 6).

![Figure 6: Vocational policy themes supporting the building of a skilled workforce](image)

9 Policy theme 1: Dedication of government in increasing the vocationally skilled workforce

This study's data analysis indicates that Thailand's production of a vocationally skilled workforce has not been highly successful. The key factors that prevented an increase in the number of vocational students included the lack of dedication on the part of the Thai government in promoting vocational education; the mismatch between education policy and industrial policy; the poor reputation of vocational students; the attitude of society towards vocational training; and the unclear standards of vocational education. Lack of government dedication
towards vocational education is the most influential factor as figures 3 and 4 indicate. These two sets of figures clearly indicate that the Thai government has mostly focused on basic and higher education rather than vocational, even though many of Thailand’s industries require vocationally skilled workforces. Hence, moving forward, the Thai government needs to be more dedicated to implementing a policy aimed at increasing the country’s vocational workforce to meet its economic development goals as required by Thailand’s labour market. The commitment of the government is necessary to continuously and effectively improve vocational education.

9.1 Policy theme 2: Encouraging collaboration between vocational colleges and industries

Based on data analysis, there has been an ongoing mismatch between Thailand’s vocational education policy and the requirements of the country’s labour market. As a result, some businesses such as 7-Eleven established their own training colleges; this exposes the failure of vocational educators to provide the workplace skills required by the labour market. As the role of government is essential in making sure industry needs match the capacity of vocational education to ensure its country’s economic development (Cameron & O’Hanlon-Rose, 2011; Ho & Ge, 2011), we argue that the Thai government should collaborate more with industry. Research tools such as surveys and interviews with industries should be conducted in order to find the right vocational education curricula and courses that match industry needs in order to produce a vocationally skilled workforce suited to workplace requirements.

9.2 Policy theme 3: Fostering a greater role for private vocational providers

Figure 5 above clearly demonstrates the reluctance of the Thai government and society regarding this policy discourse. Private vocational education can be a significant element in helping the government develop a vocationally skilled workforce; however, private institutions have not been operating at full capacity. Due to the limited places available in public vocational institutions, the private sector should be given greater encouragement and support to attract more students and operate at a more optimal level.

Based on the research findings, we argue that the Thai government should provide greater support to the private vocational education sector. As many of the students enrolled in the private vocational education sector are from lower socioeconomic backgrounds, policies such as adequate financial support could be an advantage for students and their families. This would enable more students to complete their courses and be ready for employment in the labour market. Furthermore, the private vocational education sector can help enhance
the production of a vocationally skilled workforce by improving its own capabilities, such as providing courses that meet the current needs of the labour market. Being in the private sector can actually give such institutions an advantage in that it is much easier for them to be flexible with the changing needs of the labour market. The government would only need to provide resources to support these changes.

9.3 Policy theme 4: Promoting a positive image for vocational education

The general attitude of Thai society has played a key part in discouraging the enrolment of students in vocational education. It is widely known that vocational education is perceived as a second-rate choice. Most students and parents prefer university courses as they confer a sense of honour and prestige to the family if a child graduates from university. Even when Prime Minister Thaksin Shinawatra established the ICL program to provide funding to students in vocational and higher education programs, there were a large numbers of students who applied for this loan to access higher rather than vocational education. This misperception and stigma attached to vocational education is even more severe for private vocational students than it is for public vocational students.

The negative image of vocational education can be overcome by a process of 'rebranding'—improving its quality via significant industry involvement. As in the aforementioned case of Singapore, teaching staff should be sent to factories and businesses regularly to update their knowledge and skills as required by industry, and subsequently pass on what they have learned to their students (Khaopa, 2012). The Thai government should not only implement a policy modelled on the experience of Singapore, but also encourage advertisements on television that promote the rebranding of vocational education. It is argued that when the quality of vocational students is improved, the image of vocational education will improve as well. When the negative perception of Thai society towards vocational education is changed, this may attract high-achievers, which would then further raise the quality and image of vocational education. This policy discourse on encouraging a positive attitude of Thai society towards vocational education is a necessary challenge for the Thai government in response to its skilled labour shortages.

9.4 Policy theme 5: Maintaining the continuity of policy implementation

The results have shown that during the period from 1992 to 2014, successive Thai governments were inconsistent in the implementation of vocational education policy. There were many political interruptions such as Cabinet reshuffles, which was the main obstacle to effective policy implementation. A foreign journalist defined the Thai education policy as a 'stop-go' policy (Coben, 1997). In line with this, Sippanondha Ketudat, Thailand's former Na-
tional Education Council Director, also pointed out that the changing of education ministers interrupted education reform and its policies (Bai-Ngern, 2000). These ‘too many’ Cabinet reshuffles have resulted in the discontinuity of many education policies.

Education policies cannot be effectively implemented if policies are changed frequently and the ministers are only in the position for a short period of time. These political interruptions demonstrate a lack of dedication by the Thai government and its politicians in committing to build the country’s skilled foreign workforce through vocational education. These policy interruptions might be interpreted as being part and parcel of decision-making within a democratic society. In other words, policies can be changed frequently depending upon the political parties that have been elected. However, there are some areas that require a more solid and consistent level of policy implementation such as improving vocational education for the purpose of improving national economic development. Hence, it is argued that bipartisan agreement on policies relating to a country’s economic development is essential to ensuring the full implementation of such policies.

10 Conclusion

Vocational education is necessary for the development of a country’s skilled workforce (Ako- ojee, 2016; Cournoyer et al., 2017). Exemplar evidence in Asia can be witnessed during the rapid growth and structural transformation stage of development in Singapore (Ho & Ge, 2011). The Singaporean government focused on developing its manufacturing industry and worked to develop targeted vocational education (Ho & Ge, 2011). Undoubtedly, quality vocational education has been one of the reasons for Singapore’s economic success as a high-income country.

This example supports the important role of vocational education in helping a country improve its competitive advantage by providing a labour workforce with the vocational skills that matches the requirements of industry. This can lead to increased productivity and economic growth. Based on the data analysis, it is clear that the Thai government should be more dedicated to increasing the country’s vocationally skilled workforce. The government should also engage in greater collaboration with industry. In addition, Thai society can contribute to the expansion of the vocational sector by adopting a more positive attitude towards vocational education. Moreover, all stakeholders within society should offer support for building a vocationally skilled workforce in order to contribute to Thailand’s economic development.

A documentation analysis was chosen as the key research method for this paper, which has resulted in the limiting of other empirical evidences. Further possible research could be an in-depth study of vocational education in Thailand using a more holistic approach for gathering data by interviewing all stakeholders such as industry leaders, vocational education providers, policy makers, students and their families.
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Umbrella review: Methodological review of reviews published in peer-reviewed journals with a substantial focus on vocational education and training research

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Abstract

Purpose: The growing public interest in vocational education and training (VET), most recently since the economic crisis of 2007/2008, has led to an exponential increase in articles with a vocational focus, underscoring the need for review studies for the purposes of systematic knowledge aggregation, clarification and interpretation. We assume that review studies follow the same minimum standards as other research methods: the review must be at least reproducible and thus the results verifiable or falsifiable. So far, however, the review methods used in VET research have not been investigated. Our purpose is to review the review procedures and methods used in published reviews of VET research to identify their current methodological quality.

Approach: To classify the review studies, we initially developed a conceptual framework to distinguish different types of reviews. We then developed a methodological framework to assess the review methods used. Overall, to accelerate the review process, our review of reviews (or umbrella review) followed the rapid review approach: we limited our search to reviews in English published between 2014 and 2019 in peer-reviewed journals with a substantial VET focus and indexed in Scopus and/or Web of Science. Therefore, we did not examine all existing reviews in the field of VET research. Rather, our specific focus was on a core sector of scientific research: peer-reviewed articles in curated databases. Furthermore, we concentrated on the review procedures and methods used, not on the content of the reviews.

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**Findings:** We identified nine journals with a substantial VET focus, yielding a total of 1,283 published articles between 2014 and 2019, of which only 19 articles (1.48%) were literature reviews. Of these 19 reviews, six were excluded from our umbrella review because of unclear methodological procedures. Based on the review typology we developed, five of the remaining 13 reviews were conceptual in nature, four were scoping reviews, three were evidence-oriented, and one was critical in nature. None of the reviews examined focused on meta-syntheses, research methods or meta-analyses. In total, this resulted in current review gaps with respect to theory generation (meta-synthesis), practice of theory elaboration and testing (methodological review) and the determination of overall effects across single studies (meta-analysis). Finally, our examination of the reviews showed that their scope was mostly clearly presented. However, with regard to the process steps *data selection* and *data processing*, only a few reviews fully met the requirements of the methodological framework.

**Conclusion:** Our review leads to four conclusions. 1) More systematic syntheses are needed because there is a substantial quantitative gap in review research. 2) In particular, there is a need for review studies with a focus on meta-synthesis, research methods and meta-analysis, as there is a current gap in these areas. 3) Reviews should be based on a review methodology with transparent and reproducible methods and verifiable or falsifiable results. The high number of subjective syntheses with unclear review procedures indicates that this mindset is not yet fully established in the field of VET research. 4) In the studies examined, there is a high degree of heterogeneity regarding to the accuracy and completeness of the methodological steps and data. The conceptual and methodological frameworks developed for the analysis can serve as guidelines for the conduct of reviews, and thus, the frameworks could contribute to the further development of the methodological basis of reviews.

**Keywords:** Literature review, umbrella review, review of reviews, typology, vocational education and training, VET

### 1 Research problem and research question

Since the financial crisis of 2007/2008, at the latest, vocational education and training (VET) has gained a high degree of attention, as it is often perceived as a solution to socioeconomic problems following financial crises, particularly the rise of youth unemployment. VET is also viewed as an instrument for increasing an economy's productivity, capacity for innovation and competitiveness (Chankseliani & Anuar, 2019; Gessler, 2019; Salvà et al., 2019).
1.1 Increased research on vocational education and training

This multifunctionality of VET has not only led to a high degree of attention but also to an exponential ($R^2 = 0.9427$) growth in the number of VET-related articles (N with vocation* in the title, cumulated until 2018 = 14,088), which has resulted in the need for literature reviews. Literature reviews are "systematic syntheses of previous work around a particular topic" (Card, 2010, p. 725). The number of literature review articles (N with vocation* and review in the title, cumulated until 2018 = 144) has also grown exponentially to a similar extent ($R^2 = 0.946$), although there is a dearth of review syntheses (Figure 1).

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Database: SCOPUS  
Search: TITLE (vocation*)  
Date of query: 1 October 2019  

Database: SCOPUS  
Search: TITLE (vocation*) AND TITLE (review)  
Date of query: 1 October 2019

Figure 1: Cumulated VET-related articles and reviews up to 2018

The lack of systematic knowledge synthesis is obvious, but the methodological quality of the literature reviews is not evident. Is the existing review corpus small but excellent? We use the review of reviews or the umbrella review approach (Grant & Booth, 2009) to assess the methodological quality of the existing reviews. Our overall research question is as follows: what is the methodological quality of reviews with a VET-related focus?

1.2 Methodological quality of reviews: reproducibility

In recent years, there has been evidence showing that "many science studies are not reproducible" (Sayre & Riegelman, 2018, p. 2). The so-called reproducibility crisis sets the frame for the definition of methodological quality used here: review studies have to be at least repro-
ducible. In this paper, we use the following definition: "Reproducibility refers to the ability of a researcher to duplicate the results of a prior study using the same materials and procedures as were used by the original investigator" (Bollen et al., 2015, p. 3). Reproducibility requires transparency, especially by “providing methodological details of research” (Bollen et al., 2015, p. 22). Applying the definition of Bollen et al., (2015), every literature review requires methodology and explicitness as the minimum criteria to enable transparency and reproducibility (Figure 2).

![Figure 2: Reproducibility as a minimum requirement for literature reviews]

Our research question can now be specified as follows: which methodological details are explicitly provided in literature review studies with a VET-related focus, and which ones are not? We expect that this research question is sufficiently broad to be inclusive of all types of literature review studies with a transparent methodology (Gough et al., 2012b).

The overall purpose of our umbrella review is an assessment for which a conceptual framework is required. The first step is, therefore, to clarify the concept of a review to set the frame for the assessment.

2 Literature review: definition and epistemology

2.1 Literature review

The label literature review is often used in two respects, first, as a categorial term to distinguish among review categories (e.g. literature, financial, workflow and employee performance) and, second, as a specific term to distinguish among literature review types. Grant and Booth (2009) developed an influential typology with 14 types of reviews. They defined a literature
review (as a specific term) as follows: the "common characteristics are that a literature review reviews published literature, implying that included materials possess some degree of permanence and, possibly, have been subject to a peer-review process" (Grant & Booth, 2009, p. 97). This broad definition is appropriate for all literature review types. The authors stated that a literature review as a review type is a "generic term" (p. 94). While the label classifying a review category is appropriate, its usage in classifying a review type within this category is problematic. Therefore, we use the literature review label only as a categorial term. Another review type in Grant and Booth's typology, the overview, is also a "generic term" (p. 94), and for us, it is also a categorial term, not a specific term for a review type.

2.1.1 Definition

Hart (2018) subdivided a literature review as a categorial term into two stages: search of the literature and review of the literature. A literature review starts with a systematic search of the accredited sources and resources. It involves identifying paper and electronic sources relevant to your topic and method(s) by preparing a clear plan for the search that includes a justifiable vocabulary that defines what will and will not be included in the search. (p. 3)

The review of the literature is the analysis, critical evaluation and synthesis of existing knowledge relevant to your research problem. . . . In your analysis, you are selecting from different texts, concepts, theories, arguments and interpretations that seem to be relevant to the development of your particular theoretical frame of reference and/or use of a particular methodology. It involves classifying these parts into schemes that enable you to critically evaluate those concepts, arguments and different interpretations. (pp. 3–4)

The synthesis of existing knowledge is "the act of making connections between the parts identified in the analysis. It is not simply a matter of reassembling the parts back into the original order, but looking for a new order" (p. 197). A literature review, therefore, contains at least the following basic steps: (1) definition of the scope (specify the research problem and the research question); (2) data selection (define the sources and the search terms, and include the relevant research); (3) data processing (analysis: select from different texts, and critically evaluate the extractions; synthesis: pool the extracted data).

Grant and Booth (2009) also focused on the "processes required in completing a review" (p. 104) and identified four "main phases of each review type" (p. 106), "namely search, appraisal, synthesis and analysis" (p. 104). Prior to the synthesis and analysis, the authors situated the appraisal task, whose function is to evaluate the quality of research before it is included in the body of pooled knowledge. Poor research can, therefore, be excluded. Based
on a government-funded initiative to apply systematic research synthesis in education, the
reviewers identified "particular gaps in the methodology of research synthesis, among which
the lack of agreed quality criteria for establishing the validity and reliability of 'qualitative'
research is probably the most critical." (Oakley, 2002, p. 279). Grant and Booth accordingly
stress the importance of quality appraisal: "However, whether the evidence takes the form
of primary or secondary studies, it is equally important to undertake an appraisal of quality.
This should consider both its robustness (validity and reliability) and its relevance to the local
context (applicability)." (Grant & Booth, 2009, p. 104). The authors also reordered the steps
and positioned the analysis after the synthesis. In a later publication, Booth et al., (2016b, p.
172) justified this inverse order with reference to the need for a meta-analysis. Coughlan and
Cronin (2017) also included the critical appraisal step and the re-analysis of the pooled data
task (p. 45), though within the data synthesis step. Their proposal was not limited to a meta-
analysis. Coughlan and Cronin (2017) also extended the systematic search step to search and eligiblity screening and added the final step, which comprised the conclusion, discussion and limitations.

Based on the definition of Card, that literature reviews are "systematic syntheses of previous work around a particular topic" (2010, p. 725), we can now extend Hart's (2018) framework to define our understanding of a literature review. To conclude, a literature review contains the following steps: (1) definition of the scope (specify the research problem and research question); (2) data selection (systematic search and eligibility screening: define the sources and search terms, include the relevant research, and screen and read the selected research to exclude the ineligible research); (3) data processing (critical appraisal: assess the quality of the selected research to exclude poor or inappropriate research; analysis: select the relevant data from the different texts, and critically evaluate the extraction; synthesis: synthesize and re-analyse the pooled data) and (4) data reporting (present the findings, and discuss the conclusions and limitations of the review). This is not the definition of a special literature review type but a categorial definition of a literature review.

2.1.2 Systematic and subjective syntheses

We are aware that the methodological requirements defined herein are not typical of subjective reviews, which "tend to be idiosyncratic. Subjective reviews choose articles without justifying why they are selected, and they may give equal credence to good and poor studies. The results of subjective reviews are often biased on a partial examination of the available literature, and their findings may be inaccurate or even false" (Fink, 2020, p. 16). Fink distinguished narrative reviews from these subjective reviews. A narrative review may be appropriate "for describing the history or development of a problem and its solution" (p. 16). The purpose of a narrative review is "to identify a few studies that describe a problem of interest."
. . . No standards or protocols guide the review. Although the reviewers will learn about the problem, they will not arrive at a comprehensive understanding of the state of the science related to the problem" (Demiris et al., 2019, p. 32). Therefore, also a narrative review "is very subjective depending on what you select, how you choose to use what you found, and how you choose to frame it. It’s all subjective. . . . so when you look at the quality of a narrative review, a lot of times who wrote it comes into play" (interview with Margaret Foster¹, as cited in Wang, 2019, p. 4). Subjective and narrative reviews are thus comparable in their approach, which is why we characterize both as subjective syntheses.

In this umbrella review, we do not examine the expertise of the reviewer (an experienced or inexperienced scholar). Instead, in line with our research question, we focus on the “increasing emphasis on reviews that are methodical” (Coughlan & Cronin, 2017, p. 12). Therefore, we distinguish between (1) systematic syntheses based on an explicitly described methodology of searching, selecting and synthesizing the relevant body of knowledge and (2) subjective syntheses which lack such methodology. Only reviews with an explicitly described methodology are eligible for this umbrella review (Figure 3).

Figure 3: Systematic and subjective syntheses

¹ Margaret Foster is the "co-author of the only book written on systematic reviews for librarians, Assembling the Pieces of a Systematic Review: A Guide for Librarians" (Wang, 2019, p. 2).
An example of a subjective synthesis is a recently published literature review about major strands of African VET literature and emergent approaches. The review was written by a team of experts in the field. However, its methodological foundation – e.g. the selection of literature, the identification of the major and emergent approaches, the qualitative analysis and synthesis – is unclear. According to the authors, the "article draws on team members' experiences of previous attempts to summarise the literature on VET in Africa" (McGrath et al., 2019, p. 3). The lack of methodological explanations has three consequences. (1) The findings are difficult to classify and value. (2) It is difficult to reproduce the review and to verify the findings. (3) A systematic widening or updating of the findings is difficult, even for the authorial team. The tacit methodology is situated and socially embedded in the configuration of the team.

Excluding subjective syntheses from our umbrella review does not mean that these reviews, in general, or the excluded reviews, in particular, are not valuable. But, the excluded reviews (Figure 5) were ineligible within the focus of this study.

2.1.3 Inappropriate terms

Descriptions are basic aspects of reviews and are used in many review types. A description "tells us how things are. It is not an argument. It is an account, always written from a certain point of view, to some purpose. A description doesn't explain" (Jesson et al., 2011, p. 66). As such, we use descriptive review not as a specification for one review type. The terms analytical review and synthesis review are also inappropriate for specifying review types. Analysis and synthesis are key elements in every review. The purpose of a literature review, as a second-order research, is to analyse and synthesise existing research. The other terms that are sometimes used – state-of-the-art review, systematised review and systematic search and review – are also generic characterisations, as pooling the state-of-the-art research is a central purpose of every second-order research. Thus, an explicit methodology is a basic requirement for eligibility in this umbrella review. The term systematic review is nevertheless included in our typology because specific methodologies were developed for this review type (e.g. Moher et al., 2009; Petticrew & Roberts, 2006; critical: MacLure, 2005). In Table 1, we summarise the terms that we later not use to specify our review types.
Table 1: Generic or inappropriate terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Reason for not using the terms to specify review types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature review</td>
<td>Generic term</td>
</tr>
<tr>
<td>Overview</td>
<td>Generic term</td>
</tr>
<tr>
<td>Descriptive review</td>
<td>Descriptions are used in different types of reviews</td>
</tr>
<tr>
<td>Analytical review</td>
<td>Conducting an analysis is a basic requirement for every review</td>
</tr>
<tr>
<td>Synthesis review</td>
<td>Conducting a synthesis is a basic requirement for every review</td>
</tr>
<tr>
<td>State-of-the-art review</td>
<td>Identifying the state-of-the-art research is a basic purpose of every review</td>
</tr>
<tr>
<td>Systematised review</td>
<td>Systematic work (or systematised work) is a basic prerequisite for any research</td>
</tr>
<tr>
<td>Systematic search and review</td>
<td></td>
</tr>
</tbody>
</table>

In the first step, we defined literature review as a categorial term. In the second step, we distinguished literature reviews with an explicit methodology from those with an unclear methodology (subjective reviews and often narrative reviews). In the third step, we identified inappropriate terms. In the next step we will examine the epistemological principles underlying the literature review in order to have a basis for the development of our typology.

2.2 Epistemological foundation

According to Toye et al., "a central distinction between synthesis approaches is (a) those that aim to describe or 'aggregate' findings and (b) those that aim to interpret these findings and develop conceptual understandings or 'theory'" (2014, p. 4). Barnett-Page and Thomas (2009, p. 9) followed the same idea, though with a different purpose. They did not focus on purposes (e.g. aggregation) but on the underlying epistemologies and named their pair of opposites as realist and idealist. They did not make a distinction and assumed that "it is generally a question of degree rather than of absolute distinctions" (Barnett-Page & Thomas, 2009, p. 9). In Table 2, we summarise the two extreme epistemological positions (idealist and realist) and add the purposes (Toye et al., 2014) and basic review types (Booth et al., 2016b) that are grounded on these epistemologies.
Table 2: Realist and idealist epistemologies

<table>
<thead>
<tr>
<th>Epistemologies</th>
<th>Idealist</th>
<th>Realist</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Barnett-Page &amp; Thomas, 2009)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Searching</td>
<td>Iterative</td>
<td>Linear</td>
</tr>
<tr>
<td>Quality assessment</td>
<td>Less clear, less a priori; quality of content rather than method</td>
<td>Clear and <em>a priori</em></td>
</tr>
<tr>
<td>Problematising the literature</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Question</td>
<td>Explore</td>
<td>Answer</td>
</tr>
<tr>
<td>Heterogeneity</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Synthesised product</td>
<td>Complex</td>
<td>Clear for policy makers and practitioners</td>
</tr>
<tr>
<td>(Toye et al., 2014)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purpose</td>
<td>'interpret . . . findings and develop conceptual understandings or 'theory'' (p. 4)</td>
<td>'describe or 'aggregate' findings'' (p. 4)</td>
</tr>
<tr>
<td>(Booth et al., 2016b)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic review types</td>
<td>Interpretive/configurative reviews &quot;seek to broaden our understanding of a particular intervention or phenomenon. Each study holds the potential to contribute additional insights and also contribute to the overall picture'' (p. 22).</td>
<td>Aggregative reviews 'bring together studies on a similar topic such that each additional study adds 'weight' to a shared finding. Bringing studies together in this way necessitates assumptions about how similar studies are to one another (homogeneity)'' (p. 22).</td>
</tr>
</tbody>
</table>

Following the idea of a continuum, a purpose between the idealist and realist camps can be identified, which we call *clarification*. This purpose is based on the interpretation and/or aggregation of prior findings for the purpose of clarifying a concept or method as a basis for further development of a theory or methodology. Some helpful umbrella reviews focus on clarification of methodological basics (e.g. Booth et al., 2016a; Grant & Booth, 2009).

3 Conceptual framework of literature reviews

Our conceptual framework (Imenda, 2014) is based on Barnett-Page and Thomas (2009) realist–idealist continuum, from which we make distinctions regarding the review purposes of interpretation, clarification and aggregation.

In section 2, we identified generic, ineligible and inappropriate terms. Without these terms, we are left with the following review types from Grant and Booth's (2009) typology: critical review, mapping review, meta-analysis, mixed studies review, qualitative systematic review, rapid review, scoping review, systematic review and umbrella reviews. In our typology, we did not distinguish between *qualitative systematic review* and *systematic review*. Although different, they belong to the same review type, which we call *systematic review*. For the
same reason, we grouped *mapping review* and *scoping review* under one review type. With the remaining specific review types, we developed our integrated conceptual framework based on the epistemologies, basic review types and purposes presented in Section 2.

Grant and Booth (2009) developed their typology inductively and used published review studies as the bases for their analysis. This approach produced theoretical gaps, as it relates to a given and selected practice. In our framework, we added four review types to fill the gaps: meta-meta-analysis, methodological review, conceptual review and meta-synthesis. Figure 4 presents the integrated conceptual framework with the different review types.

![Figure 4: Integrated conceptual framework](image)

These different review types can be used as a single approach, as a sequentially combined approach or as a methodologically combined approach. For example, a review can start sequentially as a meta-synthesis and move on to a critical review. The rapid review approach, on the other hand, is not a stand-alone method, but only possible in combination with another approach (e.g. conceptual review). In Table 3, we summarise the definitions of the different types of methodological literature reviews in our integrated conceptual framework.
Table 3: Definitions of reviews

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Review type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpretation</td>
<td>Metasynthesis</td>
<td>It “is more than a summing up of research findings; it involves analyses and theory generating syntheses that remain faithful to the interpretive rendering in each study . . . Metasynthesis is defined as interpretive synthesis of data, including phenomenologies, ethnographies, grounded theories and other integrated and coherent descriptions or explanations of phenomena, events or cases” (Bondas &amp; Hall, 2007, p. 115).</td>
</tr>
<tr>
<td>Critical review</td>
<td></td>
<td>It “aims to demonstrate [that the] writer has extensively researched [the] literature and critically evaluated its quality. [It] goes beyond mere description to include degree of analysis and conceptual innovation. [It] typically results in [a] hypothesis or [a] model” (Grant &amp; Booth, 2009, p. 94).</td>
</tr>
<tr>
<td>Clarification</td>
<td>Conceptual review</td>
<td>Conceptual reviews examine concepts ‘in order to clarify their characteristics, thereby achieving a better understanding of the meaning of [those] concept[s]’ (Coughlan &amp; Cronin, 2017, p. 158). The review can also focus on a broader framework, a system of concepts, a theory. A theory review ‘could have one or more of the following aims: identifying and mapping a comprehensive range of relevant theories; assessing which theories have become influential and which have been, or have become over time, largely overlooked; and integrating complementary theories and facilitating the analysis and synthesis of theories into more generalised or abstract “meta-theories”’ (Campbell et al., 2014, p. 2).</td>
</tr>
<tr>
<td></td>
<td>Alternative term:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Theory review</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Methodological review</td>
<td>“The purpose of the methodological review is to understand the quality of the research by systematically analyzing the various research components of each study and synthesizing the quality of the research methods across the body of studies” (Krezmien et al., 2017, p. 105).</td>
</tr>
<tr>
<td>Aggregation</td>
<td>Evidence review</td>
<td>It is “a process that uses an explicit and transparent methodology to re-analyse and synthesise evidence from previously conducted research studies on a given topic” (Coughlan &amp; Cronin, 2017, p. 163).</td>
</tr>
<tr>
<td></td>
<td>Alternative term:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Systematic review²</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scoping review</td>
<td>“A scoping review or scoping study is a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge” (Colquhoun et al., 2014, p. 1292 f). ‘Scoping reviews have great utility for synthesizing research evidence and are often used to map existing literature in a given field in terms of its nature, features, and volume. As such, scoping reviews have also been called ‘mapping reviews’ (Peters et al., 2015, p. 141). Limitation: ‘They do not, for example, appraise the quality of evidence in the primary research reports in any formal sense’ (Arksey &amp; O’Malley, 2005, p. 30). Reporting: Tricco et al., 2016</td>
</tr>
<tr>
<td></td>
<td>Alternative term:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mapping review</td>
<td></td>
</tr>
</tbody>
</table>

² We prefer the term “evidence review” (Munn et al., 2018) because this term indicates the subject or what of the review, not the method or how of a review. Moreover, if one review type claims to be systematic, this would mean that all other review types do not meet this requirement. We have nevertheless used the term “systematic review” (as an alternative term) because specific procedures exist for this type of review and it is popular and widely used (especially in medicine).
Interpretation and clarification

Mixed studies review

A review of mixed studies "refers to any combination of methods where one significant component is a literature review (usually systematic). Within a review context, it refers to a combination of review approaches, for example combining quantitative with qualitative research or outcome with process studies" (Grant & Booth, 2009, p. 94).

Aggregation and clarification

Meta-analysis

It is a "technique that statistically combines the results of quantitative studies to provide a more precise effect of the results" (Grant & Booth, 2009, p. 94).

Process acceleration

Rapid review

The rapid review approach is a type of systematic syntheses in which "review processes are accelerated and methods are streamlined to complete the review more quickly" (Langlois et al., 2017, p. 3). Methods are either reduce the research scope, focused search strategies, or focused methods for the data extraction, analysis and synthesis (Gannan et al., 2010).

Review of reviews

Umbrella review

It "specifically refers to [a] review compiling evidence from multiple reviews into one accessible and usable document. [It] focuses on [a] broad condition or problem for which there are competing interventions and highlights reviews that address these interventions and their results" (Grant & Booth, 2009, p. 95).

Review of meta-analysis

Meta-meta-analysis

A "meta-meta analysis uses as its basic data individual meta-analyses. By using meta-analysis as the individual unit of study (subject), much greater generality is afforded. The reason for this is that a meta-meta analysis takes into account more techniques . . . and subjects than all previous methods of evaluation; it integrates research through statistical analysis of individual studies" (Kazrin et al., 1979, p. 397).

In the following section, we use the generic definition of a literature review from section 2 to develop our methodological framework for the review of reviews.

4 Methodological framework of literature reviews

Following our definition, a literature review contains the following steps: (1) definition of the scope (specify the research problem and research question); (2) data selection (systematic search and eligibility screening: define the sources and search terms, include the relevant research, and screen and read the selected research to exclude the ineligible research); (3) data processing (critical appraisal: assess the quality of the selected research to exclude poor or inappropriate research; analysis: select the relevant data from the different texts, and critically evaluate the extraction; synthesis: synthesise and re-analyse the pooled data) and (4) data reporting (present the findings, and discuss the conclusions and limitations of the review). This is not the definition of a special review type but a categorial definition of a literature review. Based on these steps, we developed a methodological framework to assess the methods used. We developed our framework in three steps: (1) synthesising existing approaches (Aromataris & Pearson, 2014; Aromataris et al., 2015); (2) selecting the methodological criteria (Sny-
der, 2019) and (3) adjusting the criteria (Strandberg & Simpson, 2019). The full framework is presented in Table 4.

Table 4: Methodological framework of literature reviews

<table>
<thead>
<tr>
<th>Process step</th>
<th>Elements</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scope definition</td>
<td>research problem is clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research problem is embedded in the context of what is already known</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research question is clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>objectives (purpose of review) are clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research questions are clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research problem is clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research problem is embedded in the context of what is already known</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research question is clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>objectives (purpose of review) are clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>research questions are clearly reported</td>
</tr>
<tr>
<td>2</td>
<td>Data selection</td>
<td>the selected sources (e.g. databases) are clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the reasons for the source selection are clearly stated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the search strategy is clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the search terms and limits are clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the process of screening (title, abstract) and full text reading is clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the reasons for the inclusion of studies are clearly stated*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the reasons for the exclusion of studies are clearly stated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>an overview (e.g. flow diagram) is given including the steps identification (search) and eligibility, the numbers of included and excluded studies and the rationale (criteria) for the exclusion of studies.</td>
</tr>
<tr>
<td>3</td>
<td>Data processing</td>
<td>criteria or used checklist for the appraisal of the studies is clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>how the appraisal was done is clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>excluded studies are clearly reported and the reasons for the exclusion of studies are clearly stated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>method(s) of data extraction from reports is clearly reported*, and the reason/s for using it is/are clearly stated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>method(s) of analysis is clearly reported, and the reason/s for using it is/are clearly stated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the result of extraction and analysis is critical evaluated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>method(s) of synthesizing the analysis results are clearly reported*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>method(s) of re-analysis (if appropriate) of the synthesis results are clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the relation between synthesis results and research question is clearly reported</td>
</tr>
<tr>
<td>4</td>
<td>Data reporting</td>
<td>summarized findings are clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>limitations of the study and findings are clearly reported</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a general interpretation of the results in the context of other studies is provided</td>
</tr>
<tr>
<td></td>
<td></td>
<td>implications for future research are provided</td>
</tr>
</tbody>
</table>

* criteria used in the appraisal checklist (Table 7)

This framework should be seen as a minimum standard. Further steps and criteria could be added (e.g. Aromataris et al., 2015; Moher et al., 2009).
5 Review of reviews: rapid methodological umbrella review

Our review type is, first and foremost, an umbrella review, as our primary purpose is to review existing reviews (Aromataris et al., 2015). Second, we employed the rapid review approach by applying two focused search strategies to accelerate the process (Langlois et al., 2017). (a) Source strategy: we identified the journals and articles by using two databases (Scopus and World of Science). (b) Limitation strategy: we concentrated our search on articles in peer-reviewed journals, which were published in English between 2014 and 2019 in journals with a substantial VET focus. Thirdly, we have analysed the review methods used. Our review is therefore a methodological review (Krezmien et al., 2017).

The following sections describe the details about these combined approaches. The process is directed by the steps outlined in Table 4.

5.1 Scope definition

5.1.1 Research problem

We described the research problem in section 1 as a discrepancy between increased VET-focused research, on the one hand, and only a few synthesizing studies, on the other. While this quantitative shortfall is evident, what is not evident is whether the methodological quality of the reviews is appropriate to fulfil the central methodological task of research, i.e. transparency, reproducibility and verifiability/falsifiability.

5.1.2 Research question

Our objective is to identify the methodological quality of reviews in VET and to clarify the methodological foundation of a selected corpus of recent reviews. Our research question is: which methodological details are explicitly provided in literature reviews published in peer-reviewed journals with a substantial VET focus, and which ones are not?

5.2 Data selection

5.2.1 Sources

We included in our restricted search two curated databases: Elsevier’s Scopus and Clarivate’s Web of Science (WoS). Both databases index peer-reviewed literature that have been accepted for inclusion following an internal review (SCOPUS: Content Selection and Advisory
Board; WoS: inhouse editors). After the inclusion, the journals remain under permanent review. The continuous review of the corpus is important because some journals change after inclusion into "predatory journals" (footnote 4). Both databases index documents from different publishers – the content is publisher-independent. In a more comprehensive search, further databases could be included, such as ERIC (Education Resources Information Center), VOCEDplus (Vocational Education and Training Research Database), JSTOR (Journal STORage), databases from ProQuest (e.g. Education Collection, Social Science Database) and EBSCO (e.g. Education, Research Complete, Business Source Complete), subject-specific databases (PsycINFO, PSYNDEX, SocINDEX), cross-country databases (ASEAN Citation Index, LatinIndex Sistema Regional de Información en Línea para Revistas Científicas de América Latina, el Caribe, España y Portugal), country-specific databases (e.g. CHSSCD Chinese Humanities and Social Sciences Citation Database, PEDOCS Pedagogical Documents, Germany) and publisher-specific databases (e.g. ScienceDirect, Taylor and Francis Online). An additional search approach could be the use of academic search engines, such as Google Scholar and Microsoft Academic (Rovira et al., 2019), or scholarly citations engines, such as Crossref and Dimensions (Harzing, 2019).

5.2.2 Search

In the first step, we identified journals with a substantial VET focus for inclusion in our search. The focus on VET was identified by dividing a ratio between the total number of articles (in a certain time) and the total number of articles with a vocational topic. In the second step, we identified the articles with review in the title within these journals. These steps will now be explained in greater detail.

Identification of journals for inclusion

First, we identified SCOPUS articles published between 2014 and 2018 in English and in the subject area of social sciences, with vocation* in the title, abstract or keyword. The search (15 June 2019) resulted in 3,870 records. From the journal list, we selected the twenty journals with the highest number of VET-related articles and calculated a ratio to identify the VET profile of the journal: 1) total number of VET-related articles (2014–2018) divided by the 2) total number of published articles (2014–2018). This 3) ratio indicates the VET focus of a journal. We set the cut-off value for the ratio at 0.20. Of the identified journals, nine met this criterion and were included in our search. The results of the selection are shown in Table 5.

3 DOCTYPE(ar OR re) AND PUBYEAR > 2013 AND PUBYEAR < 2019 AND LANGUAGE(English) AND SUBJAREA(soci) AND TITLE-ABS-KEY(vocation*)
### Table 5: Journals with VET-focused articles and the identified VET-focus

<table>
<thead>
<tr>
<th>Journal</th>
<th>1)</th>
<th>2)</th>
<th>3)</th>
<th>4)</th>
<th>5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Journal of Vocational Education &amp; Training (JVET)</td>
<td>145</td>
<td>145</td>
<td>1.00</td>
<td>incl.</td>
<td>7</td>
</tr>
<tr>
<td>2. International Journal for Research in Vocational Education and Training (IJRVET)</td>
<td>73</td>
<td>73</td>
<td>1.00</td>
<td>incl.</td>
<td>2</td>
</tr>
<tr>
<td>3. Empirical Research in Vocational Education and Training (ERVET)</td>
<td>62</td>
<td>74</td>
<td>0.84</td>
<td>incl.</td>
<td>2</td>
</tr>
<tr>
<td>5. Vocations and Learning (VL)</td>
<td>56</td>
<td>92</td>
<td>0.61</td>
<td>incl.</td>
<td>2</td>
</tr>
<tr>
<td>6. International Journal of Training Research (IJTR)</td>
<td>49</td>
<td>87</td>
<td>0.56</td>
<td>incl.</td>
<td>0</td>
</tr>
<tr>
<td>7. Journal of Education and Work (JEW)</td>
<td>45</td>
<td>210</td>
<td>0.21</td>
<td>incl.</td>
<td>2</td>
</tr>
<tr>
<td>8. BMC Medical Education</td>
<td>43</td>
<td>1422</td>
<td>0.03</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>9. Education and Training</td>
<td>42</td>
<td>309</td>
<td>0.14</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>10. Research in Post Compulsory Education (ROCE)</td>
<td>39</td>
<td>153</td>
<td>0.25</td>
<td>incl.</td>
<td>2</td>
</tr>
<tr>
<td>11. Nurse Education Today</td>
<td>29</td>
<td>1333</td>
<td>0.02</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>12. Review of European Studies</td>
<td>29</td>
<td>392</td>
<td>0.07</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>13. World Transactions on Engineering and Technology Education</td>
<td>28</td>
<td>498</td>
<td>0.06</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>14. Journal of Career Development</td>
<td>27</td>
<td>261</td>
<td>0.10</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>15. Mathematics Education</td>
<td>27</td>
<td>283</td>
<td>0.10</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>16. Eurasia Journal of Mathematics Science and Technology Education</td>
<td>26</td>
<td>1256</td>
<td>0.02</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>17. Journal of Technical Education and Training (JTET)</td>
<td>25</td>
<td>47</td>
<td>0.53</td>
<td>incl.</td>
<td>1</td>
</tr>
<tr>
<td>18. Pertanika Journal of Social Sciences and Humanities</td>
<td>23</td>
<td>1254</td>
<td>0.02</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td>19. International Journal for Educational and Vocational Guidance (IJEVG)</td>
<td>21</td>
<td>88</td>
<td>0.24</td>
<td>incl.</td>
<td>3</td>
</tr>
<tr>
<td>20. Academic Medicine</td>
<td>19</td>
<td>1399</td>
<td>0.01</td>
<td>excl.</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Number of articles between 2014 and 2018 with vocation* in title, abstract or keyword (database query: 15 June 2019); 2) total number of published articles between 2014 and 2018 (database query: 15 June 2019); 3) ratio (VET focus); 4) included journals: (ratio > 0.2); 5) number of articles with the term review in the title between 2014 and 2019 (last database query: 15 January 2020).

In a second step, we cross-checked the results by conducting the same search in Web of Science (WoS), with vocation* as a topic (title, abstract or keyword), and limited the results to articles published in English between 2014 and 2018 in the subject area of education and educational research⁴. Articles from other subject areas and in other languages were again excluded.⁴<br>

---

⁴ Six journals were excluded in this step because they a) were no longer indexed in Scopus and were b) named on the list of possible predatory (hijacked) journals/predatory publishers (https://predatoryjournals.com): Turkish Online Journal of Educational Technology (excluded from Scopus in 2017), International Journal of Environmental and Science Education (excluded from Scopus in 2016), Man in India (excluded from Scopus in 2017), Asian Social Science (excluded from Scopus in 2015), Mediterranean Journal of Social Sciences (excluded from Scopus in 2015) and Advanced Science Letters (excluded from Scopus in 2017).

⁵ Scopus does not offer “education” as a subject area in searches, and Web of Science does not offer “social sciences” as a category in searches. “Subject area” (Scopus) and “category” (WoS) have the same function.
excluded. The search (dated 15 June 2019) resulted in 1,461 records. From the journal list, we again selected twenty journals with the highest number of published VET-related articles and conducted the same calculation as above to determine a VET ratio to identify the VET-focus of the journal. The search confirmed the already identified journals. However, none of the additional journals identified fit the criteria for inclusion. The excluded journals were: Higher Education Skills and Work-based Learning (0.15), Studies in Continuing Education (0.11), Research in Comparative and International Education (0.10), International Journal of Lifelong Learning (0.06), British Educational Research Journal (0.04), Community College Journal of Research and Practice (0.03), International Journal of Educational Development (0.02), Education Science – Theory and Practice (0.02) and Higher Education (0.02).

Based on this pre-selection of journals, we searched the reviews for our umbrella review.

**Identification of articles for inclusion**

We included all studies in the nine identified journals with review in the title and used similar criteria as in the journal identification process (Table 6).

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database source</td>
<td>Scopus and Web of Science</td>
<td>ERIC etc.</td>
</tr>
<tr>
<td>Specific source</td>
<td>9 journals</td>
<td>Books etc.</td>
</tr>
<tr>
<td>Document type</td>
<td>Articles and reviews</td>
<td>Editorials etc.</td>
</tr>
<tr>
<td>Publication period</td>
<td>Between 2014 and 2019</td>
<td>Before 2014 and after 2019</td>
</tr>
<tr>
<td>Language</td>
<td>English</td>
<td>Other languages</td>
</tr>
<tr>
<td>Subject area (Scopus)/category (WoS)</td>
<td>Social sciences/education &amp; educational research</td>
<td>Other subject areas/categories</td>
</tr>
</tbody>
</table>

A total of 21 studies (date of last search: Jan 15, 2020) were identified in the search: JVET (7), IJEVG (3), ERVET (2), IJRVET (2), JEW (2), ROCE (2), VL (2) and JTET (1). No article containing review in the title was published in IJTR between 2014 and 2019.

5.2.3 Eligibility

Following the title and abstract screening, two articles were excluded (Christie, 2017; Spours et al., 2019) because their purpose was not a review of research. They both reviewed practice. After reading the full text, six further review studies were excluded (Avis, 2018; Emmenegger et al., 2019; Guilbert et al., 2016; Little, 2015; McGrath et al., 2019; Small et al., 2018). These review studies were within the scope (literature review), but important methodological details (e.g. the criteria for the inclusion of studies) were not given. These reviews were not
eligible for this umbrella review (see section 2.1.2 Systematic and subjective syntheses). The flow chart (Figure 5), presents an overview of the search (identification) and eligibility steps (screening and check).

In the observation period (2014 to 2019), the nine identified journals with a substantial focus on VET published a total of 1,283 articles, of which only 13 reviews (1.01% of the articles) dealt with a systematic interpretation, clarification or aggregation of previous research. The included 13 reviews are presented in the overview in the appendix. Based on the review typology we developed, five of the 13 reviews were conceptual in nature, four were scoping reviews, three were evidence-oriented, and one was critical in nature. None of the reviews examined focused on meta-syntheses, research methods or meta-analyses. In total, this resulted in current review gaps with respect to theory generation (meta-synthesis), practice
of theory elaboration and testing (methodological review) and the determination of overall effects across single studies (meta-analysis).

After identifying the corpus for our umbrella review, we continued with the appraisal, analysis and synthesis.

5.3 Data processing

5.3.1 Appraisal

Critical appraisal tools are available for many kinds of research studies, such as analytical cross-sectional studies, case control studies, case reports, case series, diagnostic test accuracy studies, economic evaluations, prevalence studies, qualitative research, quasi-experimental studies, randomized controlled trials, systematic reviews, text and opinion studies. We used criteria from an appraisal checklist developed for umbrella reviews (Aromataris et al., 2015), which were also included in our overall methodological framework (Table 4). Each criterion was assessed using the following codes:

● = yes
○ = partly
○ = no

Table 7: Appraisal checklist and results

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research problem is clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Research objectives are clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>The selected sources (e.g. databases) are clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Reasons why studies have been included are clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Method(s) of data extraction from reports is clearly reported and reasoned</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Method(s) of synthesizing the analysis results is clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

We defined in advance that only studies that at least partially meet all appraisal criteria will be considered. The evaluation was made by the two authors separately, and the individual results

6 https://joannabriggs.org/ebp/critical_appraisal_tools
were later discussed and agreed. The result of our appraisal is shown in Table 7. All 13 studies met this minimum requirement.

**Exclusion**

No studies were excluded in this step.

### 5.3.2 Analysis

**Data extraction**

A data extraction form was developed beforehand, based on the framework to assess the methodology of literature reviews (Table 4), to guide the data extraction.

**Analysis**

In the first step, we extracted, independently of each other, the data from one study using our data extraction form and discussed our results, understanding of the criteria and whether our data extraction approach was consistent with the research question and purpose. We clarified our criteria, adapted the form and extracted the data from the remaining twelve studies. Each criterion was assessed using the following codes:

- ★ = criterion clearly reported (replication is possible)
- ○ = criterion partly reported (replication is partly possible)
- □ = criterion not reported or unclearly reported (replication is not possible)

**Critical evaluation**

The analysis was an iterative process in which we extracted data and updated the data extraction form. After this step, we discussed our emerging results until we reached a common agreement. This step-by-step approach was done to make the criteria consistent and obtain a common understanding of the extracted data (Levac et al., 2010).

### 5.3.3 Synthesis

We summarized the results (Σ) for each criterion and used this coding for the single ratings: ★ = 2, ○ = 1, □ = 0. For each line, we calculated the sum and summed up an overall rating with these codings: 26 (= 100%) = clearly reported = ★, 13–25 (≥50%) = mostly clearly reported = ○, 0–12 (< 50%) = mostly unclearly reported = □. We also summarized the results for each study and used the same coding (★ = 2, ○ = 1, □ = 0). For each column, we therefore calcu-
lated the sum and summed up an overall rating ($\sum^2$) with the same categories ($100\%$, $\geq 50\%$, $< 50\%$).

Based on our research question (Which methodological details are explicitly provided in literature reviews published in peer-reviewed journals with a substantial VET focus, and which ones are not?), we arrived at three perspectives on the methodological details. (1) Each study was analysed using the 25 criteria of the methodological framework (Table 4). (2) A cross-study assessment was carried out for each criterion. (3) We used the four process steps of a review (scope definition, data selection, data processing, data reporting) to create a summative evaluation for each. The results are presented in the following section.

Re-analysis

Methods of re-analysis were not applied.

5.4 Data reporting

5.4.1 Overview

Based on our typology (Table 3, Figure 4), we identified five conceptual reviews, four scoping reviews, three evidence reviews and one critical review (see appendix). A first conclusion is that there were four review types among the thirteen reviews (conceptual, scoping, evidence and critical). While this shows good breadth, the absence of three review types is problematic: (1) a meta-synthesis “involves analyses and theory generating syntheses” (Bondas & Hall, 2007, p. 115). None of the studies examined was aimed at theory generation. (2) Of the studies examined, none explicitly and exclusively focused on methods. As a sub-category or sub-question, research methods were partially considered (e.g. Schwendimann et al., 2018), but issues relating to research methods were not principally addressed, thus highlighting an important research gap. (3) None of the studies examined were meta-analyses, even though two scoping reviews did at least veer in this direction (Caves et al., 2019; Tonhäuser & Bücker, 2016). The purpose of meta-analyses, i.e. the combination of “the results of quantitative studies to provide a more precise effect of the results” (Grant & Booth, 2009, p. 94), was not intended in any review. This results in three major review gaps in terms of theory generation, the review of methodology and methods used and the consolidation of empirical results.

The table in the appendix shows substantial differences between the reviews. (1) In eight reviews, a reference provided information about the review method used by the authors, while in five reviews, no such reference was given. (2) Eleven reviews mentioned the period under study, while two reviews provided no such reference. (3) In seven reviews, the included and excluded languages were mentioned. Out of these seven reviews three reviews had
a focus on multiple languages (not only English). In six reviews, no information was given. However, it can be assumed that languages other than English were not included in the reviews that did not indicate the language used. Finally, the problem of language exclusion was only addressed and reflected on in the review of Schwendimann et al. (2018). Language restrictions can create a systematic selection bias. (4) Many authors (6 of 13) provided no references regarding the basis of the data analysis and synthesis.

5.4.2 Findings

The results of the categories research problem and research question are shown in Table 8.

Table 8: Scope definition

<table>
<thead>
<tr>
<th>Elements</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>Σ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research problem</td>
<td>Research problem is clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Research problem is embedded in the context of what is already known</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Research question</td>
<td>Objectives are clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>Research questions are clearly reported</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Σ²</td>
<td></td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

A close examination of the reviews showed that their scope was mostly clearly presented (9 clear, 4 partly clear).

The results of the categories sources, search and eligibility are shown in Table 9.

Table 9: Data selection

<table>
<thead>
<tr>
<th>Elements</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>Σ³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sources</td>
<td>The selected sources (e.g. databases) are clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>The source selection is reasoned</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Search</td>
<td>The search terms are clearly reported</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>The limitations are clearly reported</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

7 The criterion “language” was not considered. Information on how this criterion has been taken into account in the reviews is given in Annex 1.
With regard to the process step *data selection*, only one article was complete in terms of our methodological framework. A helpful tool to create transparency in the selection process is the flow chart (see Figure 5). However, of the 13 studies examined, only 3 used this instrument. This is surprising, given that flow charts were recommended in Moher et al. (1999) and again in 2009 "to address the suboptimal reporting of meta-analyses" (Moher et al., 2009, p. 1006). We would like to extend this statement: flowcharts help in countering the suboptimal reporting of reviews.

The results of the categories appraisal, analysis and synthesis are shown in Table 10.

**Table 10: Data processing**

<table>
<thead>
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<td>excluded studies are clearly reported and reasoned</td>
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<td>Analysis</td>
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<td>The result of the extraction and analysis is critically evaluated</td>
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With regard to the process step *data processing* one article (No 1) was complete in terms of our methodological framework. Because the process step *re-analysis* is not always appropriate, three further articles (No 5, 8 and 12) can be considered complete.

The results of the categories findings and conclusion are shown in Table 11.

*Table 11: Data reporting*

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<td>Summarised findings are clearly reported</td>
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<td>Limitations of the study and findings are clearly reported</td>
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<tr>
<td>Conclusion</td>
<td>A general interpretation of the results in the context of other studies is provided</td>
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<td>Implications for future research are provided</td>
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Compared to the previous process categories *data selection* and *data processing*, the results of the process category *data reporting* are better.
6 Conclusions

Our study’s results support four conclusions. (1) More systematic syntheses are needed due to a substantial quantitative gap in the review research. (2) In particular, review studies with a focus on meta-synthesis, research methods and meta-analysis are needed. (3) A literature review should be considered a valid research method and thus held to the same scientific rigour as other research methods. Reviews should therefore be based on a research method that includes transparent and reproducible procedures and verifiable or falsifiable findings. (4) In the studies examined, there was a high degree of heterogeneity with regard to the accuracy and completeness of the methodological steps and data. The developed methodological framework can serve as a guideline for conducting review studies in VET research.

Structures and reporting standards, especially in medicine, have been developed over time. However, it is problematic that “we don’t have that in other areas, such as education, as we have in medicine. Until you have structure in place, you are going to continue with the question: What did you do?” (Wang, 2019, pp. 8–9). Following this discourse, we propose a clear distinction between systematic syntheses based on an explicitly described methodology of searching, selecting and synthesising the relevant body of knowledge with transparent and reproducible procedures and subjective syntheses (such as narrative and subjective reviews), which lack such methodology. While subjective syntheses are mainly based on presumptive conclusions, they can nevertheless form a basis for systematic syntheses. However, subjective syntheses often do not meet the scientific standards of transparency, reproducibility and verifiability/falsifiability. Systematic syntheses, in turn, can be distinguished according to their subject and purpose (Table 3).

This study is also subject to limitations. To date, no general standards for systematising and typologising reviews have been established. The presented conceptual framework could be therefore more differentiated (Booth et al., 2016a) or even less differentiated (Paré et al., 2015). However, a model should be distinctive, informative and applicable. We assume that the developed model is helpful for specifying the type of review used. The methodological framework could also include further items, e.g. the review has an accessible protocol (Moher et al., 2009), which will probably be the case in the future. Limitations are of course also included in our scope and search process, including that we have not included journals published in languages other than English and journals that are not indexed in the selected databases. This applies, for example, to the German VET journal Zeitschrift für Berufs-und Wirtschaftspädagogik (ZBW), which is not indexed in either SCOPUS or WoS. The publication language is almost exclusively German. A search on 5 January 2020 in the journal ZBW via the database FIS Bildung (searched with the word review in the field FREITEXT, including the title, keywords, and abstract) showed that, between 2014 and 2019, 140 articles were published, of which only 1 (Kayser & Ziegler, 2014) was referred to as a literature review. In quantitative terms, the results are comparably unsatisfactory.
## Appendix

### Included reviews

<table>
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<th>No</th>
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<th>Period covered</th>
<th>Languages included</th>
<th>Sources</th>
<th>Studies included</th>
<th>Referenced analysis method</th>
<th>Review type</th>
</tr>
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<tr>
<td>7</td>
<td>Middleton &amp; Middleton (2017)</td>
<td>Review of literature on the career transitions of performing artists pursuing career development</td>
<td>No references provided</td>
<td>1980–2015</td>
<td>No information provided</td>
<td>3 journals + 1 database + 1 portal</td>
<td>No information provided</td>
<td>Thematic analysis and synthesis. No references provided.</td>
<td>Conceptual review</td>
</tr>
</tbody>
</table>

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8 Scholars Portal is a digital repository of journals, scholarly articles and books offered by the Ontario Council of University Libraries.
<table>
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<tr>
<th></th>
<th>Authors</th>
<th>Title</th>
<th>Year Range</th>
<th>Languages</th>
<th>Databases</th>
<th>References</th>
<th>Review Type</th>
</tr>
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<tbody>
<tr>
<td>11</td>
<td>Tonhäuser &amp; Büker (2016)</td>
<td>Determinants of transfer of training: A comprehensive literature review</td>
<td>1990–2015</td>
<td>No information provided</td>
<td>3 databases</td>
<td>79</td>
<td>Dimensional systematization of quantitative studies based on a theoretical framework model. Several references provided.</td>
</tr>
<tr>
<td>12</td>
<td>Williams, Dodd, Steele, &amp; Randall (2016)</td>
<td>A systematic review of current understandings of employability</td>
<td>No references provided</td>
<td>No information provided</td>
<td>10 databases</td>
<td>16</td>
<td>Data extraction sheet and content analysis. No references provided.</td>
</tr>
<tr>
<td>13</td>
<td>Crossman, &amp; Cameron (2014)</td>
<td>A comparative thematic review of vocational leadership literature from the USA, Great Britain and Australia. Research in post-compulsory education</td>
<td>No references provided</td>
<td>No information provided; probably English</td>
<td>7 journals from one database, conference papers from AVETRA¹⁰, reports from NCVER¹⁰</td>
<td>number of identified articles after search: 224, number of included articles: unclear (but less than 224); 11 conference papers / reports</td>
<td>Thematic synthesis. No references provided.</td>
</tr>
</tbody>
</table>

9 Australian Vocational Education and Training Research Association
10 National Centre for Vocational Education Research
References


Gessler, Siemer


Tonhäuser, C., & Büker, L. (2016). Determinants of transfer of training: A comprehensive literature review. *International Journal for Research in Vocational Education and Training, 3*(2), 127–165. [https://doi.org/10.13152/ijrvet.3.2.4](https://doi.org/10.13152/ijrvet.3.2.4)


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Vocational Business Students’ Conceptions and Misconceptions of Taxes as an Input for Instruction and Curriculum Development

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Abstract

Context: Tax evasion and tax compliance are important topics on a European level. Next to regulations and fines, the understanding of tax-related issues impacts a tax compliance decision. Vocational business students already pay taxes and are potential future entrepreneurs who will increasingly have to deal with tax-related issues in the future. Tax-related content is, therefore, integrated in the curriculum of business colleges in Austria. Information on business students’ conceptions and misconceptions concerning taxes can serve as valuable input for instruction and curriculum development.

Approach: In order to explore the conceptions and misconceptions of taxes among potential future entrepreneurs, students aged between 17 and 18 from business colleges in Austria were interviewed. Therefore, the technique of problem-centred interviews was chosen. The material was then analysed by using Mayring’s content analytic method of structuring.

Findings: The students’ conceptions and misconceptions of taxes, the difference to scientific knowledge as well as possible reasons for the misconceptions are analysed and discussed. The results show that misconceptions concerning basic principles of taxes exist, that students only have vague conceptions and little experience when it comes to income tax. They do not perceive themselves as taxpayers even though many of them have work experience and they regularly act as consumers and pay value added tax. Even though the students are

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more familiar with value added tax rates, misconceptions concerning the reasons behind the differences in rates exist. Finally, most of the students only fragmentally remember the last fundamental tax reform in Austria.

**Conclusion:** The findings as well as an analysis of the curriculum suggest that the students are missing basic knowledge on taxes as for example the difference between fees and taxes. On a curricular level, knowledge important for the individual taxpayer should build the ground for further business-related content. Finally, background knowledge on why different forms of taxes exist and on tax reforms should foster a deeper understanding and complement the factual knowledge most students already possess.

**Keywords:** Vocational Business Students’ Conceptions, Vocational Business Students’ Misconceptions, Tax Literacy, Tax Education, Tax Knowledge, Vocational Education and Training, VET

1 **Introduction**

Tax avoidance and tax evasion have a negative impact on the entire European Union since they result in a decrease in tax intakes of the member states (Vella, 2015). Therefore, the European Commission proposes a variety of regulations to reduce the amount of funds lost (European Commission, 2017a, p. 4), one being an Anti-Tax Avoidance Directive targeted to enhance tax compliance (European Commission, 2016a). Next to regulations and fines tax payer education is an important instrument to promote tax compliance (Organisation for Economic Co-Operation and Development [OECD] & The International and Ibero-American Foundation for Administration and Public Policies, 2015). Hence, not being aware of tax regulations can lead to involuntary tax evasion and, consequently, to lost funds for the society but also to fines for individuals (Kirchler et al., 2008). Furthermore, not understanding the societal importance of taxes can lead to non-compliance as well. Recent studies find that uncertainty concerning taxation issues among entrepreneurs constitutes a problem across the European Union (European Commission, 2017c).

In the countries of the European Union, however, only little research on tax literacy and tax compliance as well as on how to improve the understanding of students in the field of taxation has been done. A low level of tax literacy among several target groups was found by empirical studies in Malaysia, India and Australia (Bhushan & Medury, 2013; Chardon et al., 2016; Latiff et al., 2005). Furthermore, studies conducted in Norway, Germany and Hong Kong, employing an experimental design, found that an increase in tax knowledge leads to a more positive attitude towards taxes (Djawadi & Fahr, 2013; Eriksen & Fallan, 1999; Wong & Lo, 2015). Additionally, several cross-sectional studies carried out in Malaysia, Australia, Pakistan, Nigeria and Austria found significant relationships between tax knowledge and tax
compliance (Cechovsky, 2018a; Kirchler et al., 2006; Gangl et al., 2014; Oladipupo & Obazee, 2016; Palil et al., 2013). A rather low number of studies used interviews in order to further explore the tax knowledge of individuals including a study from Great Britain (Furnham, 2005). Based on this research gap, the goal of this study is to present young people’s conceptions and misconceptions of tax-related issues explored through problem-centred interviews which can then be used as an input for instruction in the field of taxation. The target group of this study are students from the fourth grade of business colleges in Austria. Business colleges in Austria can be described as five-year full-time upper secondary schools which lead to a university entry qualification and provide a business-related vocational education (Markowitsch & Hefler, 2018). One focus of the curriculum is entrepreneurship education. Therefore, the students learn how to develop a business plan and are taught several business-related subjects such as for example business administration, accounting, training firm (a model enterprise for training business related competences which is run by the students) or economics. In detail, the students should already have developed several tax-related competences as for example dealing with value added tax in accounting, filing tax returns and employee assessments (Bundesministerium für Bildung, 2014).

An analysis of the curriculum of business colleges in Austria shows that at the time the interviews were held, the students already had been taught tax-related content in the subjects accounting and business administration. In the first two grades six tax-related competences are taught in the subject accounting relating to value-added tax, the determination of the taxable income, personnel accounting and employee assessment. In the first semester of the fourth grade tax law is taught with regard to the difference to company law. Furthermore, in the first year of the subject business administration more general economic competences are taught such as the economic interrelations between actors of the economy which can build the basis for an understanding of taxes. Additionally, different contracts of employments are taught also from a tax perspective. All in all, the target group of this study has already gained a some understanding of tax-related issues (Cechovsky, 2018a, pp. 101–106). Therefore, the results of this study are of interest for teachers and school representatives, since they explicate the prior understanding for the focus on taxation which is integrated in the curriculum in the subject accounting in the end of the fourth grade.

In this paper first of all, insights into research from the fields of tax literacy and students’ conceptions and misconceptions are presented. Then, the research questions are outlined, the methods applied in this study are presented and the sample is described. Subsequently, the results are presented, starting with the students’ general associations concerning taxes, continuing with the students’ conceptions and misconceptions on income tax and value added tax and finally focusing on students’ conceptions and misconceptions of a recent tax reform. The results then serve as a base for recommendations for tax education at business colleges in Austria, which are presented in the final section.
2 Tax Literacy

Hofmann et al. (2008) compile a comprehensive review on the conditions of voluntary tax compliance. They focus on factors such as knowledge, attitudes, social norms, perceptions of fairness and motivational postures, which are considered relevant internal factors for tax compliance. In various studies the researchers discover that many people have a lack of knowledge concerning tax law, basic concepts of taxation and tax rates, all of them leading to an unfavourable attitude towards taxes (Hofmann et al., 2008, p. 2). Knowledge gained through personal experience and positive attitudes are seen as prerequisites for behavioural intentions (Ajzen, 1991), and consequently increase trust in the government and lead to tax compliance (Hofmann et al., 2008, p. 3). Several studies investigate the influence of social norms on tax compliance behaviour in various countries (Hofmann et al., 2008, p. 4).

In addition, a high perception of fairness seems to have also a positive effect on tax compliance (Hofmann et al., 2008, p. 5). The literature review suggests that internal variables are important for the tax payers’ willingness to coorporate (Hofmann et al., 2008, p. 7) and confirms Kamleitner et al.’s (2012) review on the tax compliance of small business owners. The latter’s goal is to develop a framework of factors influencing tax compliance (Kamleitner et al., 2012, p. 330). They seem to rely on a rather broad definition of small businesses (Kamleitner et al., 2012, pp. 331–332). It includes various forms of businesses that are centred around one single individual and decision-maker.

Researchers who adopt a psychological approach find three main characteristics that constitute the tax situation of small business owners (Kamleitner et al., 2012, pp. 334–340). Firstly, small business owners usually have a perceived opportunity of non-compliance since they do their taxes themselves. Secondly, filing the tax return requires comprehensive knowledge in order to be able to adhere to rules and regulations. Thirdly, paying taxes can be framed differently in human minds, small business owners mostly perceive paying taxes as a loss of money and as a limitation of freedom. The findings show that general knowledge as well as tax specific-knowledge impact the ability and the intention to comply with tax laws. Thus, the awareness for the necessity of taxes seems to have a positive impact on compliance. Furthermore, tax-specific knowledge is important in order to increase the ability to file a tax return and competently deal with tax-specific problems. Here, Kamleitner et al. (2012, p. 340) conclude that tax-related decisions are mainly influenced by perceptions.

Tax-related issues, however, have received fairly little attention in the research on students’ conceptions (Furnham, 2005, p. 704). There is only a small amount of studies that focus on students’ conceptions in the field of taxation. The methods that are applied in these studies, however, can be described as being more quantitatively oriented than focusing on the variations of students answers. Furnham (2005) for example interviewed 60 children between the age of ten and fifteen with the following questions: “(1) What does tax mean to you? (2) Who decides how much tax people have to pay? (3) What does the government spend
Vocational Business Students’ Conceptions and Misconceptions of Taxes

our tax money on? (4) Do people in other countries pay tax?” (Furnham, 2005, p. 706). The results show that the understanding of taxation increases with age. Furnham (2005, p. 710) concludes that a full understanding of taxation, which would include the differentiation of types of taxes, who is responsible for decisions concerning taxation and why people have to pay taxes, will probably be developed by the late teenage years. However, a similar questionnaire study by Furnham and Rawles (2004, p. 19) among 247 British students at the age of 19 shows that they still only have a basic technical understanding of taxes. The authors ascribe this to the fact that most students had not yet paid income tax (Furnham & Rawles, 2004, p. 19).

Many studies focusing on tax literacy define tax literacy as a part of financial literacy (Cvrlje, 2015, p. 156). Financial literacy is mainly concerned with personal financial issues as for example the widely used definition by Atkinson and Messy (2012, p. 14) shows: “Financial literacy is a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing.” This, however, would limit the content of tax knowledge to the individual tax return. Applying the research background of economic literacy to tax literacy as it is done in this study includes a broader tax knowledge. Economic literacy comprises next to content important for the individual, an understanding of macroeconomic issues (Beck, 1989; Schumann et al., 2011) and recent economic developments (Holtsch & Eberle, 2016). Therefore, tax literacy within this study is defined in accordance with Cechovsky (2018a, p. 22) as “tax knowledge concerning the individual and society, including recent developments”.

Next to knowledge also non-cognitive aspects such as interest, attitude and a tax compliance behaviour are part of the construct (Cechovsky, 2018a, p. 22). In this paper, however, the focus is on conceptions and misconceptions on an individual level and concerning a recent tax reform. The recent tax reform was included, since being aware of recent economic developments as already mentioned above, is an important part of an economic competence (Holtsch & Eberle, 2016). Furthermore, the tax reform led to substantial changes in the Austrian tax law including for example the introduction of a new value added tax rate and received a lot of media coverage (Bundesministerium für Digitalisierung und Wirtschaftsstandort, 2015).

3 Students’ Conceptions and Misconceptions

Knowing and using students’ conceptions and misconceptions as a teacher is a part of what Shulman (1986) describes as pedagogical content knowledge. He (1986, p. 9) points out that “pedagogical content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult: The conceptions and preconceptions that students of different ages and backgrounds bring with them”. Also, teachers need knowledge that exceeds
subject specific content. Therefore, research in the field of conceptions and misconceptions will continue to build the ground for effective instruction. At the same time, teachers need to develop strategies to build on conceptions and reorganise misconceptions (Shulman, 1986, p. 10).

As extensive research suggests, students’ conceptions are of major importance for teaching and learning. Since the 1970s research has emphasized students’ misconceptions that are inconsistent with expert knowledge (Smith III et al., 1994, p. 116). However, many articles focus on students’ conceptions and misconceptions in the field of natural sciences (Eryilmaz, 2002; Nakhleh, 1992; Yates & Marek, 2014). There is a vast variety of terms that are used in these studies: Preconceptions, alternative conceptions, naïve beliefs, alternative beliefs, alternative frameworks, informal knowledge or naïve theories (Smith III et al., 1994, p. 119).

Students’ conceptions and misconceptions were explored in connection with economic topics in the recent years too. Studies include the following economic issues: The free provision of goods and services (Davies & Lundholm, 2012), the economic crises (Aprea, 2015; Aprea & Sappa, 2014), the price (Birke & Seeber, 2011; Ignell et al., 2017) and economic principles (Busom et al., 2017). When analysing these studies three different research approaches become visible. While some studies focus on one approach only, other studies combine more than one of them.

The first one is based on the theoretical framework from cognitive psychology. The main interest of cognitive psychology is to uncover the biases and illusions that lead to misconceptions, which can then be actively addressed in a classroom setting in order to change the misconceptions (Marton, 2005, p. 143; Busom et al., 2017, p. 77). Based on this background Aprea (2015, p. 15), for example, analyses how and why students’ conceptions of the economic crises are different from expert knowledge or official representations.

The second approach, which is also based on cognitive psychology, focuses more on the conceptual change over time by applying two or more rounds of interviews. Ignell et al. (2017, p. 69), who adopted this approach define conceptions as alternative frameworks which can be held next to scientific explanations. Busom et al. (2017, p. 77) who studied the change in economic beliefs of students in the course of a semester, for example, want to find out "how well standard economic instruction does in challenging popular misconceptions".

The third approach is based on the phenomenographic research methodology. According to Marton (2005, pp. 143–144) phenomenographic research focuses on the possible variations in conceptions, and therefore the possible ways of perceiving a phenomenon. The main goal of phenomenographic research in education is to investigate students’ conceptions and misconceptions in order to find ways to change the conceptions from misconceptions to scientifically true conceptions (Marton, 2005, p. 155). This approach is for example adopted by Birke and Seeber (2011) who analyse the different understandings of economic phenomena. Furthermore, it is applied by Aprea and Sappa (2014) who identified four conceptions of
students concerning the financial and economic crises. Within this paper, the term misconception is used for students’ responses in the interviews being incorrect according to current tax law. The term conception represents the correct answer according to the tax regulations. Additionally, conceptions and misconceptions are defined as relevant prior-knowledge which serves as an input for instruction.

4 Research Questions, Methods, Sample and Data Analysis

Based on the research background of cognitive psychology and phenomenographic research described above, the following three research questions have been identified:

1. What different conceptions and misconceptions concerning taxes (in general, concerning income and value added tax and a recent tax reform) do students have? (phenomenography)

2. How do those misconceptions (of taxes in general, concerning income and value added tax and concerning a recent tax reform) differ from correct conceptions? (cognitive psychology)

3. What are the reasons for these misconceptions? (cognitive psychology)

In their analysis of journal publications Gurel et al. (2015) identify interviews as the most common way to learn about students’ conceptions. This is no surprise since interviews are able to shed light on the cognitive structure of students. Consequently, to identify students’ conceptions and misconceptions, problem-centred interviews (Witzel & Reiter, 2012) were conducted. Lamnek (2010, p. 333) postulates that problem-centred interviews can be characterised as a method that integrates both an inductive and deductive approach. Doing that the researcher develops a theoretical prior-knowledge before conducting the interviews. Hence, the interviewer is well prepared and more aware of the research area. The goal of the problem-centred interview is to motivate the interviewee through open questions to tell her or his ideas and thoughts concerning the research topic.

Theories and hypotheses of the interviewer, however, must not influence the interviewee. In order to ensure this peer feedback was sought at several stages of the research process. Furthermore, an interview guideline was developed and used. The guideline contains, among others, the following questions:

- What do you think about when you hear the term taxes?
- What is your experiences with income tax/employee assessment?
- What value-added tax rates exist in Austria? Why are there different rates?
- What do you remember from a recent tax reform that took place in Austria?

For this study the ethical guidelines on research published by the American Psychological Association (2017) were applied. Following these guidelines, information material on the study was developed. The regional school authorities as well as the principals and teachers were asked for their informed consent. Also, participating students (and their parents if the students were yet to attain legal age) were asked for their informed consent. Before the interview started, participants were informed about the project once more and anonymity was assured again.

Between the end of 2016 and the beginning of 2017, the author of this article conducted twenty-two interviews with students of Austrian vocational business colleges in Burgenland, Lower Austria and Vienna. Interview partners were regular students and those in talent programmes. The students were between 17 and 18 years old. The interviews length was between ten and twenty-five minutes and they were conducted in the schools’ meeting rooms or in the library and the school hall, respectively. A deductive sampling strategy was applied. The goal was to increase the variance of the sample in order to gain deeper insights. The relevant categories were gender, school location (urban and rural) and talent. In detail, 13 female and 9 male students were interviewed. The sample consists of 4 students from a program for especially talented students. Furthermore, 10 students are from schools in Vienna and 12 from schools in more rural areas in Austria. All in all, six schools took part in the project. The sampling was influenced by practical issues too, since the school authorities, teachers and students had to agree to being interviewed, therefore, the sample can be described as a convenience sample. Due to the small sample, no explicit analysis according to the sampling categories was conducted.

The interviews were transcribed and analysed according to Mayring (2015). Mayring (2015, p. 67) points out that the selection of a technique should be based on the research interest. Since a prior understanding of the categories was developed before the analysis, the technique of structuring was chosen, followed by summarising as explained below. For structuring, Mayring (2015) recommends defining which parts of the text are relevant for each category. These interview parts then qualify as example for each category. Finally, coding rules are defined in order to find a clear distinction between the categories. A trial analysis helps to further refine categories. Following Mayring (2015), these categories were applied to the interviews: First associations (answer to the first interview question), employee assessment, value added tax and tax reform. Based on the categories the interviews were filtered. Subsequently, the interview parts were paraphrased and subcategories were developed. An example of the summarising process is provided in Table 1. In a first step the quotes were paraphrased and brought on an equal language level. The second step consisted of filtering
the main meaning and generating further categories. In a final step, the new categories were outlined and overlapping generalisations were omitted.

Table 1: Example of the Interview Analysis

<table>
<thead>
<tr>
<th>Quote</th>
<th>Step 1: Paraphrase</th>
<th>Step 2: Generalisation</th>
<th>Step 3: Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Sales tax 20%, what else, there is the income tax, then the value added tax in the commerce . . ., then . . . yes there are a lot of other taxes (Laughs).&quot;</td>
<td>20% sales tax, value added tax, many other taxes</td>
<td>Types of taxes</td>
<td>First associations concerning taxes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Types of taxes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Positive associations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Public finance</td>
</tr>
<tr>
<td>&quot;According to my opinion taxes are relatively useful and important, because the government needs certain income and without taxes no schools or hospitals or insurance would be available. A lot of positive aspects would not exist.&quot;</td>
<td>Taxes are useful and important, positive services would otherwise not exist</td>
<td>Positive associations, useful</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taxes are used to finance certain public goods</td>
<td>Public finance</td>
</tr>
<tr>
<td>&quot;Basically what you pay to the government, in order to make sure that we can live how we live.&quot;</td>
<td>Taxes are what you pay in order to be able to hold the standards of living.</td>
<td>Public finance</td>
<td></td>
</tr>
</tbody>
</table>

5 Results

In this section first associations with the term taxes are described. Thereafter, the students’ conceptions and misconceptions of income tax and value added tax are presented. Finally, the conceptions and misconceptions of the students on a recent tax reform in Austria are outlined. In order to provide a comprehensive explanation, the three research questions (specified above) are answered in an integrated way. In detail, the conception or misconception is explained, followed by a description of how the misconception differs from a correct conception and an analysis of the reasons for the misconception or conception.

5.1 Associations With Taxes

To get a general view of the variations in students’ conceptions concerning taxes, the first step was to analyse the students' initial associations with the term taxes. After informing the
interviewee about the study as well as assuring anonymity, the interview was started with the open questions: "What do you think about when you hear the term taxes?" or "What is your first association when you hear the term taxes?". To ask open questions is a method used in phenomenographic research to uncover the relevance structure of individuals (Marton, 2005, p. 153). The results of the analysis of these first associations are shown in Table 2 below. Four different conceptions associated with taxes could be identified.

More than half of the students mention at least one type of tax during their first association (Category 1.1 in Table 2). Among the variety of tax types mentioned, the most frequent are the value added tax and the income tax, as the example quote\(^1\) in Category 1.1 in Table 2 demonstrates. Furthermore, students mention the capital gains tax, the municipal tax and the metro tax. The prominence of value added tax and income tax can be explained by the students experiences in the subject accounting where these taxes are dealt with but also by the personal relevance in the students’ lives. According to Eurostat (2016) income tax and value added tax, together with social contributions, are considered the most important tax categories in Europe. For 2015 the data shows that 17.6% of all taxes in the EU-28 are value added type taxes and 30.1% are classified as taxes on income. Taxes on capital only amount to 0.7%.

One student associates the term taxes with fees that must be payed when registering a car. Fees are, however, different from taxes, since for paying fees one is entitled to a service in return, which does not apply for taxes. This misconception can be explained by the student’s recent personal experience and the student is not able to differentiate between fees and taxes.

The example quote in Category 1.2 in Table 2 stands for one of the fifteen answers related to the field of public finance. This shows that most students are aware that the government uses the tax money to finance public goods. This can be explained by the everyday experience with public goods as for example schools or public transport.

Five students evaluate taxes as something important or positive during within their first reply, as the quote in Category 1.3 in Table 2 illustrates. Positive associations originate in the availability of public goods that are financed through taxes.

Five students mention that they view taxes negatively (Category 1.4 in Table 2). One student has positive as well as negative associations with the term taxes in the first question. A very negative evaluation is represented by the quote in Category 1.4 in Table 2. The negative associations are mostly justified by the large amounts of money that has to be spent on taxes.

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\(^1\) Since the interviews were held in German, the interview transcripts were translated into English.
Table 2: First Associations With Taxes

<table>
<thead>
<tr>
<th>Number</th>
<th>Categories</th>
<th>Description</th>
<th>Example quote</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Associations concerning types of taxes</td>
<td>Types of taxes are named.</td>
<td>&quot;Sales tax 20%, what else, there is the income tax, then the value added tax in the commerce . . ., then . . . yes there are a lot of other taxes (Laughs) spontaneously I do not recall so many of them.&quot;</td>
<td>12</td>
</tr>
<tr>
<td>1.2</td>
<td>Associations concerning public finance</td>
<td>Payments to the government and what is financed through taxes is mentioned.</td>
<td>&quot;Basically what you pay to the government, in order to make sure that we can live how we live.&quot;</td>
<td>15</td>
</tr>
<tr>
<td>1.3</td>
<td>Positive associations</td>
<td>Positive evaluation of the tax system or parts of it is given.</td>
<td>&quot;According to my opinion, taxes are relatively useful and important, because the government needs certain income and without taxes no schools or hospitals or insurance would be available. A lot of positive aspects would not exist.&quot;</td>
<td>5</td>
</tr>
<tr>
<td>1.4</td>
<td>Negative associations</td>
<td>Negative evaluation of the tax system or parts of it is given.</td>
<td>&quot;When I hear taxes my first thought is a negative one. One has to pay and fees, (…). That is the first thing that comes to my mind.&quot;</td>
<td>5</td>
</tr>
</tbody>
</table>

5.2 Income Tax

All over the world various forms of organising income tax assessment exist. One major difference is whether tax payers assess the income tax themselves or whether the revenue body assesses the tax payable (Robinson & Slemrod, 2012, p. 243). A self-assessment system requires a more elaborate system of control and penalties, since the tax payer has more possibilities for non-compliance (James & Alley, 2002, p. 37). A system that relies on assessments by the tax authorities entails higher administrative costs. Austria relies on tax assessed by the revenue body. In order to be able to analyse the students’ personal experience with income tax, the employee assessment was chosen as one situation, were students have to get in contact with tax authorities. In Austria, even if individuals are employed only for one month a year (e.g. in an internship), income tax is still calculated on this monthly basis and as if they had worked the entire year. In order to receive the tax refund resulting from this temporary miscalculation, a form provided by the revenue body must be filled out, either on paper or online (Federal Ministry of Finance, 2016, p. 13).\footnote{This regulation has been revised in 2017, and the tax credit is now returned automatically under certain conditions (Federal Ministry of Finance, 2017).}
The answers in Table 3 show that only a low number of students has already filed an employee assessment (Category 2.1 in Table 3). Still most of the students have already work experience. Most students have not yet any experience with this task (Category 2.2 in Table 3). One reason is that their parents handle this task for them as shown in the example quote in Category 2.2 in the table below. The quote strongly suggests that the student does not take responsibility for tax-related issues, despite the fact that the student attends a business college. Still, some students say that they were going to file an employee assessment in the future (2.3 in Table 3). There are, however, many insecurities on why this is done. Only four students offer an, not always correct, explanation. These answers include working only for one month (see example quote Category 2.4 in Table 3), not having a regular income and having paid too much taxes. They can be seen as correct conceptions, although not detailed ones. A misconception is the answer that being a student brings tax advantages. This misconception can be explained by the fact that the students do not see themselves as taxpayers but rather as students, who do not yet participate in the real economy (Cechovsky, 2018b).3

Table 3: Personal Experience With Employee Assessment (Cechovsky, 2018b, p. 475)

<table>
<thead>
<tr>
<th>Number</th>
<th>Categories</th>
<th>Explanation</th>
<th>Example quote</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Filed</td>
<td>Students mention that they conduct an employee assessment themselves.</td>
<td>&quot;I got a form from the tax office, completed and returned it.&quot;</td>
<td>5</td>
</tr>
<tr>
<td>2.2</td>
<td>Not filed</td>
<td>Students mention that they did not conduct an employee assessment themselves.</td>
<td>&quot;I did not do it but my mum did it.&quot;</td>
<td>13</td>
</tr>
<tr>
<td>2.3</td>
<td>Plans to file</td>
<td>Students have not yet conducted an employee assessment but have specific plans of doing it in the near future.</td>
<td>&quot;No, I will do it this year. So, I will do it this January. I did not know that this can be done for a summer job. Our accounting teacher told us. And she said that one can do it for the previous year too. And so I will do it in January or February.&quot;</td>
<td>4</td>
</tr>
<tr>
<td>2.4</td>
<td>Reasons</td>
<td>Students offer an explanation why one gets money back when doing an employee assessment.</td>
<td>&quot;Well, because I worked for this one month only. Because I am not employed regularly and something with the marginal earnings threshold it is not, but because it is for one month only.&quot;</td>
<td>4</td>
</tr>
</tbody>
</table>

3 Further aspects concerning students’ understanding of the tax system from a public finance perspective can be found in Cechovsky (2018b).
5.3 Value Added Tax

According to the European Commission (2017b), almost all EU member states apply a standard value added tax rate and one or two reduced value added tax rates. Standard value added tax rates range from 17% in Luxembourg to 25% in Denmark, Croatia and Sweden. Within the European Union, reduced value added tax rates are limited to certain categories of goods and services: Foodstuffs, supply of water, pharmaceutical products, certain medical equipment and aids, transport of passengers, books, newspapers, periodicals, admission to cultural services and amusement parks, TV, services by artists, writers and composers, social housing, renovation, cleaning in private households, agricultural input, hotel accommodation, restaurants and catering. The decision to change value added tax rates for these categories is made in the member states.

Table 4 gives an overview of the students’ conceptions and misconceptions of the value added tax. The first two categories focus on the number of correct answers concerning value added tax rates, whereas Category 3.3 and 3.4 relate to the explanation why different rates exist.

All students are familiar with the term value added tax and are aware that this is a tax that has to be paid when purchasing goods or services. Also, many students associate the term with the deductible input tax (in German Vorsteuer), which is part of the accounting curriculum in business colleges (Bundesministerium für Bildung, 2014). However, they are not able to explain why companies are eligible to retain the input tax.

Most students name examples of goods and their value added tax rates. Categories 3.1 and 3.2 in Table 4 show all examples and whether they are correct or not. Most frequently mentioned are the categories of food, beverages and books, probably because of personal experience from purchases with pocket money. Nineteen examples are associated with the correct value added tax rate. The example quote in Category 3.1 shows that the student has an extensive knowledge of the altered tax rates as introduced with a recent amendment to tax legislation in Austria. This student only mentions one incorrect rate, the one for bus tickets. This misconception stems from the fact that the rate of passenger transport with planes is taxed with 13%. Altogether, eleven rates are given incorrectly. A common misconception is that the reduced rate of 10% value added tax is charged for beverages as shown in the example quote in Category 3.2. This misconception can be explained by the students thinking that food and beverages are taxed the same. Another misconception concerning tax rate is that there is a value added tax rate of 19% in Austria. In Austria, however, this rate exists just in two areas which are under German custom regulation. Therefore, this misconception can be explained by confusing German and Austrian tax regulations.

Around half of the students can give a suitable reason for different tax rates (Category 3.3 in Table 4). They reason that a lower rate is levied on food since everyone needs it and it should be affordable for everyone, as the quote in Category 3.3 for example shows.
About half of the students are not able to give a reason for a distinction (Category 3.4 in Table 4). A misconception is shown in the example quote in Category 3.4, since reduced value tax rates are not connected with the price of a product but should ensure the affordability of necessary goods. An explanation for the confusion of the value added tax rates and the missing ability to explain the existence of different rates is that they are learned as factual knowledge with no further explanation of why the difference exists.

Table 4: Value Added Tax

<table>
<thead>
<tr>
<th>Number</th>
<th>Categories</th>
<th>Explanation</th>
<th>Example quote</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Value added tax rates: Correct</td>
<td>Correct examples of value-added tax rates.</td>
<td>&quot;They have now, increased for example on dog food, this is now 13%, books are now (.) I am not sure 10 or 13%, food is 10%, drinks are 20%, except milk, I think are 10%. Err bus tickets or something like that is increased to 13%, tickets for a football match that is 13%.&quot;</td>
<td>19</td>
</tr>
<tr>
<td>3.2</td>
<td>Value added tax rates: Incorrect</td>
<td>Incorrect examples of value-added tax rates.</td>
<td>&quot;So I do not really know it. But I suspect that beverages are 10%, are they? I think so. Beverages should be affordable for everyone.&quot;</td>
<td>11</td>
</tr>
<tr>
<td>3.3</td>
<td>Different rates: Essential goods</td>
<td>Explanation for differences in tax rates is that essential goods are made less expensive.</td>
<td>&quot;I think, that they do not want to charge high taxes on food and beverages, since those are everyday goods that we need and otherwise the goods would be more expensive, this would not be good. Then we could not afford it anymore.&quot;</td>
<td>10</td>
</tr>
<tr>
<td>3.4</td>
<td>Different rates: No explanation</td>
<td>Correct examples of value-added tax rates.</td>
<td>&quot;Why is it like that? Good question! I don't know. I know that the rate for cinema was increased recently. I know that, this seems a little bit weird to me. But why are there different rates? Maybe because the goods have different prices? I don't know.&quot;</td>
<td>11</td>
</tr>
</tbody>
</table>

5.4 Tax Reform in Austria

A tax reform presents one approach to increase the efficiency of a tax system. This approach, however, has to be tailored to the economic and legal situation of the country (European Commission, 2016b, p. 17). A trend starting in 2014/15 in the European Union shows a shift from taxing labour to taxing capital. Tax reforms intending to cut labour tax are a method to increase employment. In order to finance an income tax reform, there has also been a trend towards an increase of taxes on consumption and recurrent property tax since 2010. Apart from Austria, also Croatia, Portugal and Finland recently put a reform into effect to decrease personal income tax (European Commission, 2017c). Table 5 illustrates the students’ concep-
tions and misconceptions of a recently introduced tax reform in Austria. It shows that more than half of the students remember some details of the reform.

The 2015/16 tax reform in Austria comprises amendments to twenty different laws (Bundesministerium für Finanzen, 2015). The most important alterations include changes in the income tax rates, various changes concerning deductions and allowances, changes concerning social security insurance, changes in the rates of the capital gains tax, changes in the property transfer tax and changes in the value added tax rates (Bundesministerium für Digitalisierung und Wirtschaftsstandort, 2015).

Four students do not even know that a tax reform had been passed (Category 4.1 in Table 5). Four more students remember that they heard about it but cannot recall any details as the quote in Category 4.2 illustrates. Not remembering the reform or not recalling details about it can be explained by the perceived irrelevance of tax-related issues for students.

More than half of the students had heard about and remember some details of the tax reform (Categories 4.3, 4.4 and 4.5 in Table 5). Most statements refer to the changes in the value added tax and the income tax. As regards the value added tax (Category 4.3 in Table 5), many students remember a change in the tax rate in general. However, only one student is able to mention various examples. Another wrongly remembers an increase in the tax rate for cigarettes. Major changes in income tax are summarised by a student with the sample quote in Category 4.4. This conception is consistent with scientific explanations.

There are also misconceptions about the new income tax legislation. One student wrongly remembers an increase in income tax: "We talked about it [the reform] a little bit at home because the income tax was increased, wasn't it? But none of us was directly affected by it". This misconception can stem from solely remembering that the situation for people who earn a high income have to pay a higher share of income tax, but not recalling that the situation improved for lower income people.

Another student mentions the change in the property transfer tax because the student’s family is affected by it: "Yes, my family has been affected by it, for example the inheritance tax was increased – at least I think it was so. And the property transfer tax". This again supports the explanation that students do remember details of a reform only if they are of immediate importance for them or their family. Furthermore, the student wrongly remembers a change in the inheritance tax which does not exist in Austria. This misconception can stem from a confusion with the property transfer tax which is also levied when getting a property free of charge, which is the case when a property is inherited.
Table 5: Tax Reform in Austria

<table>
<thead>
<tr>
<th>Number</th>
<th>Categories</th>
<th>Explanation</th>
<th>Example quote</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Not heard about</td>
<td>Student has not heard or read about the tax reform.</td>
<td>&quot;No, tax reform, I do not know anything about this.&quot;</td>
<td>4</td>
</tr>
<tr>
<td>4.2</td>
<td>Heard but no memory on details</td>
<td>Student has heard or read about the tax reform but does not recall details.</td>
<td>&quot;Yes, noticed. Err I have heard of the tax reform. We shortly covered it in the subject accounting. But I do not remember anymore what happened. But I have heard of it.&quot;</td>
<td>4</td>
</tr>
<tr>
<td>4.3</td>
<td>Value added tax</td>
<td>Conceptions and misconceptions concerning changes relating to the value-added tax.</td>
<td>&quot;I only know that the VAT rates on books have been changed.&quot;</td>
<td>6</td>
</tr>
<tr>
<td>4.4</td>
<td>Income tax</td>
<td>Conceptions and misconceptions concerning changes relating to the income tax.</td>
<td>&quot;I only know, that there have been three rates for income tax and now there are five and this is fairer now and most people have more money remaining after tax. Except maybe the very rich ones, because they fall into the highest tax category (laughs).&quot;</td>
<td>6</td>
</tr>
<tr>
<td>4.5</td>
<td>Property transfer tax</td>
<td>Conceptions and misconceptions concerning changes relating to the property transfer tax.</td>
<td>&quot;Yes, my family has been affected by it, for example the inheritance tax was increased – at least I think it was so. And the property transfer tax&quot;.</td>
<td>1</td>
</tr>
</tbody>
</table>

6  Summary and Discussion

There are several limitations to this study. First of all, the target group of Austrian students from business colleges is very specific. These students do have a prior knowledge in business administration and accounting topics. Therefore, one has to be cautious in interpreting and generalising any results. Moreover, some results are specific to regulations in Austria. Therefore, further studies should focus on different countries and other target groups. Furthermore, no explicit analysis according to sampling categories was conducted due to the small sample. This could be considered as an interesting research question for further studies as well.

Students from business colleges in Austria between the ages of 17 and 18 are a relevant target group for exploring conceptions and misconceptions concerning taxes. They already have some money at their disposal and, therefore, act as consumers and pay value added tax. In addition, they earn money for the first time by doing internships or working part-time. Also, they are allowed to take part in the democratic process of elections which enables them to influence tax-related policies. Some of them even start thinking of business ideas and
starting a company, since the curriculum of this school is targeted towards entrepreneurship education (Bundesministerium für Bildung, 2014).

The first associations indicate that a misconception concerning fees and taxes exist. This misconception has found to be a common one by a quantitative study conducted among 688 students from business colleges at the same age (17 to 18) in Austria (Cechovsky, 2018a, p. 148). This questionnaire study found that one third of the students did not know that they are not entitled to a specific service in return to tax payments. When looking at this misconception from a cognitive psychology point of view (Marton, 2005; Busom et al., 2017), the bias might stem from the interchangeable use of the terms fees and taxes in everyday language. Teachers should be aware of this common misconception. This can be classified as pedagogical content knowledge according to Shulman (1986), which should be addressed in teacher trainings for inexperienced teachers. The new teachers should be taught to explicitly discuss common misconceptions in the classroom. The curriculum shows that no explicit competences on the basic principles of the tax system are taught. These basic competences could be integrated in the first year in the subject business administration in order to build a basic economic understanding for further tax-related content. Furthermore, the first associations include positive as well as negative evaluations of taxes, which can be related to tax compliance as found out by Hofmann et al. (2008). It would be of interest to further study this relationship.

The interview results on the income tax show that students are often not aware of tax-related issues on an individual level. This becomes visible since many students have not yet filed an employee assessment. These findings are in line with other studies in this field (Furnham, 2005; Furnham & Rawles, 2004). Not filing an employee assessment in the case of an internship, however, leads to a loss of money for the individual. Most of the students have already worked, still they do not perceive themselves as taxpayers. From a phenomenographic point of view (Marton, 2005) it is of interest to look at the different explanations for getting a tax credit when filing an employee assessment and how these could be addressed by teachers in class in order to change them. A further possible starting point could be the structure of the curriculum. On a curricular level, in the subject accounting the content very much focuses on business-related issues. In order to foster an understanding on the individual level, the tax-related issues for the private individual should be integrated earlier in the curriculum and can build the basis for the perspective of the company owner. This would help to connect tax-related issues to the students’ life situations. Furthermore, teacher training should convey that also for practical tasks it is not sufficient to focus on “how it is done” but also the question “why it is done” is of importance.

Value added tax is a tax that students are usually familiar with. However, students lack a deeper understanding of the reasons for different tax rates. This makes it harder for them to remember the goods and services that differ from the regular value added tax rate. Yet,
instruction should not only focus on factual knowledge concerning the different value added tax-rates but also convey background information on the reasons for and effects of different value added tax rates, since half of the students were not able to provide a reason for the difference. As pointed out in the theoretical section the uncovered misconception, for example that food and beverages are taxed the same, should be actively addressed in a classroom setting (Marton, 2005; Busom et al., 2017). Thus, teachers could for example discuss the different value added tax rates by focusing on the reasons why they exist, which makes it easier to understand and remember the main differences in rates.

Tax reforms frequently occur in all countries of the European Union (European Commission, 2016b). The results of the interviews on a recent major tax reform in Austria show that changes in tax regulations lead to confusion. Furthermore, the tax reform was not even recognized by all students and only some remember certain details about it. This leads to the conclusion that students are only interested in tax-related issues if they or their family is directly concerned with it. Therefore, tax reforms as well as their impact for the private person and businesses should be part of the instruction in the subject accounting in order to make sure that the important changes are recognised and understood by the students. Tax reforms from a governmental view can be integrated in the subject economics.

To conclude, it needs to be stressed that tax education is an important part of economic education that should be part of a European civic education. Furthermore, tax education should next to information important for personal taxation issues such as filing an income tax return, offer information on a societal level as the definition on tax literacy suggests. Knowledge of the tax system as a whole and being aware of the need for public goods in a country, as well as the effects on a society, can contribute to the understanding why taxes and tax compliance are vital.

References


**Biographical Note**

Dr Nora Cechovsky is a researcher at the Institute of Business Education at the Vienna University of Economics and Business in Vienna, Austria. Her research focuses on tax literacy as a part of a sound economic literacy. Furthermore, she has done research on teaching methods in soft skills development and in the field of teacher education.
Stories of Learning: A Case Study of Norwegian Plumbers and Apprentices in TVET at the Construction Site and in a Training Agency

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Abstract

Context: Through a dual model, based on 2 years of education in upper secondary school followed by two and a half year of apprenticeship training, Norwegian plumbing education has become an integrated part of the Technical Vocational Education and Training (TVET). Competence and skills are described in national plumbing curriculum. However, there is little information on how learning and training, interaction and relations between craftsmen and apprentices take place and develops at the workplace. The objective of this article is to identify significant learning processes by studying apprentices in a training agency and in communities of plumbers at the building site.

Approach: The study has an ethnographic approach, based on a combination of fieldwork and interviews with apprentices, plumbers and a vocational teacher. During one year of fieldwork I followed a group of plumbing apprentices in a training agency, and in their plumbing companies at different construction sites. As a former plumber and vocational teacher, I was able to participate as a plumber and researcher and thus I had a unique position to work along with the apprentices and plumbers. This enabled me to observe interaction, learning and training in their communities of practices as an insider.

Findings: The study showed that the process of learning practical skills, a professional language and a technical rationale was time consuming, challenging and sometimes tiering. In return the apprentices discovered proficiency, gained confidence and were considered as

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participants in the community of plumbers. A central finding is the great value of working in a community of plumbers at the building site, combined by studying sanitary and heating technology at the training agency. Among peers at the training agency, the apprentices were challenged to build and explore complex pipe laying, and to discuss technical regulations and rationale with each other and the vocational teacher.

Conclusion: Craftsmen, like plumbers, consecutively handle a variety of technical work tasks and situations. Inside practice, the plumbers are close to materials and systems on construction site, where pipes, cableways and building structures looks different from the plan and the progress on paper. As experts, the plumbers often solve problems more functional and cost effective than suggested in the blueprint. The study shows how apprentices and plumbers develop skills, tacit knowledge and professionality through involvement with relevant things and situations, and by sharing experiences and technical expertise in communities of peers and plumbers.

Keywords: Training Enterprise, Training Agency, Apprenticeship, Body and Senses, Inside and Outside Practice, Tacit Knowledge, Drawing and Storytelling, Vocational Education and Training, VET

1 Introduction

Craftsmanship has a long tradition of learning in the world of work. Working alongside skilled workers, apprentices participate in the daily work. Through having active positions inside the professional community of practice, the apprentices talk, watch, and listen to skilled craftsmen, become familiar with tasks, tools and materials, and gradually become skilled workers (Eikeland, 2015). In Norway, apprentices in crafts such as plumbing, attend a training agency specially designed for the plumbing profession.

In this article, I study interaction and learning processes in communities of apprentices and plumbers in Norwegian training enterprises on construction sites and in a training agency. Interaction and communication among the craftsmen, the company manager, and the architect are pivotal to ensuring a high quality of work and progress, of procurement, and of management of supplies and equipment. Learning and training at the workplace are analysed in the language of situated learning theories and social-constructive perspectives (Brown et al., 1989; Dewey, 1916; Illeris, 2006, 2015; Lave & Wenger, 1991; Merleau-Ponty, 2002; Wenger, 1998).

As a researcher with a background as a former apprentice, plumber, plumbing engineer and vocational teacher, I am confronted with my personal experiences in all levels of this study. Hence, I have worked deliberately to balance distance and proximity to my informants, during the data collection and through the analysis. The study has a qualitative approach, and
the empirical findings build upon rich field notes from one year of participating observations in one training agency and at three construction sites, dialogue, group interviews with two communities of plumbers, and in-depth interviews with nine apprentices, two plumbers and one vocational teacher in a training agency.

After an introduction to the study, I present the Norwegian context and the theoretical framework, followed by the research context and method. I then present the findings and discuss how the apprentices learn to be plumbers through interaction and communication with relevant things and comprehensive work tasks, and how they construct understanding of plumbing and a professional language through interaction and communication with plumbers, their peers, and the vocational teacher at the training agency. Furthermore, the analysis shows that responsibility, professional knowledge, and autonomy are strong incentives for plumber's involvement and problem-solving at work. The findings show how experienced plumbers obtain and share rich data through vocational storytelling and how they use experiential learning to perform comparative analyses of "situated" (former and current) problems at the construction site.

2 Plumbing Education and TVET in Norway

The Norwegian TVET model entails two years of education in upper secondary school followed by two years of apprenticeship training. The (2+2) dual model was established in 1994 and consisted of a large number of general subjects, a one-year basic vocational course followed by a one-year specialisation in upper secondary school. Under the reform "Knowledge Promotion Reform" in 2006, the second year of plumbing was replaced by a broader two-year programme in building and construction. Vocational training in plumbing is provided mainly during the apprenticeship period, although the apprenticeship period was shortened under the Reform94. In 2008, following extensive pressure from the plumbing industry, the education authorities agreed to extend the apprenticeship for plumbers to 2 ½ years, and in the new VET curricula to be implemented in the school year 2020/21, specialisation in plumbing will be reintroduced as a second-year course in upper secondary school.

To maintain the level of the journeyman's certificate most of the Norwegian plumbing companies cooperate with a training agency. Training agencies are often run by a vocational pedagogical staff who follow the apprentice and share the responsibility for training of the apprentices with the training enterprises (Nore, 2015). At the training agency in plumbing, the apprentices are trained in technical drawing, sanitary and heating technology and practical tasks – normally for one day a week in the final year of their apprenticeship period. A Norwegian training agency is a private enterprise representing several member companies. Public funds, following the apprenticeship contract, are used to finance the operation of the training agency (Norwegian Directorate for Education and Training, 2020). An elected
board, representing the member companies and the training agency, decides how the funds are to be used and how to organise the training agency. In this study I focus on apprentices and plumbers, learning and training processes in training enterprises and on a training agency during the work-based part of the TVET dual-model.

3 Social-Constructivism and Situated, Work-Based Learning

The nature and meaning of the work environment has always been essential to becoming a craftsman. The craftsman’s work and learning environment consist of materials and tools, the location and task, and most importantly, the social and professional environment of skilled workers in the community of practice (Lave & Wenger, 1991). Although learning often takes place while tasks are being performed, it does not look as if much teaching is going on. In fact, teaching very rarely occurs as an identifiable activity; instructions or explanations are communicated – while plumbers and apprentices perform their tasks (Jordan, 1989). The properties of things, such as the size and shape of a pump, its weight, surface, sound, colour and temperature, present variations of phenomena that become meaningful through engagement in the work task, such as laying pipes. In order to perceive things, Merleau-Ponty points out that “we need to live them” (Merleau-Ponty, 2002, p. 379). When we are in touch with things, our perceptions are immediately “translated” to our body. When our senses detect a scent, a breeze or a taste, it is sometimes difficult to explain what we perceive in words, but through our senses we can recognise specific details, a face or a situation. According to Merleau-Ponty, this is based on an implicit understanding that the body’s consciousness perceives the symbolism in the thing and links each sensory quality to the rest of the body, including experiences already perceived (Merleau-Ponty, 1994). Technical crafts like plumbing always depend on things, and often it is in the craftsman’s hands, before his or her eyes, that a thing’s potential and limitations emerge (Merleau-Ponty, 2002; Tesfaye, 2013).

Merleau-Ponty’s phenomenology and his understanding of subjectivity lead in many ways to Dewey’s (1916) experience and enquiry-based approach to learning (Gibson, 2016). Like Merleau-Ponty, Dewey values the knowledge of “how to do”: “How to walk, talk, read, write, skate, ride a bicycle, manage a machine, calculate, drive a horse, sell goods, manage people and so on indefinitely” (Dewey, 1916, p. 201). All these examples of action skills are acquired through hours, sometimes years of training and practice, and contain embodied, tacit knowledge which is often hard to describe or to identify as explicit knowledge. Similarly, the tacit communication between the craftsman and the thing, are often difficult to explain in words. Gamble’s (2001) study of cabinet makers shows how apprentices communicate and develop tacit knowledge while engaged in intensive woodworking, most of the time without any corrections from the master-trainer. Explanations about the construction, such as to “foresee or understand” a requested angle or a specific shape in the piece of wood, were visualised by
drawings and rough sketches referred to as a “third language”, while at the same time the master-trainer encouraged the apprentices to think and visualise while working. As an “outsider”, Gamble (2001) experienced how difficult it was to understand how the master-trainer and the drawing teacher communicated with the apprentices simply by setting the task, checking the apprentices’ drawings, and showing them where they had gone wrong and how to fix it: “It took the observer a long time to work out that what she was observing was tacit transmission of the capability to ‘see’ what is there and what is not there” (Gamble, 2001, p. 188).

As an aspect of social practice, the apprentices involve their whole person in the social community and in its wide systems of meaningful relations. These specific systems of relations occur, reproduce, and develop in social communities, which means the relations not only define learning a craft, but also construct an identity (Lave & Wenger, 1991). When Schön (2009) argues that “our knowledge is in our actions”, he refers to how our senses and behaviour respond to the situations and the materials we deal with in everyday life. From my experience as plumber, I know that from a bundle of pipes the plumber builds a pipe system based on principles and functions in the heating system, where the water, temperature, and pressure set the rules. The plumber makes sure the pipe dimensions match the heat demand of the radiators and builds the pipe system to make sure the exact amount of hot water can circulate and accomplish its mission. While he builds the pipe system in symmetric and parallel lines he makes threads and bends, and splits the pipes as the courses divide, avoiding possible traps that would impede flow, and making smooth connections to each functioning heating system. A plumber’s work is based on the customer’s specification. However, plumbing depends upon disciplines and rationales, such as tables, formulae, calculations, standards and regulations, as well as centuries of technical practice, testing and situated experienced knowledge within the world of plumbing. For every movement, there is an explanation for acting like this - and not like that.

Through years of practice, craftsmen’s expertise contains an infinite amount of embodied experience that is woven into senses, the intellect, or into the dexterity of the fingers and hands, a tacit knowledge that can only be rendered visible through practical work (Polany, 1966). Whether it be mathematics, manual dexterity or professional knowledge, the plumber uses embodied knowledge in every action, small or large (Dewey, 1916; Lensjø, 2017; Merleau-Ponty, 1994; Sennett, 2009). Illeris (2006, 2015) argues that all learning is situated; not only the interaction between human beings but also the context they create and the work they produce. In addition, the utility and purpose of every tool are invented by human beings and are the result of their ideas for use, meaning that it is impossible to understand any kind of interaction with the material world differently from interaction with the social world. However, becoming a competent plumber takes more than just being part of an environment. Illeris (2006, 2015) argues that learning implies two very different processes: External interaction between the learning and the person's social, cultural, and material envi-

One way to understand situated learning in the workplace is as a fostering process, where the purpose is to continue a certain profession. That is, to understand situated learning means that what you learn belongs in a specific context. Brown et al. (1989, p.4) explain this in a simple way: "It is quite possible to acquire a tool but to be unable to use it." The understanding of how to use plumber's tools to build a pipe system reflects the cumulative wisdom of the culture in which the tool is used and where the meaning is a product of negotiation within a culture and of practice in authentic activity (Brown et al., 1989). Empirical studies of situated learning emphasise the importance of knowing the history and cultural conditions of the profession as well as the rationale behind the work task. Lave and Wenger (1991) draw a distinction between talking about the vocation from the outside and being inside a community of practice. Talking about the vocation from the outside refers to a more general form of teaching the vocation, such as in school. Talking about the vocation from the inside refers to interaction in a community of practice where reflection-in action and reflection-on-action is crucial to understanding and using materials and equipment, progress and physical settings (Schön, 2009; Wenger, 1998).

4 Research, in the Context of Interaction and Communication at the Workplace

Learning potential at the workplace is broadly presented in the comprehensive studies of Stephen Billett (2001, 2006, 2008, 2014, 2016). According to Billett, occupational practices are not wholly subject to the actions of others but arise “through individual’s thinking and acting and mediation of what they experience” (Billett, 2016, p. 615). A central premise is that no distinctions are made between doing, learning and the remaking of (i.e. occupational) practice (Billett, 2014). Practice within an everyday occupational practice setting leads to rehearsal, refinement of procedures, and close guidance from other practitioners and experts (Billett, 2001). Furthermore, when individuals think and act in and through engagement in their work, they can utilise what they know, what they can do, and what they value, and thereby not only remake but transform their occupational practices (Billett, 2016). Based on such a view of individual learning, Billett argues that learning is deeply embedded in us, based on our experiences. He argues that personal epistemologies form the basis of individuals’ active knowing, engaging, and learning. These attributes are more than beliefs and extend to what individuals know and can do, including their embodied knowledge (Billett, 2016). The constant changes during the progress of work on a building site are recognisable in theories of
situating learning and how learning at the workplace is bound to a community of practice (Lave & Wenger, 1991; Wenger, 1998). According to Wenger et al. (2002, p. 27) a community of practice is a unique combination of three fundamental elements: “A domain of knowledge, which defines a set of issues; a community of people who care about this domain; and a shared practice that they are developing to be effective in their domain.” A strong community encourages the members to share ideas, to listen carefully, and to ask difficult questions. The domain denotes the topic the community focuses on, while the practice is a set of frameworks, documents, ideas, information, tools, styles, language and stories.

Fear et al. (2003) refer to how shared stories can help the members within a community of practice to solve problems by helping them to sense an impact or to visualise (through the mind’s eye) details or essential information that otherwise would be difficult to explain. Fear et al. go further and maintain that sharing a story is not only reserved for ongoing challenges, but that stories of “real people engaging in real work” also foster valuable connections between theory and practice (Fear et al., 2003). Stories are often told as the work is carried out, and Jordan (1989) point out that it should be remembered that the colleagues are experts: “Because of the way these stories were treated, elaborated, ignored, taken up, characterised as typical and so on, they contributed to understanding and solving issues in the present job” (Jordan, 1989, p. 935). Related to a specific situation, stories often contain thick descriptions about work situations and contexts. These stories are, according to Jordan: “Packages of situated knowledge, knowledge that is not available abstractly, but is called up as the characteristics of the situation require it” (Jordan, 1989, p. 935). Unlike cultures that document their knowledge in texts, oral cultures like craftsmanship store and share knowledge among the members of the community. According to Yang (2013), storytelling in oral cultures has multiple functions. In addition to sharing information and social and aesthetic pleasure, storytelling demonstrates one’s competence and identity as a craftsman and reveals one’s membership and status in the community (Yang, 2013).

5 Method

This study has an ethnographic approach, based on a combination of fieldwork and interviews with apprentices and plumbers. My own background as a plumber gave me access to the training agency and the construction sites, and was my “ticket” to participate as a professional member of the communities of practice. During my fieldwork, I followed a group of plumbing apprentices in a training agency for one year. Throughout the year, I followed two of the apprentices and their plumbing companies at different construction sites. In this article I present some of my findings from the training agency, but mainly I present findings from the largest construction site with four apartment buildings, each at a different stage in the building progress. Eleven plumbers and four apprentices worked on this site. As a member
of the group, I had a unique position to observe interaction and communication within the group of plumbers and apprentices. Working full days alongside my informants, I was able to follow the group during their morning meetings, coffee and lunch breaks, and all kinds of plumbing processes. The question of the position of the fieldworker seems to pose a challenge in qualitative research. Field positioning is described broadly in the anthropological work of Whyte (1981) where roles and positions in clubs and gangs are characterised by predictions, informal rules and mutual balance. More obvious is the otherness and vulnerability of the fieldworker in an institutional workplace like a health institution or a construction site, where all the workers have specific professional roles and positions. According to Van der Geest and Sarkodie (1998), qualitative researchers in an institution like a hospital or clinic find themselves out of place. Not being a doctor, nurse, other type of health worker or patient, makes their position somewhat awkward. Currently, it is more common for fieldworkers to engage in participating research, dressing like and following professionals (Agrosino & Mays de Pères, 2000; Hastrup, 2010; Ringer, 2013; Wadel, 2016).

From my position as a plumber and participating researcher, I soon discovered that to do research within my own culture was easy and more practical because of my familiarity with the cultural language and the plumbing profession. Within our own culture, there exists what Giddens (1993) calls "a mutual knowledge", meaning that the researcher in many ways can take advantage of the experienced, professional and cultural knowledge he or she shares with those who are being observed (Wadel, 2016). On the other hand, as a participant in my own culture I may not be able to see what might be obvious to a stranger. Aware of the probable "blind spots" in my observations, I was still very pleased to be a part of the plumber's community of practice on the construction site. From such a position, I was able to participate in discussions about the work progress and thereby understand what specific and underlying problems the plumbers had to deal with in their everyday work life. Also, through my own work tasks I was directly confronted with the same experiences as my informants, be it a lack of important pipes or fittings or collaboration problems with other occupational groups on the construction site. Through my position as a plumber, I was a participator in real contexts and situations, and it was easier to understand the strength of the plumber's anger and frustration – such as in a specific situation where we all were "overrun" by the project manager – because I could feel the injustice myself. While working as a skilled worker in the Norwegian community of plumbers, the other workers on the site got "used to" having me around. My presence gradually became a part of the everyday life on site. From then on, I was able to study communication and cooperation from a unique inside position.
My field notes and transcribed interviews consisted of rich and comprehensive data, and to analyse the texts I used a combination of open and axial coding in the form of the constant comparative method, as described by Glaser and Strauss (1967) and further developed by Charmaz (2014). To ensure coherence during this process, I found it necessary to adopt a hermeneutic approach to the analysis. Hence, I used a reflexive methodology from parts to a whole and vice versa, according to the basic version of Gadamer’s (1960, 1989) “hermeneutic circle” (Alvesson & Sköldberg, 2011). In this process of meta-perspective analysis, I consciously used my preunderstanding as a professional plumber, TVET teacher, and participant as an inside researcher, moving back and forth between pre-understanding and new understanding (Alvesson & Sköldberg, 2011).

6 Plumbing and Training at the Construction Site

At the time of my fieldwork, the plumbers and apprentices built technical rooms and pipe systems for radiators, underfloor heating, water and wastewater systems, snow melting systems and underground main water and sewage installations in four apartment buildings. The plumbing manager and the team leader both participated in weekly progress meetings with the other company managers and the site manager. On an everyday basis, the team leader was in charge of and cooperated with the plumbing manager, the site manager, and the plumbers. All the plumbing companies in this study were members of a training agency and had long traditions of apprenticeship training. The analysis shows that training is important within
the community of plumbers, and that the plumbers consider the young apprentices as pivotal participants and future colleagues. The analysis reflects how the plumbers really care about the way they treat the apprentices, and that the time they "invest" in the training soon will pay off in terms of both the work and the work environment:

If you don't care about the training, they [the apprentices] will never learn the difference between a good and a bad job. The earlier he or she learns, the earlier the training will pay off. There is no reason to shout and yell. No one makes mistakes on purpose. If they feel they are safe and accepted, they learn faster. You get what you give and if you treat them well, then it is possible to have a good working environment. If you are going to work as a plumber for many years, the environment is important. And, you never know, they may be your colleagues for the rest of your career. In a few years, they even may be your boss. (Plumber)

As newcomers, the youngest apprentices are often responsible for smaller and sometimes trivial tasks, such as drilling, picking up equipment and tidying up the storage areas, or preparing for a specific task such as carrying the necessary pipes, fittings and tools. During small and repetitive jobs, the apprentice must concentrate on the specific task. As a side effect, they become familiar with routines and rules and learn to interact and communicate with the plumbers and other workers on site. During my fieldwork, I watched how the youngest apprentice was doing a specific monotonous job for three weeks, and in the interview I asked him how he felt about that job: “Well, someone has to do it. Everything you do here at the construction site is important” (Apprentice). The feeling of being an active and significant participator in the plumber's community of practice gave a sense of affiliation and meaning. Doing real work and having the ability to plan and make one's own decisions stimulated feelings of responsibility and freedom:

At school, the teacher decided everything. As a student, you can't decide anything. And during breaks the teacher goes to the staff room and the students disappear in all directions. Here at the construction site, we decide a lot and we are together all day. (Apprentice)

Responsibility also triggered the apprentice's desire to be accepted by the plumbers. Because they were responsible for their own work tasks, the results depended on their own efforts, and the apprentices worked hard to deliver a good result. According to Merleau-Ponty (2002) and Dewey (1916), being an observer is quite different from being an active participant. Hence, in a peripheral role, the result is not that important. As a responsible actor however, the result depends on one's own efforts and ability to achieve it. If the result of the apprentices’ work measures their ability to be plumbers, the apprentices may feel that their future career and their position in the community depend on their results. Hence, they do what
they can to influence the direction of their work (Dewey, 1916; Illeris, 2006, 2015). When the
task is completed, fear of failure is replaced by the sense of accomplishment and motivation.
Through interacting and working side by side with the plumbers, the apprentices learn to
plan a work task and to keep to a deadline, they gain self-confidence, grow muscles, attain
manual dexterity and become familiar with the constitution of the community of plumbers.
They also acquire knowledge about a broad spectrum of issues such as politics, society and
family life, and gradually attain a professional and social position (Billett, 2001, 2016; Jordan,
1989; Wenger et al., 2002). In accordance with Lave and Wenger’s (1991) theories of situated
learning, the analysis of my field notes confirms the genuine impact the plumber’s commu-
nity had on being on the inside, as apprentices, with respect to the plumber’s language and
behaviour, their traditions of planning and doing work, and how they cooperated with other
workers, managers and customers (Willis, 2013).
   Every morning the plumbers gather in the plumbers’ main depot in the middle of the
site. Over a cup of coffee, they discuss and plan their day and the ongoing plumbing work.
New information from the site management means that the schedule and current plans need
correction. The analysis in this study shows that changes, delays and lack of – or wrong infor-
mation lead to great frustration among the plumbers. On the one hand, when the plumbers
put professional pride into their work, it feels demotivating when their efforts and their work
are treated solely as capital:

   They [the management] discuss and decide changes without informing me quite often.
Also, they know that I work overtime to keep up the schedule. They know that every
time I work overtime, I put my family and children on hold to finish the job. And when
the next morning they tell me that I have to tear it all down and rebuild it because of
some changes they decided days ago, then – I feel reduced to an object with no value,
except for the value of the money I generate through my work. (Plumber)

On the other hand, the plumbers know that disruptions cost time and money that weaken the
company’s capital and reputation, which in turn affects the employees: “Of course, we want
our company to do well. If the company does well, it means that our jobs and our future are
safer” (Plumber).

Regarding coordination of their work and the workplace, the analysis shows that the
plumbers take care of much more than just the plumbing. The blueprints always include in-
terpretations of constructions, technical choices and use of materials and equipment, and my
findings support Fear et al.’s (2003) assertion that “real people engaging in real work” fosters
valuable connections between theory and practice. Different ways of doing the same thing
create variety in work tasks, and in addition to everyday plumbing tasks, the analysis shows
that plumbers spend time discussing cost-effective and more functional ways to solve prob-
lems than suggested in the blueprint. In the actual context and situation, pipes, channels, and
cable bridges look quite different from the blueprint, and technical complexity and the workers’ professional choices affect real work. Billett argues that individuals can utilise what they know, what they can do, and what they value and thereby not only remake, but also transform their occupational practices (Billett, 2016). Through my fieldwork, I observed how skilled workers at the site communicated and managed to avoid upcoming obstacles, collisions, and delays as a natural part of their plumbing tasks.

7 Learning and Training at the Training Agency

The training agency was run by a vocational teacher with a background as a plumber and plumbing engineer. During my year of observations, the apprentices worked on key tasks in sanitary and heating - both comprehensive and complex - in order to recreate and identify real-world situations where the apprentices could practice using tools and materials, as well as develop professional rationale and language. To plan the practical tasks, the apprentices had to learn plumbing theory such as calculations and drawing, and to understand the consequences of their drawings and calculations, they had to build the pipe systems. While the apprentices worked in groups, they were free to use both the classroom and the workshop. In TVET school, theory and practice are often referred to as separate dimensions. Dividing comprehensive work tasks into different subjects and teaching theoretical and practical content in different arenas and at different times often leads to a lack of coherent understanding and learning. By separating theory from practice, there is also a risk that the theory lessons may become more general, less situated, and less related to real work (Hiim & Hippe, 2001; Hiim, 2013; Lensjø-Alvin, 2011; Spetalen et al., 2014). The analysis of my field notes indicates that misunderstandings between theory and practice are often revealed through practice. To identify, clarify and resolve problems and mistakes during everyday work, plumbers communicate through sketches and in a professional language based on key words and functional literacy from sanitary and heating technology. Just as important are linguistic expressions referring to unwritten knowledge in plumbing, containing occupational culture, history, and situated experience from professional practice in plumbing. As the apprentices in this study switched between working in plumbing companies at the site and once a week training at the training agency I observed how they quickly developed both a plumbing rationale and a professional plumbing language. While they worked in groups at the training agency, they were able to use their own language to discuss and compare use of materials, work tasks, and situations from their respective work experiences on site. With younger and less experienced peers, they could easily try out, start over and talk about ideas and thoughts they felt were difficult or impossible to talk about with the plumbers:
It’s exciting and very useful to meet others at your own level. It gives me confidence, because when we work in groups we open up and dare to speak, we try out and discuss what we mean and the things we have learned on site. We dare to say what we think and talk about different ways to do things. (Apprentice)

At first, the apprentices fumbled in both plumbing and professional communication. To be able to communicate at work, they tried to explain difficult situations by pointing or using informal language and “replacement words” like “that thing”. After a few weeks, it was obvious how they had changed their vocabulary and more often used professional expressions as a natural part of their communication. At the training agency the TVET teacher introduced them to key words and professional terminology along with basic principles of water, sewage, and heating systems. To unite theory and practice, the TVET teacher always repeated relevant theories and continuously encouraged the apprentices to explain and discuss the functions of materials, such as valves and pumps in the pipe system, in their own words. While the apprentices worked on plumbing tasks in the workshop, the teacher moved between the groups and encouraged the apprentices to describe what they were doing and asked them the names of pipes and parts:

We meet once a week at the training agency. Every time, I start by repeating what we did last week. Then I introduce them to something new: technical drawings, regulations or plumbing theory. Always related to practice. I explain and then I want them to repeat by using their own words. For instance, what is a collection pipe and why do we need sewer ventilation? How do we know the difference between storm water pipes and sewage pipes in the ground? What consequences will it have if you connect sewage pipes to a storm water system? Every time we repeat, they remember a little more. When they begin to understand basic terminology and how things relate to words, they get an ‘aha-moment’. Pieces are falling into place and suddenly they have gained an insight they can benefit from in several contexts and situations. Repeating and cramming. They are learning key words and plumbing terminology and using them in practice to explain work, things and functions. (TVET teacher in training agency)

Most skilled workers, like a plumber, can recognise phenomena related to situations and contexts, theories and regulations as well as skills, techniques, and procedures. To develop a professional language and to be able to put one’s knowledge into words is a complex and time-consuming process for the apprentices. Yet analysis of the interviews shows that the plumbers emphasise the importance of developing a professional language and rationale. To be a professional plumber means you can discuss certain situations with managers and the architect and thereby are able to interact, influence, and improve your own work. The teacher’s methodical repetition and use of terminology relate to the apprentice’s work tasks at the training agency, which in turn reflect core tasks in plumbing. At the training agency, ter-
minology and plumbing rationale become an increasing part of the apprentices’ reflections in and on practice (Schön, 2009). Back at the construction site, the apprentices recognise details in work as well as terminology and language in the plumber’s daily discussions in and on their actions and work tasks. One of the apprentices described how relevant content in practice and theory at the training agency made it easier to remember corresponding situations at the construction site, and how training and work emerged as holistic. Despite switching between two very different arenas, the apprentices expressed the feeling of being inside the same practice:

Here at the training agency, we have time to try and to fail. The teacher is good at explaining things. You need to be ‘alert’. And when you’re able to connect theory to real practice, it’s easier to understand. When we can connect theory to our practice here in the workshop, which we recognise from the construction site, then I understand a lot more. Things we have done at the construction site, and then we do the same things here at the training agency. Then, I recognise it and understand why we did this and not that. (Apprentice)

8 Interaction and Communication in the Community of Plumbers

Analysis of the field notes shows that the plumbers establish a professional and social environment based mainly on plumbing and on site questions concerning plumbing and work, on the ability to solve practical problems and to investigate, discuss and rationalise why things must be like this and not like that, and to construct mutual knowledge within the community of plumbers. How the plumbers articulate, visualise through sketches, and design their process within their community at the construction site is in accordance with Schön’s (2009) theory of reflective conversations about the situation and the context. Personal proficiency and experience in plumbing are highly valued within the community of plumbers. However, the older plumbers I met during my fieldwork never drew attention to their own knowledge or experience directly, nor expected any special position or treatment in the community of plumbers. On the contrary, they often spoke in a low voice. Every lunch hour, the plumbers started their break by updating each other on their progress. If needed, the plumbers drew sketches while depicting the problem and the situation. The plumbers often referred to similar situations that made it possible to compare and negotiate the current situation by telling stories.

After some weeks at the construction site, I observed the plumbing manager trying to figure out why a thermoblending valve was refusing to let hot water into the circulation pipes. As the plumber’s depot for materials was located near the hot water central, the plumbers
observed how the manager tried to solve the problem by opening and closing different valves, stopping and starting the pump, and checking if the temperature changed. Repeatedly he studied the blueprint and compared and watched every single part of the manifold. During lunch, the manager showed up at the plumbers’ table, presented the problem and asked for their opinions. The younger plumbers had several suggestions, but the manager had already tried them all, without success. Then the oldest plumber said quietly:

Well, I have found a couple of times that if the lockable unions connected to the thermoblending valve have been replaced with non-original unions, the non-return component inside the union may come loose and fly into the pipe. When they’re stuck inside the pipe, they stop the water from flowing. (Plumber)

At that moment, everyone around the table understood that the plumber was sharing experienced knowledge which otherwise would be impossible to guess or to discover by watching the pipes, reading textbooks, manipulating algorithms or studying routines or definitions they had acquired with apparent competence in school. There and then, they revealed that they had no idea how to deal with this problem. According to Brown et al. (1989), people who use tools and materials build an increasingly rich implicit understanding of the world in which they use them, and of the tools and materials themselves. Learning how to use a tool or understanding how fittings and pipes sometimes construct “invisible” or unforeseen problems inside the pipe system involves far more than can be accounted for in a set of rules.

Quite often, the plumbers told vocational stories in connections with plumbing problems on site. By using professional language and drawings to explain and compare complex situations, they shared experiences and exchanged and constructed mutual knowledge about plumbing. By analysing my field notes and transcribed interviews transversely, a deeper pattern within the plumbers’ communication emerged. In addition to providing rich and important data, the stories included specific variations and standards the plumbers could use to create analytical perspectives on their own practice. In their subsequent discussions, they separated and defined what was happening in the data (Charmaz, 2014). The vocational stories had comparable perspectives that helped the plumbers to organise, delineate, and capture the meaning of specific situation and hence to identify problems. By intuitively following Charmaz’ (2014, p. 120) code for coding, the plumbers used several approaches to compare actual themes and gerunds. By analysing relevant stories, adhering closely to the data and defining the actions on which they rested, they compared data with data, recognising tacit assumptions, and crystallising the significance and relevance of actions and meanings (Charmaz, 2014). In order to find similarities and differences, the plumbers compared incident with incident, action with action, location with location, material with material, and time with time, all based on a multitude of implications that could have a bearing on the specific case. Using comparative methods, they moved in circles from preunderstanding to understanding
and from parts to the whole - and the plumbers’ analyses took the form of a hermeneutic circle (Gadamer, 1960, 1989). According to Alvesson and Sköldberg (2011), the aim of hermeneutic processes is to search for and find meaningful signs within a written or oral text, a drawing, picture or social action, signs that may affect and enrich the pattern of interpretation during the dialogue and the hermeneutic process. Hence, while the plumbers’ stories were critically discussed and translated into new understanding, the conclusion always led to action where the plumbers tested, adjusted, and reconstructed the problem (Alvesson & Sköldberg, 2011; Charmaz, 2014; Schön, 2009). In addition to professional development in such hermeneutic processes, Lave and Wenger (1991) emphasise how vocational stories help newcomers to understand the community’s culture and history. Furthermore, by sharing experiences through specific stories, the plumbers generated mutual, professional knowledge across different levels of skills. By listening to the plumber’s discussions and professional stories, the apprentices learned how the plumbers used drawings and expressions, how they talked, listened and argued, and how their world was socially and professionally constituted (Illeris, 2006, 2015; Lave & Wenger, 1991; Wenger, 1998).

9 Concluding Discussion

In this study I followed apprentices and plumbers for one year of the work-based part of Norwegian TVET, which included three construction sites and one training agency. The analysis presents nuanced depictions of the apprentices’ and plumbers’ everyday life, and through stories of young apprentices’ individual learning processes the analysis illustrates how interaction within communities of craftsmen can consist of a prominent culture for sharing knowledge in order to solve problems, but also in order to create mutual understanding. This study shows how apprentices and experienced plumbers develop tacit knowledge and skills through their involvement with relevant things and situations, and how they share their ability and professional experiences through drawings and storytelling, as active participants inside their community of practice. Learning in plumbing has little to do with imitation, and more to do with the individual’s embodied perceptions of things and how plumbing requires time to learn through interaction and communication as essential parts of learning and work. Inside practice, the plumbers are close to materials and systems on construction site, where pipes, cableways and building structures look different from the plan and the progress on paper. This study shows examples of holistic and relevant education and training in a training agency combined with practice in a community of plumbers at the construction site. The analysis reveals the complexity in learning a profession that is based on interdependence between practical and theoretical knowledge. Despite all the differences between the training agency and the construction site, the analysis shows that the apprentices in this study experience that they are totally within the same practice of plumbing. To be within the same practice
depends on the extent of recognition in the learning content and the ability to be considered as a professional participator. To be considered a professional participator in a community of professionals is based on a deep understanding and acceptance of the constant need to try out, fail and start over and at the same time be able to watch, listen and discuss professionally with peers, plumbers and other professionals. The sense of achievement and personal growth breeds professional pride and has a strong impact on the learning process. The analysis shows that plumbers do more than plumbing, and that their work requires significant local knowledge as well as plumbing and construction knowledge. Through reflection in and over work the plumbers investigate personal epistemologies and solve problems as a natural part of their work (Billett, 2016; Schön, 2009). By drawing sketches and telling relevant vocational stories, the plumbers bring rich, comparative data into the ongoing situation. Through interpretation, the plumbers analyse, discuss, test out and construct new, mutual knowledge across skill taxonomies (Alvesson & Sköldberg, 2011; Charmaz, 2014; Lave & Wenger, 1991; Schön, 2009).

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Predicting the Future Competence Needs in Working Life: Didactical Implications for VET in Norway

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Abstract

Context: Two major challenges in professional and vocational education (VET) are low levels of relevance and coherence between the content of the educational program and developing competence in working life. This article is based on an action research project, conducted as a series of experiments at vocational upper secondary schools and during the basic course for postgraduate certificate teaching in professional education for professional educators in Norway. It was carried out with a focus on job-related professional education to meet these challenges. The project is based on a pragmatic theoretical perspective in professional didactical teaching.

Methods: The action research included experiments, observations, evaluations, qualitative questionnaires and interviews.

Findings: The results show empirical examples of didactical principles in job-related professional education; the core of these being the analysis of work tasks and work practice as a basis for curricula analysis and planning of teaching and assessing. This includes job-related planning of content, teaching and assessment according to comprehensive professional competence. The results also show challenges linked to job-related professional education.

Conclusions: The overall results show a need for the development of professional didactical teaching competencies that focus on job-related professional education, to meet the future needs for competence in work life.

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Keyword: Job-Related Professional Competence, Comprehensive Professional Competence, Job-Related Professional Content, Teaching and Assessment, Workplace Learning, Vocational Education and Training, VET

1 Introduction

The primary challenge in vocational and professional education (VET) in teacher training programmes is a lack of coherence; a gap between theory and practice, and between education and the need for competence in the workplace (Billet & Choy, 2013; Hiim, 2017; Sullivan, 2005). This is an important field of research, since VET is often perceived to be irrelevant for the professions it leads to (Billet, 2010, 2014; Hiim, 2016; Smeby, 2015; Sullivan & Benner, 2005). In Norwegian VET in upper secondary school, there is often disconnect between what is taught in school, and what is practiced in the field/work life (Dahlback et al., 2018). This is at least in part due to the generalised nature of teaching - it does not have a focus on the relevance and professional specialization required in VET (Dahlback et al., 2018; Ministry of Education and Research, 2015-2016). Other examples from VET at the university level are challenges because content in teaching and the assessment methods (for example in nursing and police education), are based on disciplinary theory instead of actual work tasks (Sylte, 2018).

A key teaching target in Norway is that teacher education should involve coherence between theory and practice, teaching subjects and both pedagogical and didactical theory (Ministry of Education and Research, 2008-2009). One consequence of this is that teaching competence is particularly difficult to acquire theoretically. A significant challenge is whether the competence needs of the professions in practice are reflected in the content, teaching and assessment criteria (Hiim, 2016). Therefore, it is essential to focus on didactical principles of relevance in VET to ensure a continuous mastery of professional competence. The main goal of the white paper for VET in Norway is developments that meet future competence needs and coherence in the workplace: "Competence is about acquiring and applying knowledge and skills. It is about learning to cope with challenges and solve problems in both known and unknown contexts and situations" (Ministry of Education and Research, 2015-2016, p. 28 ["author translation"]).

Professional job-related education focuses on job-specific relevance for workplace specific competence, and teacher education within this entails a close coherence between the subjects and the pedagogy and didactics, with the purpose of developing comprehensive professional (teacher) competence (Ministry of Education and Research, 2008-2009).

This article is based on an action research project on the development of relevant VET through a workplace-related approach. The project examines didactical principles in developing relevance on two VET levels: 1) Using action research in VET in upper secondary
schools (USS) for hairdressing, health care and technical occupations, and 2) in a teacher training programme at a specific teaching institution for assistant/associate professors and professors in nursing, engineering and police education (Sylte, 2014, 2015, 2018). The focus in this article is: Which didactical principles can make VET relevant for future competence requirements in workplaces? The research questions were:

1. How can professional job-relevance content and teaching be managed in VET?

2. How can professional job-relevance assessment be managed in VET?

According to the research questions, the action research included two development experiments (E1, E2). Developments of professional job-related content and teaching methods in VET (E1): In both subprojects, the experiments (E1) involved practical-theoretical learning of didactic relation planning, teaching and assessment, based on an analysis of work tasks and qualification requirements in work life and society (Hiim & Hippe, 2001). The participants also should analyse the curriculum to see whether it provided room for practical-theoretical student tasks.

Developments of professional job-related assessment methods in VET (E2): In the second experiment, the USS teachers should plan comprehensive student tasks based on work tasks. The participants should develop practical-theoretical assessment methods with characteristics for electrician and hairdressing USS programmes. In subproject 2, the professors also should learn practical theory to develop assessment methods to describe quality characteristics.

The development of didactical knowledge and the principles of relevance involve a professional job-specific focus on content, teaching and assessment methods in VET. This involves didactic planning and the implementation of both teaching and assessment, based on the analysis of work tasks and qualification requirements. Although workplace training is important, this research is limited to developing relevant competence education in schools and universities. In other words, research confirms the problem of relevance, but there are few studies that focus on how we can address this.

Although there are some significant differences in VET at the upper secondary and university level, a central feature is that both levels target specific professions where the workplace is often part of the training arena. The author’s experience as a teacher at both the vocational upper secondary school, and within a teacher training programme for professors at the university level has shown that many of the same problems (of relevance and the need for a professional job-related VET) arise in both settings. The need for job-relevant education is seen, for example, in hairdressing education and teacher education. Didactic principles may very well help develop professional judgment at both levels of VET. The problem is that the content is often not perceived as relevant to the profession (Hiim, 2017; Sullivan &
Benner, 2005). While it may be considered a problem that this study analyses development experiments in two different educational levels, it is also a strength - identifying examples and practices that may be useful at both levels, as the project assumes that the two levels have similar challenges (those of relating education and training to work life), and may therefore find similar solutions.

Comprehensive professional competence in this article focuses on a holistic competence that includes professional subjects and key competences, such as collaborative ability, independence, creativity and innovative and critical thinking (Sylte, 2018). For instance, a hairdresser requires competence on how to colour and cut hair, customer service, new hair trends, as well as products and environmental changes in society. Comprehensive professional competence also includes an understanding of how a profession is practiced and its function in society, in addition to its culture, traditions and development (Sylte, 2018).

In this article, the term "coherence" stands for coherence between what is taught in school and what is practiced in the field. A lack of coherence can be linked to a gap between theory and practice and subjects in VET. In teacher education, there can be a gap between the curriculum (content), pedagogic theory, and the professional practice in the school (Smeby & Heggen, 2012).

Didactical principles refer to how teachers undertake practical-theoretical planning, implementation (content and teaching methods) and assessment, and critical analyses of the teaching in VET, in both upper secondary school and university level (Hiim & Hippe, 2001).

First in this article, the previous research about relevance problem coherence to the future workplace needs for competence, will be described. Then I will focus on the theoretical perspective of didactical principles for relevant VETs. After that, I will describe the method for the project, before the presentation of the main results. At last, I will discuss the articles research issue and bring up some conclusions.

2 Relevance, VET, and Future Competency Needs in the Workplace

A great deal of previous research into VET has focused on relevance: Contemporary VET is often not perceived as relevant for the job or profession it is meant to prepare students for. One criticism is that universities have placed too much of an emphasis on analytical and scientific thinking and have only partially succeeded in teaching methods to achieve proficiency and wisdom in complex practical work situations outside the university classroom. The theories taught are characterized by pure academic disciplines and are less focused on experiential knowledge gained through practice (Sullivan & Benner, 2005).

Work content and rapid developments in society necessitate lifelong learning (Billett, 2010). Society continuously changes; therefore, future competency needs involve more than academic disciplines. Several studies to date have confirmed the effectiveness of work-re-
levant learning at both levels of VET, which provide a stronger coherence with workplace competence (Canrinus et al., 2015; Haight, 2012; Hiim, 2016; Smeby & Heggen, 2012). For instance, Loo's (2012) research in teacher education points to positive effects when students have both professional experience and teaching experience prior to undertaking the education. Similar positive effects were found by Loo (2012) when students are working part-time within their profession during their teacher education. The professors in the TTP in the author's second subproject had a similar background as the students in Loo's (2012) study.

A lot of today's debate based on recent research on VET challenges, is about the role of VET in the VET-systems of various nations (Guile & Unwin, 2019a). There is some recent research about how expertise is developed in an age of considerable transformation in work processes and the future competence needs in working life. Guile and Unwin (2019b) examine many of the challenges of VET such as the need for training in the context of extended working lives and the professional development of vocational teachers. Guile and Unwin (2019b, p. 19) say that "VET has paid a price for becoming overly institutionalized within national education and training systems". They problematize that VET have been "primarily conceptualized, studied, and evaluated through an educational lens" (p. 20). They point to a major challenge that the VET students practice in work life "are framed within the requirements of VET programs and/or professional regulations" (p. 20). Guile and Unwin (2019b) also argue in line with Canrinus et al. (2015) and Smeby and Heggen (2012), that a lack of coherence between VET and concepts and changes in working life and professional competence, the less effective and meaningful VET becomes.

Working life has begun to require other qualities than those currently focused on within a school setting. Wagner's (2008) analysis of future workplace needs of competence identified that what you know means much less than what you can use the knowledge for. Wagner found that the ability to be innovative, to creatively solve problems and to look for new opportunities, as well as skills like critical thinking, communication and collaboration, are much more important than academic knowledge. The need for complex problem solving was also ranked highest by the World Economic Forum's (2018) description of competence needs in the future workplaces. These kinds of competencies are implicated in comprehensive professional competence but are difficult to assess separately from each other through theoretical or practical assessment methods. Baartman et al. (2013) point out the challenge that assessment methods are not often included in Miller's (1990) higher competence levels of show and how/does in assessments. Assessment methods have shifted the focus from an assessment of learning to an assessment for learning, which involves both formative assessment and self-assessment with a focus on learning (Torrance, 2007). When students are actively involved in the assessment process, both motivation and the learning outcomes are strengthened (Hattie & Timperley, 2007). However, Baartman et al. (2013) point out that self- and formative assessment are not
Didactical Principles for Competence Need in Working Life

sufficient and question whether professional competence requirements are actually reflected in the assessment criteria. Miller (1990) divides competence assessment into four levels in a pyramid: The lowest is assessment of knowledge, the second knows how, the third is showing how and the highest is doing in a realistic and complex context.

Addressing Miller’s structural competence would involve a workplace-related assessment where the student is given the opportunity to show the complexity of the VET role (comprehensive professional competence) (Grollmann, 2008; Sylte, 2018). Gulikers et al. (2017) argue that: “This highest level requires an integration of knowledge, skills and attitudes in competent performance, assuming that competent performance cannot be undertaken if underlying knowledge and skills are not internalised” (p. 4). I am in agreement with this argument because theory is important, but the problem is that assessment at VET mostly implies Miller’s levels of knowing and knowing how through written assignments separate from practice, while job-related assessment of comprehensive professional competence requires methods that safeguard all levels of the pyramid in a holistic way.

This is in line with Winch (2010) who points to the importance of that developing expertise requires the integration of “knowing how” and “knowing that”. Winch (2010) highlights the need for knowledge that involves not only knowledge of many propositions, but also a mastery of inferential correlation between propositions. It can be about mastering key concepts in the subject and practical knowledge of procedures for acquiring knowledge and testing knowledge requirements. Such comprehensive professional competence often involves “the ability to deploy propositional knowledge in practical procedures, for example, in checking whether a new knowledge claim is consistent with propositions that are already accepted within the subject, for example, in the construction of measuring or testing equipment” (p. 104). At the same time, he emphasizes that a professional also need “an intelligible account of how propositional knowledge in general and deliberately utilized bodies of systematically organized knowledge can bear on practice in judgement” (p. 104).

However, previous research has primarily focused on problems of relevance related to future competence needs for coherence in the workplace, most recently on relevance, coherence and the provision of comprehensive professional competence (Grollmann, 2008; Sylte, 2018). For example, this means that tertiary students in VET must demonstrate the ability to perform teaching and be able to solve complex challenges linked to their assignments or to the practice of their profession. Based on the concept of comprehensive professional competence, VET requires forms of content, teaching and assessment methods than ones that distinguish between theory and practice. According to Guile and Unwin (2019a), VET need to focus on “what is sometimes naively referred to as “the world of work”, through to bespoke training organized by or for employers and self-taught activity” (p. 1). Therefore, VET needs “programs that have a specific occupational focus (…), and work-based learning of various types and duration triggered by changes and innovation in work processes” (p. 1).
3 Pragmatic Theoretical Perspectives on Didactical Principles: Developing the Workplace Competency Requirements

The project is based on a pragmatic theoretical perspective in professional didactical relational thinking and learning. Experience and language are both considered processes in which concepts are developed through participation in practical contexts (Hiim, 2017). An important difference between pragmatic versus conventional educational thinking is that the curriculum, content, teaching and assessment are based on work tasks (Dewey, 1895, 1972; Dreyfus & Dreyfus, 1986; Hiim, 2017; Schön, 1983). The focus is on the development of comprehensive professional competencies, rather than context-free abstract theory. A pragmatic theoretical perspective also includes teacher planning, teaching and assessment related to profession-based work tasks in coherence to the relation model of didactics. This model contains the didactical categories of goals, resources/frames, content, learning process, assessment and learning condition, as illustrated in Figure 1 (Hiim & Hippe, 2001; Sylte, 2016).

![Figure 1: The Relation Model of Didactics (Sylte, 2016, p. 52; Hiim & Hippe, 2001, p. 32)](image)

The model above illustrates how these categories influence each other and are mutually dependent. For instance, if the student's learning conditions for a work task are lower than first assumed, this will influence the learning objectives of the lecture, as well as the other categories. This is because the learning process, assessment and other categories must be adapted to the students' learning conditions, while still ensuring that the overall learning ob-
jectives are covered. It is important that learning happens by interacting and reflecting over the experiences gained through the work tasks – a reflection both in and on action (Schön, 1983). According to a work process, you may make changes, adjustments and corrections along the way. Thoughts and actions are part of a holistic process. Reflection-on-action means that the practitioner thinks and reflects more consciously after the action is performed, comparing and assessing alternative actions. According to Schön, individuals also need professional discretion to solve work tasks, which requires both practical theoretical knowledge and practical experience. Schön claims that the professional knowledge lies in action, and that professional practice is dependent upon knowledge-in-action. In addition, according to Dreyfus and Dreyfus (1986), there is a need for expert competence in which the student can use theory and practice to solve work problems and tasks. An expert competence also includes skills in how to learn - lifelong learning (Billet, 2010).

In summary, Dewey (1895, 1972) emphasizes experimental problem solving, experience and reflection in the learning process. Key competencies such as accountability and accuracy often include tacit knowledge, which must be learned through conscious reflection both in and on action (Schön, 1983). Schön’s “reflection in and on action” is identified as a central didactic principle, which is important to emphasize in assessment methods by characteristics of low, medium and high levels of quality. Another important didactical principle is that assessment must be linked to professional context and comprehensive professional competencies. The goal of relevant VET should be to develop comprehensive professional competence, in which there is discretion, wisdom and judgment. An important didactic principle then becomes that VET should aim to develop an incipient expert competence (Dreyfus & Dreyfus, 1986; Sylte, 2018) relevant within working life. At the same time, VET must also contribute to the development of students through the formation and development of individual judgment skills. Following Dewey (1895, 1972), there is a central didactical principle in which experience is linked to learning processes and formative assessment – especially with regard to the assessment of comprehensive professional competence.

4 Action Research

The research approach was pedagogical action research based on two subprojects in VET, inspired by the British tradition of educational action research (Hiim, 2010; McNiff, 2014; Stenhouse, 1975). It is anchored in a pragmatic epistemological perspective based on a pragmatic and critical analysis of teachers’ professional knowledge (Hiim, 2010). Education has both a fundamental subjective values-based aspect and a normative, democratic aspect, meaning that the technological “implementation” of predetermined theoretical principles is not possible without understanding these fundamental aspects (Hiim, 2010; McNiff, 2014; Reason & Bradbury, 2008). The pedagogical action research is based on the main principles of
the pedagogical action research that has its roots from Lewin (1952). The starting point for educational action research, which originated mainly from the UK in the 1960s and 1970s, has been criticism from teachers who have seen conventional social research as instrumental, and that there was a great gap between research-based knowledge and real life in the classroom (Elliot, 1991; Hiim, 2010; Stenhouse, 1975). The project had a pragmatic research design with inspiration from Australian action research that highlights the power relationships in educational traditions and systems, and where democratic participation among all participants in the research is central (Carr & Kemmis, 2005; Kemmis, 2010). Knowledge was developed along the way through quality development, as included development experiments as a result of experience inspired by the Bath tradition, which places emphasis on developing science with experience qualities (Sylte, 2015).

The choice of action research is related to the author’s understanding of the concept of learning and knowledge. The author has a pragmatic and critical perspective on teacher research and teacher knowledge, which influenced the choice of research method in the project. The author wanted to know how VET could be developed through the participating teachers’ specific experiences and reflections on their own practice. The purpose was not to define definitive solutions or procedures, but to describe and analyze empirical examples that showed how relevant VET can be developed and which didactical principles distinguished themselves / were positively identified.

5 The Development Experiments in the Action Research Subprojects

The first subproject involved participants (VET teachers) from USS in who were also students at a pedagogical development programme. The second subproject involved participants (professors) who were also students in a teacher training programme for professors (TTP) in VET educations at the university (Figure 2). The author was an action researcher, teaching in both programmes.
The Action Research Project’s Research Questions (RQ):

RQ1: How can professional job-relevance content and teaching be managed in VET?

RQ2: How can professional job-relevance assessment be managed in VET?

The two Development Experiments in the Action Research (E1 & E2):

E1: Developments of professional job-related content and teaching methods in VET

E2: Developments of professional job-related assessment methods in VET

<table>
<thead>
<tr>
<th>Action Research Project:</th>
<th>Participants (99):</th>
<th>Participants Teach:</th>
<th>Participants’ Role:</th>
<th>Researcher’s Role:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subproject 1 in upper secondary school (USS), 2007–2011, RQ 1 &amp; 2</td>
<td>37 VET teachers (USS) were also students at a pedagogical programme (PDP) at the university</td>
<td>6 educational programmes, which led to different vocations (e.g., hairdressing, electrician, health care education programmes in 13 upper secondary schools)</td>
<td>37 VET teachers conducted 20 pedagogical/didactical development experiments in USS. 16 E1 and 4 E2 are the basis of this article.</td>
<td>• teach at PDP • action research • supervised the participants’/teachers’ twenty development experiments (sixteen E1 and four E2) in participants’ practice.</td>
</tr>
<tr>
<td>Experience and learning from subproject 1 influences</td>
<td>62 students at TTP were also professors in psychology, law, veterinary medicine, police work, engineering, etc.</td>
<td>24 different VET educations at the university, such as, e.g., nursing, veterinary medicine, engineering, police education</td>
<td>TTP students/professors conducted five didactical development-experiments.</td>
<td>• teach and supervised at TTP • action research (four E1 and four E2) development experiments in researcher’s own practice at TTP (University).</td>
</tr>
<tr>
<td>Subproject 2 in a teacher-training programme for professors (TTP), 2012–2015, RQ 1 &amp; 2</td>
<td>37 VET teachers conducted 20 pedagogical/didactical development experiments in USS.</td>
<td>Those five examples from E1 nursing, veterinary medicine, engineering and police education are the basis of this article.</td>
<td>• supervised the professors’ five E1 development experiments.</td>
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Figure 2: Demographic Information on the Participants and the Development Experiments in the Action Research Process

To answer the research questions in Figure 2, development experiments (E1 and E2) were carried out through planning, implementation and the evaluation of professional job-related content, teaching and assessment methods, first in the first subproject. Based on the learning and experiences surrounding relevance in the first subproject, the author saw the need to make similar developments in the second subproject. The development processes were documented using logs, reports and surveys, and supplemented with interviews in both the subprojects (Figure 4).
6 The Action Process - Background for Empirical Data

A process model was used in the action research (Figure 3). The development experiments were structured in three or four sequences, illustrated in Figure 3.

In the first subproject the USS teachers analysed and described their current situation, their vision and the objectives for development in their schools. Together with the author, they then planned, implicated and evaluated the experiments, E1 and E2, in three sequences in three different student groups in their own practice. Sixteen USS teachers conducted E1 and four undertook E2. Experiences and learning from the first subproject influenced the second, with the same experiments (E1 and E2) conducted by the researcher. No control group was used as the focus was educational development in VET. In the second subproject, the researcher planned, implemented and evaluated the same E1 and E2 in four sequences in four different student groups (TTP students/professors) in the researcher’s practice. In addition, five TTP students/professors conducted experiment E1 in their own teaching practice. The teachers/professors and the author then conducted research in their own practice: "Teacher researchers are uniquely positioned to provide an insider's view that makes visible the way that students and teachers together construct knowledge (…)") (Cochran-Smith & Lytle, 1993, p. 43).

In the research strategy, it was emphasized that education and research should take place as a comprehensive process. The change process was developed as a collaborative, democratic action, in that the planning, implementation and critical analysis of teaching and learning
were structured as circular, sequential processes. Data from each sequence therefore became important for what was chosen to proceed in the next sequence.

The empirical data were based on the interactions in the action process and the qualitative data, illustrated in Figure 4. The survey questions and the semi-structured interviews (Patton, 2015) had a focus on how the participants/informants experienced the professional job-relevance content, teaching and assessment methods.

7 Analysis

In the project, the researcher used Reason and Bradbury’s (2008) criteria for validity, the first-, second- and third-person levels of practice. At the first level, participants’ research and documentation with empirical descriptions could be processed and systematized in relation to the project’s theoretical framework. At the second level, follow-up, guidance, interaction and critical reflection between researchers and participants was important. At the third level, researchers facilitated the participants’ investigations or trials. Here, it was also important to compare different participant documentation from a third-person level practice.

Figure 4: Empirical Data

The critical systematic analysis included discussion and reflection, testing and new actions with new trials, evaluation, discussion, reflection and changing in line with Reason and Bradbury’s (2008) criteria for validity in action research. Based on a pragmatic theoretical perspective, the participants’ experiences of relevance and the empirical data (Figure 4) were analysed through coding and categorization of content, teaching methods and assessment. Subcategories that emerged were the opportunities and challenges that related to experiences of professional job-related education among participants and students. In order to avoid being sovereign in the selection of empirical examples, participants were given the opportu-
Ethical Considerations

Credible documentation of the participants' experiences so that analysis of data showed participants' practice was emphasized in the project. Grimen (2004) has criticized the action research approach for giving too much leeway to the researcher's judgment and ability to evaluate. We attempted to accommodate Grimen's criticism by discussing and reflecting critically in a dialogue with the participants about their experiences with the development experiments (Reason & Bradbury, 2008). Sorting and categorization of data, identification of standards for assessments and bringing forth pattern and evidence, was important for the validity and the ethical considerations. One way to ensure that what the participants had said and experienced, was that the participants had to read the author's analysis with the opportunity to correct. Likewise, I was conscious of my research role as teacher educator and sought to retain a certain amount of professional distance, to limit my subjectivity influencing the analysis.

8 Results and Discussion

The USS teachers conducted development experiments with professional job-related content and teaching in their workplaces. One example of a practical-theoretical task is customer care in hairdressing: Based on goals for the programme, the students created individual goals related to a work task, such as haircutting or hair colouring. It was important that the students learned customer care linked to haircutting or colouring as a comprehensive customer treatment in an authentic workplace. Such a practical-theoretical task involves sequences with theory in psychology, communication, hairdressing and hair-colour chemistry (among others). It also involves a forward-looking formative assessment, in which the students reflected on how to solve a hair-colouring problem (Schön, 1983). After practice, the students shared their experiences through plenary presentations. This also involved self-assessment with reflection on knowing how, showing how and doing in a realistic and complex context (Miller, 1990; Schön, 1983). The USS teacher said: "The students liked this teaching method. The students said they were more motivated by solving hair-colouring problems, and they learned how to do and understood why, both for hair colouring and customer care." Similar job-relevant content and teaching methods were also developed in other educational programmes in both the subprojects.

However, teachers noted that in VET programmes in USS, cooperation with the practice field was not used often enough. The results provided examples of how a professional job-
related education could be conducted in both joint general subjects and professional subject programmes in USS. For example, one USS teacher taught mathematics at a building construction site instead of the classroom and said: "During practical work in the building hall, the students read and interpreted building drawings and integrated mathematics in their own work." Consequently, the students did not experience the theory/mathematics as being difficult. Several of the students improved their grades in the mathematical subjects they had previously failed in secondary school, said the teacher.

The professors experienced that the didactical learning in the development experiment (E1) was useful and relevant: "I have been more aware of planning my teaching, related to work tasks and the curriculum" (professor statement). Five of the professors also conducted similar teaching experiments in their own teaching practice. While learning to plan and conduct police questioning, police students used various theories from law, psychology and sociology. Student nurses learned theory on hygiene related to practical exercises with intramuscular injection procedures. In these examples, theoretical content was taught and learned through a hands-on practical task (Dewey, 1895, 1972). Professional job-related content, teaching and assessment were not common practice for the professors before the training programme, they said. Even though the professors had similar positive backgrounds as described by Loo (2012) which he emphasizes as a positive effect for learning, professional experience and teaching experience prior to undertaking the TTP, and working part-time within their profession during their TTP, it wasn’t enough to teach job-related. The professors were not used to analyses the work tasks and the curriculum as a basis for achieving comprehensive professional competence. Biesta (2014) however argues for the need for coherence between knowledge and curriculum, noting that it is required in order to explain Dewey’s (1895, 1972) transaction theory of the pragmatic perspective of learning; including experimental learning such as we undertook in the experiments.

In the second action sequence subproject 2 in TTP, the professors and researcher saw the need for more student involvement and shared job-focused activity. We chose to use a Flipped Classroom (FC) approach to encourage professional job-relevant learning. This implied home preparation of video clips, reading articles and tasks with a description of a challenging teaching situation. In the classroom, the time was used for job-related activities, such as presenting articles with peer assessment, collaborative learning and counselling exercises by reflection on the professors’ teaching challenges with their own students (Schön, 1983). The focus was on learning job-related education in VET. "(...) presenting articles has given the most learning", said one of the professors, with another at a veterinary medicine programme saying: "We learn and receive feedback in a real context."

One example of the professors who learned to develop professional job relevance in their own teaching practice were engineering students who solved practical IT problems. Home preparation could be video clips with technical models with theoretical explanations, litera-
ture/assignments/case studies/problems. In the classroom, there was a joint discussion and solution to the "problems" through plenary and group discussions. One of the professors' students said: "The increased activity of practical exercises with guidance gives me a greater education than the traditional lecture method." The engineering students also conducted an immediate peer assessment of each other's work, while the assessed students still had to focus on their tasks. The FC, the professional job-related approach and the peer-assessment yielded higher learning outcomes, said the professor.

Another professor from a nursing programme conducted a similar teaching in their practice: Nursing students received an animated web lecture on stroke as home preparation for the classroom and repetition. The animation involved drawing and explaining the primary cause mechanisms of stroke. At the end of the animation, a case study created a starting point for dialogue and reflection on practices around stroke in the classroom. The professor noted that "this has led to much greater involvement, motivation and better results", and: "High failure rates were the reason we started with this method and they have gone down ". The professor from the engineering programme also stated that "the average grade has increased from 3.60 to 4.52". However, the participants also saw challenges with too much FC, with one professor stating: "Web education is often too monotonous for students to watch".

The results showed a broad scope for job-related education curriculum creation, although some programmes, special health-care programmes, are more knowledge- than competency-based in USS. The same challenges with knowledge-based curriculum in VET can be found at the university level, particularly in health-care programmes. According to the teachers and professors however, a competency-based curriculum gave good opportunities for job relevance.

9 Comprehensive Professional Competencies

Findings from the two VET levels show that disciplinary theoretical knowledge is perceived to be of little relevance for the future needs for workplace competence. At the same time, theoretical knowledge in VET is important, when relevant for the work life. One professor said that students perceived pure lectures with an emphasis on discipline-based theoretical knowledge as irrelevant. When participating teachers and professors changed their educational content and teaching methods to suit changes in the future workplace, "it [was] clear that these student-based methods, where they solve challenges and work problems (...) instead of teachers who have a pure lecture on the subject, have led to much greater commitment, motivation and better results" (professor statement). In USS, teachers also said that student practice in cooperation with the workplaces was also necessary to meet the future workplace competency needs (Billett, 2014). These examples show how practical-theoretical knowledge
can help to develop a comprehensive professional competence that also involves changing skills for rapidly changing workplaces (Wagner, 2008).

The examples from hairdressing, police questioning and nurse injection procedures demonstrate the pedagogical potential of using work tasks as a way to connect practical and theoretical knowledge in educational programmes. In these examples, it was important that the teachers/professors and their students learned reflection in and on action (Schön, 1983). Here, both practical-theoretical knowledge and discretion are used, implying wisdom and good judgment (Dewey, 1895, 1972; Schön, 1983).

However, the result also shows challenges with knowledge-based curricula to promote relevant VET. "(...) the curriculum mostly asks for theoretical knowledge", said a professor during an analysis of the curriculum for planning teaching with focus on comprehensive professional competence. This was a challenge on both VET levels, especially for the health-care programme at the USS level and across the board at the university level, where participants saw the need for a more competence-based curriculum in line with workplace needs for competence and pragmatic theory (Dewey, 1895, 1972; Hiim, 2017).

Dewey (1895, 1972), Dreyfus and Dreyfus (1986) and Schön (1983) argue that the professional practice of a work task requires professional judgment, practical theoretical knowledge and practical experience. As an example, an electrician-teacher in USS said when students learned through comprehensive work tasks: "(...) that's the way it happens in the real world, in the workplace". However, the question remains of whether it is the teacher's knowledge, perspective or education traditions that may be the reason why some teachers do not undertake job-related content within the education, or see the possibility of it. Many participants felt that some teacher colleagues were not concerned with job-relevant learning at both VET levels.

The results show that coherence as connection between content, teaching and work tasks is a necessary didactic principle (Billet & Choy, 2013; Canrinus et al., 2015; Hiim, 2016; Smeby & Heggen, 2012; Sullivan, 2005). "Many of the students have gained motivation (...)", said one of the USS health-care teachers. These students felt relevance when for example, a theory of psychology was used to understand a practical health-care task by reflection. This can be linked to the term knowledge-in-action (Schön, 1983). In nursing education, the professor changed their teaching style from theoretical lectures to student- and job-related issues, in which the students worked on practical tasks, due to earlier problems with high failure rates: "Now the students work with things they wonder about in the classroom", said the professor, and "(...) both motivation and learning outcomes increased."

Student learning related to context, experience and problem-based teaching did help to promote relevance. The professors and their students also both thought that Flipped Classroom was suitable for in the classroom environment, with one student saying: "Different teaching methods and variety are important." However, the most important factor was that
FC provided an opportunity for job-relevant professional tasks in the classroom, with most students saying it was like using "education to solve/calculate tasks/use computer programs that are more like something you would do in working life instead of just listening to a lecturer all the time." FC is a valuable addition that provides space for job-related professional practice, but FC as a method alone does not promote relevance. Despite all these factors, VET can be well-created regardless of whether the students hear a lecture before they enter the classroom. It depends on whether the teachers/professors can relate education to the students' professional duties and practice. In our study, both participants and students expressed the need for traditional lectures. However, professional didactics cannot become a simple recipe for how to professionalize the education but must remain didactic principles central to relevant professional education (Sylte, 2018).

The job-relevant teaching methods were perceived by participants and students as meaningful and relevant on both levels: "Many of the students have gained motivation" (USS teacher statement). In addition, the USS teachers discovered that cooperation with the workplace, during internships for instance, was necessary for promoting professional job-related education.

Figure 5 shows three examples of characteristics linked to a practical-theoretical task in customer services in different professions, one in an electrician work task and one in haircutting. The characteristics were based on an analysis of work tasks linked to curriculum analysis. The characteristics described a low, medium and high quality of achievement, such as showing in a realistic and complex context (Miller, 1990; Wagner, 2008). In that way, comprehensive professional competence was emphasized in the characteristics. This assessment method also included self-assessment, formative assessment as a forward-looking statement and a summative assessment of students' practical-theoretical assignments (Baartman et al., 2013; Hattie & Timperley, 2007; Torrance, 2007).

The characteristics were quality descriptions of achievement levels, which included key competences such as accuracy and accountability. The USS teachers experienced that the students learned how to carry out a work assignment at the same time as they learned the characteristics of high quality in their line of work: "Learning outcomes have increased a lot, because students understand the tasks and what is needed to get high quality in work tasks" (hairdressing teacher statement). Comprehensive professional competence, self-assessment
Competence Characteristics in Customer Service

<table>
<thead>
<tr>
<th>High Level of Achievement</th>
<th>Medium Level of Achievement</th>
<th>Low Level of Achievement</th>
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<tbody>
<tr>
<td>Shows independence by considering, reflecting on and justifying key elements that characterize good customer care, what customer care entails as good service and what good service is, and shows practical examples of how to provide such service in a realistic and complex context</td>
<td>Shows knowledge of good customer care, what customer care entails as good service, what good service is, and shows practical examples of how to provide such service</td>
<td>Describes knowledge of good customer care and good service</td>
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Competence Characteristics in Hairdressing – Haircut

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<th>High Level of Achievement</th>
<th>Medium Level of Achievement</th>
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<tr>
<td>The student plans, assembles and documents air and cable entry for houses. The student shows accuracy and accountability in the implementation of an electric energy system. The student discusses different solutions and justifies the choice of method for the work task. The student shows practical examples and good customer service in a realistic and complex context.</td>
<td>The student plans, partly assembles and partly documents air and cable entry for houses. The student shows partial accuracy and accountability in the implementation of an electric energy system. The student shows knowledge of the work task. The student justifies the choice of method. The student shows a simple assembly and medium customer care on a customer.</td>
<td>The student mentions some knowledge of the electric energy system. The student shows low medium accuracy and accountability in the work task. The student mentions knowledge about customer care, but does not show it in practice.</td>
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Figure 5: Competence Characteristics

by reflecting in action, and the teachers’ forward focused formative assessment was emphasized (Hattie & Timperley, 2007; Schön, 1983; Torrance, 2007). USS teachers’ students found that these methods contributed to increased motivation, learning and professional relevance: “The learning outcomes have increased a lot, (…), through their self-assessment and the teachers’ formative assessment with forward looking linked to the characteristics that describe the quality” (hairdressing-teacher statement).
In subproject 2, the professors also learned practical theory to develop assessment methods to describe quality characteristics. In addition, they learned via training in how assessment related to comprehensive professional qualifications (based on an analysis of work tasks and curriculum), could be used in their own professional workplaces. The results indicated that participants experienced job-relevant assessment methods with an emphasis on comprehensive professional competence as useful and relevant on both levels. Several professors said something along the lines of: "This gave tips and concrete examples of challenges and how these can be solved." However, several participants also experienced challenges with analysing the curriculum in relation to the assessment methods at both levels: "It is difficult to assess comprehensive professional competence when the curriculum is predominantly theoretically based, with a lack of practical context" (professor statement). Ultimately, none of the professors saw the possibility of attempting assessment with these characteristics in their own education, even though they experienced this assessment method as very useful and relevant.

According to the participants at both levels, there are challenges both in the curricula, and because assessment is "locked" in structural terms.

Do the students have a possibility to demonstrate their comprehensive professional competence in the exam? Or does the exam focus mostly on a fragmented theoretical knowledge that the students must memorize without understanding the consequences of the knowledge in practice?

asked one professor who taught nursing education. The challenge of whether comprehensive professional competence is reflected in the assessment methods remains (Baartman et al., 2013). For example, one of the professor’s nursing students got a B on her exam, although one of the exam answers was answered so incorrectly that in a real life setting it would have killed the student’s patient. The exam consisted of many theoretical questions, which were scored and summarized, providing points that were calculated to make the final exam grade. However, for one of the questions, the consequences would have been grave in practice. Because the student responded perfectly to the other questions, the professor could not give a lower grade than a B, despite giving the wrong answer to such a vital question. This was a common exam form within nursing education.

Participants from both levels also experienced challenges in interpreting curricula, and with assessment regulations for comprehensive professional competence. USS electrician-teachers who also developed examples of assessment methods focusing on comprehensive professional competence, discovered that the assessment was closely related to teaching, and said: "We have had almost an ‘aha experience’ and learned so much, we need to rebuild our entire teaching and think about more comprehensive work assignments in order to ensure relevance."
10 Assessment of Comprehensive Professional Competencies

In working life, assessments and decisions are made without the practitioner always explaining the rules, procedures or theories used (Schön, 1983). According to Schön, this is partly because a lot of professional knowledge cannot be expressed in words - it can only be expressed through practice and reflection in action. It is difficult to explain the quality of a hair colouring, or how to make an intramuscular injection. Schön is further concerned that theoretical reasoning should preferably be linked to different contexts. If not, there is a danger that students only learn "standard answers" and will be unable to exercise judgment in each situation. It is time to ask what type of competence is being asked for in the assessment work in VET (Baartman et al., 2013). Are exams and tests asking for discipline-based and theoretical knowledge, or comprehensive professional competence? Comprehensive professional competence involves various components, such as social, professional and key competencies related to practical skills (Sylte, 2014).

Results from VET in both hairdressing and electrical programmes show that a professional job-related assessment with characteristics of quality is necessary to ensure coherence between the content, teaching and assessment. Although relevant assessment methods are important in VET, many participants experienced challenges because current assessment methods were still theoretical knowledge-focused. The participants also argued that some teaching colleagues seemed more concerned with their own subject area than professional job-related teaching and assessment: "The culture creates challenges for the assessment of comprehensive professional-competencies", said one of the professors.

At an incipient expert level, students distinguish between different situations that require different actions. They can assess the situation and act more intuitively in terms of theoretical understanding, discretion and practical experience (Dreyfus & Dreyfus, 1986). The students are then no longer bound by the rules of practice but know how to do the appropriate action without making calculations and comparing alternatives. The hairdressing students were aware of what was needed to attain a high level of achievement through the formative and characteristic assessment, with several developing an incipient expert competence (Dreyfus & Dreyfus, 1986; Hattie & Timperley, 2007; Torrance, 2007). Yet the nursing student still got a B on the exam, although their comprehensive professional competence was probably at a much lower level. This can be seen in the context of Winch (2010) who points to the importance that students develop competence which involves both "knowing how" and "knowing that". At the same time, the teacher from the USS electrician programme, who had earlier experienced that they had more focus on theoretical knowledge, was now rethinking his approach: "(...) we must actually change our entire teaching and think more comprehensive (...)." This implies that the student assesses and understands the consequences of the knowledge related to the quality of the entire work task.
11 Didactical Principles for Promoting the Future Work Life Needs for Competence in VET

In both subprojects, the participants also experienced challenges with professional didactical competence for professional job-related education: "(...) the biggest obstacle to change the teaching (...) lies with teachers" (professor statement). Much of the argument among VET teachers/professors from both levels of teaching deductively, with the dissemination of theoretical and disciplinary knowledge as a guideline for practice, was the fear of professional impoverishment. Therefore, teaching without coherence to the work tasks and exercises that students experience in today’s education will not be sufficient to meet workplace requirements for competence (Billett, 2010). The participants in this research became aware of the importance of work tasks as a starting point for didactic planning, implementation and assessment. This in turn helped promote quality in the students' practical actions, cf. the results from the assessment with characteristics.

However, for teachers/professors who do not see the need for professional job-related education, one possible explanation may be that professional job-related education is perceived as having a unilateral focus on the specific workplace. Young (2004) is critical to a one-sided emphasis on workplace competency deciding the focus of VET and worries that the result of such a unilateral focus may be less development of the theoretical aspects within VET. Hoskin and Anderson-Gough (2004) also point to challenges with one-sided work-based learning, because the students also need qualification-focused learning. Their research shows a need for context-based learning; a combination of work-based learning and job-relevant theory is necessary to become a successful professional. Our research results indicate that education must be relevant to both the workplace and the social mandate of the profession. This does not mean that the VET should be theoretical or characterized by a narrow and instrumental theory of comprehension – instead, it means that the theory should illuminate work tasks in a clear and understandable manner.

This is where didactical principles can help (for example when learning police questioning and nurse injection procedures) demonstrate the pedagogical potential of using work tasks as a way that connects practical and theoretical knowledge. Students learn to justify the why and how around the work task. A work assignment often requires professional knowledge from several subjects in the programme. For instance, when the police student conducts questioning, he/she needs knowledge from ethics, law, communication, and psychology, all of which is aimed at the actual questioning methodology.

At the same time, there is a point during normal working processes that learning happens continuously in a colloquial setting, and it is important to recognize and emphasize this form of learning (Eraut, 2007). Additionally, there is often a need to acquire knowledge from various topics to learn the entire work process. Another point is that what students experience
in education is insufficient to prepare them to meet the work life needs of competence if the practice in school does not vary in different practice or work tasks (Billett, 2010). Hence, we can see how important both theory and varied practice are, but these must become optimally integrated between the work task and the work context – which means coherence between relevant theory and practice.

Dewey’s (1895, 1972) transaction theory focuses on a pragmatic comprehensive perspective in which the didactical categories are coherent with each other, as with the didactical relation model we used in the project. Considering this, there must also be coherence between knowledge and curriculum (Biesta, 2014). The results show the importance of a competence-based curriculum coherent with content, teaching and assessment methods, in order to achieve comprehensive professional competence. Wagner’s (2008) research established that workplaces have already begun to seek other qualities than those schools are concentrating on.

According to both Wagner and the results of this project, it is necessary that the students develop competencies in innovating, creative problem solving, critical thinking, communicating and collaborating. It is therefore important for VET to focus on future workplace needs for competence. However, even if work life asks for more than mere instrumentalism, it is still important that VET is not solely based on what work life determines education should be (Young, 2004). Education and working life have different purposes. In addition to teaching skills and competences, education should also attend to the personal development of the students.

Wheelahan (2010) says that both practical and theoretical knowledge is important because the student also need for example, "sociological insights to understand how relations between educational institutions and families may be mediated by social class or ethnic background." This is important for adapting to both working life and society. Even so, I would still argue from these results that there is a need for job-relevant education to meet future workplace competency requirements in VET.

12 Didactical Implications for VET

Both society and working life are changing rapidly. There is a continuous need for further development of professional competence. This requires close cooperation and dialogue between educational institutions and workplaces to accommodate the need for both changing competence and specific professional competence (Billett & Choy, 2013; Wagner, 2008). For both VET levels, these empirical examples of didactical principles of job-related VET are important for promoting the future work life needs of competence:
A key principle is the analysis of work tasks as a basis for curricula analysis and the planning of teaching by didactical relational thinking. This includes practical-theoretical planning of content, teaching and assessment related to a work context.

A competence-based curriculum is needed.

Coherence and comprehensive-professional competencies are essential.

While coherence between theory and practice is widely accepted, it appears that learning comprehensive professional competencies is still fairly rare, especially in VET at the university level. This applies to both teaching and assessment activities. At the same time, participants in the study developed good didactical examples of relevant content, teaching methods and assessment, in which several students developed an incipient expert competence. This should be a goal for future VET. According to participants’ experiences of some of their teacher/professor-colleagues, there are still teachers/professors who are not very concerned with or interested in job-related learning. This may due in part to a lack of tradition for job-related learning in VET, particularly at the university level. The results show a need for the development of professional didactical teacher competencies that focus on job-related VET as well. In addition, it is likely that other education programs may also benefit from the development of educational culture, curricula and didactical principles in both VET levels for meeting future workplace competency requirements.

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VET Realignment and the Development of Technical Elites: Learning at Work in England

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Abstract

Context: An enhanced role for work-based learning is advocated increasingly widely across industrialised countries and by international Vocational Education and Training (VET) policies. However, this is framed differently in each country by long-term policy orientations that reflect VET's relationship with wider economic and social formations. These national differences reflect path dependency but also distinctive responses to contemporary challenges such as globalisation. In England, recent reforms strengthening workplace learning are constrained by existing patterns of skill formation and may be shaped by further market liberalisation and divergence from social and economic policies in Europe.

Approach: The study examined the relationship between greater emphasis on workplace learning in England and societal change, addressing the research question: how are early experiences of work in England, as part of young people's full-time education programmes, positioning them for future employment? Case studies were organised around apparently distinctive placement types that had emerged from earlier studies. Using the constant comparative method, the team identified a series of categories to distinguish the way each type of work-based learning positioned students in a particular type of labour market transition.

Findings: Evidence emerged of divergence in England's "further education" system, across mainly male "technical" routes, young people on vocational courses preparing them for
routine, low-skilled, precarious employment, and an area of greater uncertainty preparing young people for digital routes linked to the "new economy". Key dimensions of difference included study locations, discourses of occupational status, types of valued learning content, approaches to socialisation, sources of expertise and processes of credentialisation. In each case, learning at work served to position students for a particular type of labour market transition, which we characterise as technical elite formation, welfare VET and new economy precarity.

Conclusion: Approaches to workplace learning in England already reflect social distinctions but entail the possibility of reinforcing these, supporting a more hierarchical pattern of labour market transition. Whilst the upper strata of VET shift their purpose to support the formation of new "technical elites", others face the possibility of further marginalisation. Such new inequalities could become central to a further fragmented society in a post-Brexit, post-COVID-19 Britain. Other European states facing challenges of globalisation and the transition to services are also likely to experience pressures for VET stratification, although they may seek less divisive solutions.

Keywords: Policy Analysis, Education and Training Reform, Workplace Education and Training, Social Justice, Vocational Education and Training, VET

1 Introduction

Patterns of transition to employment and adulthood are shifting across Europe, as countries and regions seek to increase the role of early experiences of work in professional, technical and vocational programmes of study. Interest in such activity now extends from Vocational Education and Training (VET) at tertiary level, with half of all EU jobs expected to require higher qualifications, to the recognition of informal learning (Kis & Windisch, 2018; European Commission, 2016). Learning in the workplace has long been associated with favourable transitions into productive, stable and rewarding employment, as well as social inclusion for disadvantaged groups, with the workplace seen as offering opportunities to develop conceptual and "soft" skills alongside technical expertise (Nilsson, 2010; Employment and Social Developments in Europe, 2015). International bodies, including the OECD and European Union, support these developments with discourses of human capital and national competitiveness (European Commission, 2016; Mühlemann, 2016). Yet the generalised approaches that characterise such international agendas are problematised by the significant differences in the role that workplace learning plays in national education and skills systems across Europe (Méhaut & Winch, 2012; Bosch, 2017).

The means by which learning at work is integrated into VET systems constitutes one of the chief distinctions among national systems. Iannelli and Raffe (2007) depicted a contrast
between countries they described as having employment-based transition systems, enjoying lower youth unemployment and social inequality, and countries with "education-based" systems that focused on transitions from school to higher education. Greinert’s (2005) noted distinction between three models of VET compared the German dual training system, combining learning in industry and school settings, school-based vocational education in France and the market-based post-school training of England. Political economists have noted the wider significance of vocational education for economic and social policy, contrasting "collectivist" approaches in Germany and its neighbours to "liberal market" systems in Anglo-Saxon countries, basing their analysis on the relationship between VET and related fields such as welfare and banking (Busemeyer & Trampusch, 2012; Sorge & Streeck, 2018). These generalised comparative models inevitably simplify differences across and within national and even regional boundaries but provide useful starting points for analysis of different systems. These models also reflect path-dependency: Greinert (2005) described the emergence of major models from the circumstances of industrialisation in each country. Thelen (2004) provided a detailed historical analysis of the way contestation among social actors produced the settlements underpinning contemporary skills systems in each country. Such historical pathways have entailed the creation of powerful frameworks to support workplace learning, such as the Handelskammer in Germany, whilst depriving countries such as France of embedded structures that support apprenticeship (Gehin, 2007).

However, our chief concern in this paper is not simply the practicality of implementing policies to enhance the role of workplace learning but the distinctive societal impacts of such policies. In Germany and some neighbouring countries, dual training has long been seen as supporting greater social equality, initially by supporting a "diversified quality production" (Streeck, 1991) that sustained a larger manufacturing base, staffed by highly-skilled workers; and more recently extending VET into the service sector, facilitating the continuation of relatively low wage inequality (Sorge & Streeck, 2018). It is less clear that countries where VET was earlier confined to state-run school education, such as France, Holland, Sweden and Norway, have achieved the same results through an increased role for firm-based training (Hardy & Ménard, 2009; Michelsen & Stenström, 2018; Wesselink et al., 2010). Countries with long-established dual training systems continue to record significantly lower rates of unemployment for 15-24-year olds in 2018 (Germany 6.2%, Austria 9.4%, Denmark 10.5%) than those for countries where the state has played a stronger role (France 20.7%, Sweden 16.8%), although this compares to more pronounced differences a decade earlier (Eurostat, 2019). Yet employment is not the only measure of equality, and in the UK, where skills formation and deployment are determined largely through market mechanisms, liberal market policies have contributed to a more unequal society, with stratified education systems (devolved to the four countries making up the UK) variously implicated in these processes. Higher
rates of participation in higher education, reaching 50% of the age cohort in 2019, powerfully influence the shape of secondary education with a strong academic/vocational divide.

This paper examines how an increasing emphasis on workplace learning in England, the country in Europe most strongly representative of the liberal market model, is reshaping the transitions that young people make to employment (and, by implication, to adulthood). England has a larger higher education system than others in Europe, accompanied by the stratification common to "high-participation" systems (Marginson, 2016) and skills training largely takes place separately from general education. Its main contributions to European VET policy, such as qualification frameworks built around competency-based outcomes, have since been contested internationally (Clarke & Winch, 2015; Ante, 2016). Learning at work has become an increasingly important element of full-time vocational education, following the Wolf Review (Wolf, 2011) and the development of "technical education" or "T Levels" (Department for Education/Department for Business, Energy, Innovation and Skills [DfE/DBEIS], 2016). However, learning at work can offer different opportunities to individuals and occupational groups, according to their positions in work hierarchies and processes (Illeris, 2011; Felstead et al., 2009). This raises questions about how learning at work may affect the contribution made by VET to income equality and social justice, in relation to different national settings.

This paper therefore reports a study of the relationship between greater emphasis on workplace learning in England and societal change, addressing the research question: how are early experiences of work in England, as part of young people's full-time education programmes, positioning them for future employment roles? In the study we sought to uncover the way that changes in the economy and in society are both reflected and reinforced by policy in this area. The nature of recent educational policy change in England is discussed in the following section, along with examination of its socio-economic background. This is followed by a discussion of the methods used in the study and an exposition of the findings. Finally, the paper concludes with discussion of their significance for the future shape of further education and skills in England, and the possibility that these changes may have wider significance for VET elsewhere in Europe.

2 Workplace Learning in England

The introduction having provided a framework setting out the major distinctions among European countries, this section examines developments in England pertinent to the study: The recent move towards workplace learning and its socio-economic context. This section summarises the recent introduction of "industry placements"; analyses the specific changes in economy and society that provide their context; explains how the patterned responses of policymakers and key institutions have shaped the implementation of policy; and examines
in detail how this has played out in the development of skills policy for England. A drive to increase the contribution of workplace learning to England's mainly vocational "further education" (FE) system has been strengthened since Conservative-led governments came to power in 2010. A planned increase in apprenticeship numbers has been followed by the replacement of "frameworks" or packages of qualifications with "standards" designed by employer-led "trailblazer groups" (Richard, 2012; UK Government, 2015). Short periods of work-based learning also became mandatory for full-time advanced secondary vocational programmes following the Wolf Report (Wolf, 2011). More ambitiously, the Sainsbury Review (Independent Panel on Technical Education, 2016) proposed to supersede a vocational system of "13,000 qualifications, many of them of little value" (Independent Panel for Technical Education, 2016, p. 6) with fifteen routes of "technical education", mainly distinguished by the addition of work placements between 1 and 3 months in length. Promoted with reference to the need to learn "lessons of the past or from abroad" (Boles, 2016, p. 5), it called for curricula developed by "industry experts" and a "transition year" for those unable to access the system. However, these practices have been inaugurated through the distinctive, market-based approaches that UK governments have used to shape further education and the skills system in England, presented in the consumerist terms of giving "every young person . . . two choices: The academic or the technical option" (DfE/DBEIS, 2016, p. 7).

The economic challenges facing the UK economy are not qualitatively different from those facing other countries, although the shift to services has moved further than elsewhere in northern Europe: In 2017 83% of the UK workforce was engaged in service work, rising from 64% in 1978 (Office for National Statistics [ONS], 2018). This has included a growth in internationally traded services requiring highly skilled workers, but also in sheltered but low-value personal services which offer substantially lower rewards and are characterised by precarious employment (Wren, 2013). Many manufacturing jobs for which further education colleges (the country's main VET institutions) primarily trained young people in the past have disappeared in response to technological change. These developments have contributed to the polarisation of labour markets, with a concentration in both high-skilled and low-skilled employment, described as an "hourglass economy" (Goos & Manning, 2007). These economic developments have been linked to social realignment, calling for new theorisation of young people's transitions (Avis & Atkins, 2017). Nevertheless, UK government policies have sought in particular to address needs for skilled workers and those in the "new economy" who are deemed to have been poorly served by FE in England.

Such mid-level occupations remain valued labour market opportunities yet are also subject to skills shortages. Whilst much reduced in number, they have not seen significant falls in wages, implying productivity gains (Acemoglu & Autor, 2011; McIntosh, 2013). Holmes and Mayhew (2012) drew attention to the position of those earning mid-level wages whilst in apparently high-status jobs, which Wren (2013) suggested implied that workers in these
roles have taken on additional responsibility. These are not secure professionals; nor elites in the traditional sense of small, powerful, professional groups at the top of society, struggling to capture and control "the jurisdictional work domains and labour market shelters through which professionalization projects are collectively mobilized" (Reed, 2018, p. 298). However, those entering these roles will occupy a relatively privileged position compared to those employed in routine, part-time and insecure jobs, in between periods of joblessness.

By contrast, many young people entering FE in England exhibit characteristics of significant social and educational exclusion, lacking access to valorised capitals: most also have negative previous educational experience and a history of low attainment. Conceptualised in policy as having low aspirations (despite research evidence to the contrary) they are problematised as being "disaffected" and "disengaged" (e.g. Atkins, 2009, 2017; Billett et al., 2010). These already have few options but to engage with a limited range of low-level vocational programmes, argued to offer an impoverished curriculum which is only weakly work-related, and to have minimal exchange value in the labour market (Wolf, 2011; Keep & James, 2012). A similar prospect faces those young people – mainly women – preparing for occupation in service industries such as care, hairdressing, and beauty therapy. The "new economy" of digital and creative occupations that attracts many young people into vocational pathways shares several of these features in fragmented industry structures. The rise in the so-called "gig economy" with associated zero-hours contracts, and other "forms of contingent work" such as self-employment (Thompson, 2019, p. 19-20) has led to a marked increase in job insecurity, in-work poverty "churn" between insecure work, benefits claimancy, and government training schemes, well documented over an extended period (MacDonald & Marsh, 2005; Simmons & Thompson, 2011; Shildrick et al., 2012).

The low-pay, low-skill, routinised occupations which low-attaining young people might previously have accessed are now in decline across Europe as a whole, limiting the opportunities available to this group of young people (European Centre for the Development of Vocational Training [Cedefop], 2018; Keep & James, 2012; Billett et al., 2010). The changing nature of the labour market, and that an individual's relative chance of finding employment is heavily mediated not only by the availability of work, but by social class, gender and ethnic group membership, is seldom acknowledged in policy discourses (Simmons, 2009, p. 143; Simmons & Thompson, 2011, p. 29). There is an absence of consideration of those transitions which are variously extended, fractured, difficult, troubled and/or precarious (Atkins, 2017). For these learners, earlier policy initiatives focussed on creating "ladder-like" (Hodkinson et al., 1996) progression into the labour market and some service occupations, notably in care roles, are already mediated by work placement, so that the implementation of T Levels builds on existing patterns of "work experience". These issues are further complicated for students on courses associated with the "new economy" where "the workplace" can take very different forms.
These developments do not entirely determine that education and labour market policies will support and strengthen this growing social divide. However, increased emphasis on employer prerogative makes this more likely. Arrangements bringing together UK government, employer and trade union representatives lie far in the past. Following the Industry Training Act (Ministry of Labour, 1964), training boards once made recommendations for training and further education, levying employers and paying out training grants: In 1969-70, 26 boards raised £175 million from a million employers (Cantor & Roberts, 1972, p. 86). But from the 1980s, liberalisation and market measures have dominated skills development in Britain. Conservative governments closed 16 training boards and the tripartite Manpower Service Commission (Ainley & Corney, 1990); government schemes for the young unemployed funded third-party firms to provide training and brokerage (Chankeliani & Relly, 2015); FE colleges came to provide more full-time courses, delaying labour market entry and providing progression to universities, becoming subject to intense performativity under both Conservative and New Labour governments (Hodgson et al., 2017). Compared to the role of those European governments that provide legal support for collective arrangements among education providers and labour market partners, the role of government in English skills formation is limited to create favourable market conditions for competing education providers to meet employer needs.

Consequently, the Sainsbury Review is also to be implemented through a voluntarist (for employers) framework: This places the task of organising learning opportunities in the lap of provider organisations, mainly FE colleges. In early pilots of work placements, these were most successful where labour market demand was strong and employers were able to select students who might be valued future employees; colleges found it harder to place students in attractive placements for low-level service roles (Newton et al., 2018). The "T Level" qualifications have been introduced more slowly and partially than first envisaged and, rather than replacing other vocational qualifications, are increasingly seen as a route into "higher technical education", for those destined for skilled occupations.

The apparent widening of the gap among these groups raises important questions about how the shift of learning into the workplace is beginning to play out within the framework of English education, with the possibility of ameliorating or exacerbating old and emerging inequalities. The study described here therefore focused specifically on students undertaking early work experiences as part of their studies, in order to answer the question of how this positions them for future employment. The methodology of the study is discussed in the following section.
3 Research Design and Methods

The development of workplace learning as part of upper secondary education remains at an early stage in England, with substantial placements (a minimum of 45 days per academic year) forming part of the first phase of T Levels from 2020. However, the study was able to address the research question of how these experiences are differentiated through an empirical study that drew on both existing placement experiences and their development. In this section, we address the selection of case studies, data collection and its ethics, and the method of analysis.

3.1 Case Study Selection

Case studies were developed, using a multiple case study design which anticipated different patterns of theoretical replication (Yin, 2018). Earlier studies of work-based learning and placement development work (Esmond, 2018; Newton et al., 2018) had suggested areas of divergence in placement practice, and these were expected to provide useful data about how such practices shaped students’ transitions to different types of employment. Initially, four cases were planned. However, as Yin (2018) points out, case definition is an iterative process, in which the tentative definition is derived from the research questions but can be revisited during the study (2018, p. 29–30). The data began to cluster around three types of provision, leading to three case studies in three clusters of further education colleges. These had the added benefit of each including one of the three “T Level” subjects. The first provided professional construction courses (a T Level subject) sharing an emphasis on technical knowledge with some manufacturing provision, which we characterise as a “professional-technical” case. The second, “care and personal services” case collected data from in personal services and early years education (a second T Level) provision: These share an emphasis on practice with other vocational courses which, no matter whatever their intrinsic or social value, tend to lead to employment with relatively low social status. The third, in digital and creative fields, prepared young people for roles in the so-called “new economy”: The third initial T Level is offered in software engineering. We invited participation from colleges which had departments with nationally-recognised expertise in these areas. Teachers and students from the identified departments were invited to participate and did so on a self-selection basis. All students had enrolled on nationally certificated level 3 programmes in one of the specified areas.

3.2 Data Collection and Ethics

The collection of data sought as much as possible to capture students’ experience of employment, and data gathered included the study of policies and documents through which
these placements had been organised and students had reflected on their experience. A more important focus, however, was collection of data through semi-structured qualitative interviews which utilised film elicitation (Nichols, 1991; Harper, 2002). Showing discussion of workplace learning among college tutors, work-based educators and employers, film elicitation (an adaptation of photo elicitation, see Atkins & Duckworth, 2019; Rose, 2016) was specifically used to surface issues in placement learning. Participants included students who had experienced work-based learning, and their teachers; interviews explored their experiences and perspectives on learning in the workplace, and how participants expected placements might support their progression into secure and responsible job roles.

Ethical approval was sought from, and granted by, the University where members of the research team worked. The design and conduct of the project were consistent with the British Educational Research Association (BERA) ethical guidelines (2018).

3.3 Data Analysis

Interview data were subject to thematic analysis utilising the constant comparative method (Corbin & Strauss, 2015). The constant comparative approach has its origins in grounded theory, with Glaser (1965) distinguishing this from the use of prior fixed codes:

> the analysis cannot usefully be confined to the practice of coding first and then analyzing the data, since the analyst, in direct pursuit of his purpose, is constantly redesigning and reintegrating his theoretical notions as he reviews his material. (p. 437)

As Wellington (2015) recommends for case studies, this inductive and iterative process began with each team member’s “immersion, swimming around in and poring over the case[s]” (p. 173) in advance of the development of codes. Next, the process of team-based review refined the scope of the cases and began to develop the categories which defined their key differences, leading to a shared and robust interpretation of the data. This stage aims to “discern conceptual similarities, to refine the discriminative power of categories, and to discover patterns” (Tesch, 1990, p. 96). Finally, the team was able to produce definitional statements for each case across a series of categories that distinguished the way each type of work-based learning positioned students in a particular type of labour market transition. These are set out as a series of related categories in the following results section, which ends with three ideal types of social formation that the team identified to characterise students’ labour market transitions. Their significance is discussed later in the conclusion.
4 Results

Table 1 shows the broad definitions of each case, the categories that distinguish them, and the ideal types of labour market transition to which they lead. The first row shows the titles we have given each study, each of which is defined in terms of broad occupational type (and which may apply to comparable courses elsewhere) with the actual subject areas where we collected data given in the row below. Following these descriptors, six defining categories are set out: The study locations; the status of the occupations students were being prepared for; valued areas of learning content; the form of socialisation they underwent; the dominant sources of the expertise students acquired; and the nature of the credentials they would gain. The final row summarises the processes of labour market transition for which we will suggest in the conclusion that they appeared to be destined.

Table 1: Overview of Cases

<table>
<thead>
<tr>
<th>Categories</th>
<th>Professional-Technical</th>
<th>Care and Personal Services</th>
<th>Creative &amp; Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational areas</td>
<td>Professional construction</td>
<td>Personal services (e.g. hair, beauty); early years education</td>
<td>Software engineering and creative media</td>
</tr>
<tr>
<td>Study locations</td>
<td>National specialist (with managed accommodation)</td>
<td>Localised, high level of work-based learning</td>
<td>Classroom-based, with problematic study locations</td>
</tr>
<tr>
<td>Occupational status</td>
<td>High</td>
<td>Low</td>
<td>Emerging</td>
</tr>
<tr>
<td>Valued learning content</td>
<td>Professional: specialist learning related to work roles</td>
<td>Routinised: arising incidentally from work processes</td>
<td>Network: projects commissioned by professional clients</td>
</tr>
<tr>
<td>Socialisation</td>
<td>Professional: developing ability to network with industry professionals</td>
<td>Routinised: socialised into acceptance of caring responsibilities and routine roles</td>
<td>Networked: developing abilities to network with industry/creative actors/consumers</td>
</tr>
<tr>
<td>Sources of expertise</td>
<td>Academic</td>
<td>Work-based</td>
<td>Networked</td>
</tr>
<tr>
<td>Credentialisation</td>
<td>Academic</td>
<td>Vocational</td>
<td>Technocratic</td>
</tr>
<tr>
<td>Labour market transition</td>
<td>Technical elite formation</td>
<td>Welfare VET</td>
<td>New economy precarity</td>
</tr>
</tbody>
</table>
4.1 Study Locations

All of the case studies collected data mainly in college settings rather than the workplace; yet significant differences were evident in the locations and their significance for each case. Within the voluntarist framework in England, colleges have the responsibility to select or allocate placement opportunities and the learning and work opportunities they might offer. In the professional-technical case study, both work-based and college-based components were highly organised. Students employed by national companies stayed in residential accommodation that the provider organised, and which Ofsted (national quality agency for schools and colleges) inspected. There has been evidence in early "T Level" developments that placements in these areas can be highly beneficial but also difficult to secure (Newton et al., 2018) and these opportunities were highly valued.

By contrast securing a placement was seen as easy in the "care and personal services" case, especially for industries where students as "casual" staff can provide capacity at busy times. However, these could be of variable quality and learning opportunities were contingent on the activity of the business. For example, a hairdressing student explained that she was using a limited range of skills working on the pensioners' day on Wednesdays:

It was different to here [college workshop], where they are teaching you how to do it, they correct you if you go wrong. But with work experience, really you're just sweeping and cleaning and, you know, washing hair. (Emma, hairdressing student)

This did not provide opportunities to develop skills such as cutting and colouring hair, nor opportunities to develop professional networks which might have provided opportunities for paid employment on qualification: Emma was being used as a form of "cheap labour" (Sally, beauty teacher).

On the "creative and design" pathway, however, even these limited opportunities were less readily available. Student "projects" provided by employers provided opportunities to apply course concepts in practice, and to develop useful skills in research and networking expertise. However, in industries structured around networked micro-businesses, colleges found it difficult to arrange placements that met the requirements of national policy, which required location in an industry setting, whilst avoiding placing students alone with a single individual in a micro-business. An important distinction between the professional-technical and other cases, then, was the opportunities that the former provided to acquire, through placements, specialist knowledge and experience that would not be available in colleges.
4.2 Occupational Status

Each type of work-based learning was discursively positioned to reinforce the status of occupations for which they were positioning the learner. In the professional-technical case, this affirmed the relatively high status that students were expected to achieve by sharp discursive differentiation from "craft" occupations. The field of professional construction where the data was collected prepares candidates for employment as surveyors, architectural technicians and site managers. Where colleges in the past have supported students or adults who had trained for craft occupations to access professional qualifications, this was emphatically ruled out. Teaching staff reported a shift from "many years ago [when] if you wanted to be a construction manager you had to be a joiner and a bricklayer" (Paul, construction lecturer). Craft occupations were described as a route for young people who if successful might end up running their own building company. By contrast, "young professionals" were destined for more attractive careers:

They're looking to get a degree and perhaps then go on to get a masters, which is becoming more and more of a requirement, and then to move into management and work on some of the world's very interesting projects. So there is the split now, and it isn't what the joiners used to do. (Paul, construction lecturer)

Yet by contrast, the other case studies produced little or no evidence that the students' experiences of work led to a higher evaluation of their occupation's social worth. Even in educational settings, students mainly reported carrying out routine tasks that led to a diminution of self-worth, with opportunities to read to or work with children directly highly prized by placement students. Students in creative and design areas remained unclear about their futures, reflecting the uncertainty of jobs in these sectors.

4.3 Valued Learning Content

Just as the locations, and their consequent opportunities to learn, varied significantly across the three case studies, different aspects of knowledge were valued. On the professional-technical case study, students engaged with an unusually high level of theorised knowledge. Correspondingly, apprenticeships in such areas have retained taught qualifications whilst many service-sector apprenticeships are now taught entirely in the workplace (Fuller & Unwin, 2017; Esmond, 2019) and students reported the intensity of college-based study. Practical aptitude was clearly valued and respondents listed practical achievements alongside the high school grades as enabling them to join the course: Jack, a former lifeguard had taken on plant maintenance at his swimming pool, whilst Phil on the same course cited practical projects for family members. Yet the same students reported their college-based learning as valued
in the workplace and, as we will see, this translated into a high valuation of classroom-based knowledge.

By contrast, “care and personal services staff” valued practical skills yet sometimes found it difficult to use these on placement. Placements in these areas were sometimes presented to students as opportunities to experience work rather than to learn. In these cases, learning at work depended on the arbitrary quality of work experiences and serendipitous opportunities arising from work experience. Yet it was unclear how they were directly orientated to labour markets as a result of this learning, with some hairdressing staff and students noting that placements appeared to have displaced earlier vacancy opportunities.

In this respect, the projects completed by students in digital and creative areas offered better opportunities to demonstrate practical skills than those completing placements, where socialisation into routines predominated. For creative and design students, the knowledge required for commissioned projects was accessed largely independently of organisational constraints and internet-based. Although staff articulated a need for practical applications, students provided no real indication of evaluating any kind of internet-based learning content any differently.

4.4 Socialisation

The accounts of students across all cases conveyed the significance of social dimensions. In the professional-technical case, this took on professional aspects: the course leader spoke of “presenting to main boards and corporate entities . . . writing technical reports and having to adapt them to a non-technical audience” (Neil, course leader). This process of socialisation extended from dress codes to the accommodation described above: Upper secondary students lived with “approved landladies” expected to ensure students were home for 10pm; those on higher levels progressed to student accommodation. In this context, we see the (predominantly male-dominated) groups being socialised into what might be described as a “professional habitus” associated with greater access to valorised capitals.

By contrast, placements in the care and personal services case were those where socialisation into emotional labour is deemed essential (Colley, 2006). Compared to students in more “technical” disciplines, students preparing for more service-based fields encountered greater emphasis on socialisation than on technical skills during their lengthy work placements. Whilst interpersonal skills associated with customer service and communication are essential for those in directly customer-facing roles, this can contribute to a sharper differentiation in the FE sector in England where general education subjects are excluded from curricula. In contrast, in those programmes for lower attaining young people and in low status, female-dominated programmes such as childcare, we see students being socialised into specific forms of vocational habitus (Colley, 2006) associated with emotional labour, with
"skills" such as self-presentation, time-keeping and obedience (Tomlinson, 2013, p. 69) and with low paid and precarious employment.

The significance of these socialisation processes is attested by government insistence that T Level students on creative and design courses will need to complete industry placements, in spite of the practical difficulties involved. They may be able to access the same networked knowledge inside and outside work organisations; but without placements, full-time students will not be subject to the expectations of a sector characterised less by industrial discipline than by short-term employment and insecurity.

4.5 Sources of Expertise

The professional-technical case study revealed an unexpected tension between industry and academic expertise. The course leader described his efforts to recruit and retain teachers with contemporary industry expertise but this appeared to play out in a less direct focus on practical problems at work than might be expected from the valorisation of technique. This preference for knowledge available in the college over cutting-edge industrial practice supported the observation that this case appeared to valorise abstract, institution-based knowledge. Staff were often studying for academic credentials: "We really promote the staff to complete masters and PhDs: A very academic team" (Neil, course leader). English vocational teachers often hold higher industry qualifications than academic credentials: Unlike many European countries, teachers in engineering are also particularly likely to hold sub-bachelor teaching qualifications (Frontier Economics, 2018). Yet precisely in a sphere where important learning opportunities were available at work, great emphasis was placed on academic expertise for tutors and for students.

Students not only accepted this approach but saw their tutors, rather than the expertise available in their companies, as the key personal resource of knowledge. The research team probed this preference in interviews: Researcher: "Do you get out and talk to experts in the field or visit sites where it [an advanced technique]'s being used, or a project where it's being used?" Phil:

Well I've been [i.e. worked] on a few myself, actually, where it's been sort of, been implemented; but we've actually got Susie, one of our lecturers who is a specialist in [the technique] and she does quite a few lectures and she's quite, quite well known so she is a quite useful . . . person to speak to you about it and learn from. (Phil, professional construction student)

At higher levels, participants reported the use of written dissertations to assess higher-level students for project work, a method more closely associated in England with final-year bachelor study than practice-based projects but now permitted on "higher national" qualifica-
tions. Jack explained the absence of discussion around industry practice as the consequence of course specifications:

At the moment we're sticking to . . . the guidelines of the course, so it's quite rare that . . . we have a problem, bring it in and say to our lecturers, 'Can we have a word about this?' . . . It's understanding what the course wants of us and then learning from that. (Jack, "higher national" student)

The significance of this data is that, in the case where the quality of learning opportunities at work appears highest, the most valued sources of expertise appear to be located in the classroom.

By contrast, students in personal service roles experienced the expertise of professionals differently. Here work-based practitioners were placed in highly valued expert roles and could be seen by students as gatekeepers who determined what they could learn at work. Students were often visited by assessors, who lacked the authority of classroom-based teachers or industry-based experts: Their role is expanding with the growth of workplace learning in England (Esmond, 2019). Even in an area with significant traditions of workplace learning, childcare students found their learning experiences contingent on the extent to which they were trusted by the other practitioners to deal with parents and children. Anna described different settings she had experienced:

I think when they don't push you, they just see you as a student and nothing else then it makes it seem like you can't do as much. But, then, if you go to one and they trust you, then you get to learn more . . . [but with certain practitioners] you just get to do jobs which aren't important. (Anna, childcare student)

A critical question rarely discussed in England at this stage is how teachers engage with the practice of their students, especially where those students have had different experiences and opportunities. Whilst some teachers in this study described different teaching strategies for building on their placement learning (e.g. shared reflections or discussions in the classroom), others left students to make their own connections between "classroom learning" and "workplace learning".

### 4.6 Credentialisation

A final key distinction among the case studies was their orientation to progression and credentials. Although the Sainsbury reforms offered to replace the vocational system wholesale (see above), and the terminology of "T Levels" is presented as an equivalent to the "A levels" that provide university progression, the three patterns emerging from the data show quite distinct orientations.
The professional-technical case placed considerably greater emphasis on progression. Here the course leader reported his main motivation in building an upper secondary course as providing recruitment to higher level courses. The vision of a distinctive route to higher levels of study completes the distinction between this and other routes. By contrast, progression to higher levels featured very little in the data from personal service and caring occupations, or in the creative and digital fields that made up the final case study. Although progression to higher levels of study is widely available in such areas as healthcare and early childhood education, work placements in these areas were never discussed as facilitating progression to degree-level studies: in these cases, work placements were seen more clearly as progression routes into employment where credentials play a less significant role in selection.

4.7 Labour Market Transitions

Having categorised these diverse learner experiences, we can begin to summarise how these early experiences of work in England position young people for labour market transitions. The case studies provided evidence that workplace learning entails more far-reaching processes than providing students with specialist industry skills. Even on the professional route, important propositional knowledge is acquired in classroom settings, and learning at work entails important socialisation activities, preparing students for lengthy pathways (usually via higher education) into higher levels of employment and its expectations. Other routes prepare learners for social practice, either by accustoming them to workplace routine or discovering cultural norms of networked interaction. These are not new social processes but the move towards workplace learning in England appears to be reinforcing them in a more hierarchical form.

We therefore complete our case study by conditionally denoting three types of labour market transition which the move towards workplace learning appears to be setting in motion. We characterise the first as "technical elite formation", noting a partial separation of the upper strata of VET evident in other jurisdictions. We designate the support of transition to marginal service employment as "welfare VET", socialising many learners into poorly rewarded care roles. The difficulties of digital students in securing the briefest of placements reflect the contingent nature of employment in that field, notwithstanding the rewards available to more successful individuals, leading to our final designation of "new economy precarity". We discuss the implications of this typology in our conclusions.

4.8 Conclusions

The typology emerging from our case studies is provisional and is not claimed to be a universal description of an emerging VET fissure in England. Nevertheless, this increasing
divergence corresponds broadly to the pattern of service employment discussed by Wren (2013), with professional construction contributing to the UK’s globally traded services. Participation in this workforce generates very different rewards from those in Wren’s (2013) “welfare” (the professional services provided by the state) and “non-dynamic” sectors (p. 13). Membership of such groups (and their reproduction) calls for very different preparation, and entails quite distinctive labour market transitions. Such a widening gap in VET would reflect the increasing levels of inequality in the UK.

We do not claim that this greater social (and educational) hierarchy is inevitable. Whilst it would build on England’s foundations of liberal market skill formation, this would require conscious choices by policymakers. Nevertheless, these outcomes for workplace learning are more likely in the English context precisely because all forms of professional and vocational learning focus directly on practice. (The wider curricula of most European VET, extending to languages and broader social questions, are largely excluded even from the college curricula of these subjects.) Thus, the shift towards greater emphasis on placements can enhance the reproductive role of educational practice that vocational educators widely seek to interrupt.

Further research and unfolding events can confirm, refine or refute the relevance of our cases, and our typology of labour market transitions. These approaches may be sustained, and even enhanced, if the UK draws further away from European social models and becomes more profoundly aligned to more extreme versions of liberal market economy, although this remains a matter of political choice. At a moment of redefinition for the UK’s position in relation to Europe, its position as a liberal market economy, may prove, as political economists suggest, self-reinforcing. It may be that other educational and political traditions and institutions enable other countries to resist these tensions. However, such theorisation offers no guarantee that VET elsewhere in Europe will not suffer fragmentation of a similar type, if at a different pace and on a different scale.

The aftermath of the COVID-19 pandemic may also strengthen a shift away from the classroom and towards learning at work, particularly if this is seen to help straitened state finances. It has also raised questions about which occupations and what aspects of their work should be valued, and by implication what educational preparation they require and deserve. There may be less acceptance that, for example, the education of care workers should primarily serve their marginalisation. At a probable moment of profound change, these cases draw attention to the possibility of a rising curve of inequality in VET.

References


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Pre-Service Teacher Career Choice Motivation: A Comparison of Vocational Education and Training Teachers and Comprehensive School Teachers in Germany

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Abstract

Context: The current shortage of teachers in Germany, especially in vocational schools, is of relevance to the education system and labour market policy. To recruit future teachers more effectively, it is of great importance to gain a better understanding of pre-service teachers’ career choice motivation. However, research has concentrated so far mainly on teachers in the general education system. The present study investigates the career choice motivation of students who will become vocational education and training (VET) teachers and compares it to the career choice motivation of future comprehensive school teachers.

Approach: We surveyed \( N = 79 \) teacher training students in total, 30 pre-service VET teachers and 49 pre-service comprehensive school teachers at the beginning of their university-based teacher training. To measure career choice motivation, we used the standardized questionnaire Motivation for Choosing Teacher Education (FEMOLA) including six subscales (Pohlmann & Möller, 2010). In order to compare pre-service VET and comprehensive school teachers with regard to the six scales of career choice motivation, we performed a multivariate analysis of covariance (MANCOVA).

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Findings: We found the highest means for the motives subject-specific and educational interest for the future VET teachers. In comparison to the pre-service comprehensive school teachers, they rated their educational interest, social influences, and utility as significantly less relevant in terms of their career choice motivation. There are no significant differences on the other three motivational scales.

Conclusion: The findings show that the two groups partially differ in their motivations to become a teacher. Therefore, we can conclude that the measures for attracting new students should also be individually adapted to the motives for their career choice. For example, in a counselling interview, the motives for choosing a profession should be discussed and compared with the requirements for studying and later working life.

Keywords: Career Choice Motivation, Vocational Education and Training, VET, Pre-Service Vocational Teacher, Recruiting, Multivariate Analysis of Covariance, MANCOVA

1 Introduction

The cognitive, social and emotional development of children is strongly shaped by their learning experiences in schools. Within the educational system teachers play a central role by designing learning opportunities. The professional role and competencies of teachers are closely connected to students’ achievement (Hattie, 2009), underlining the importance of well-educated and skilled teachers in schools. However, similar to many countries around the world like Australia, the U.S., or several European countries (Watt et al., 2012), Germany currently faces a shortage of teaching staff, equally in general and vocational education schools (Bertelsmann Stiftung, 2017). Especially for vocational schools the problem becomes acute as not enough people decide to become a vocational school teacher. And this teacher shortage particularly applies to industrial-technical and nursing professions (Kultusministerkonferenz [KMK], 2011; Lange & Sülflow, 2017). In Germany, only 50% of the predicted demand for vocational school teachers will be covered during the period of the school years 2016/17 and 2020/21 (Klemm, 2018). Possible causes include that teaching at vocational schools is little known as a profession, and, in addition, despite its generally positive image not as attractive as teaching at general education schools (Frommberger & Lange, 2018; Huismann, 2018). Compared to teachers at other school types, such as the high academic school track (Gymnasium), teachers at vocational schools might receive less prestige, less remuneration and might be seen as "blue collar" teachers, all adding up to a slightly lower attractiveness of teaching in vocational schools. To comply with the challenge of recruiting more people for teacher training to overcome the above-mentioned lack, we need to know where and how to find further potential applicants. One important angle to consider on that note are the motives why students chose the profession of vocational education and training (VET) teacher in the
first place (Driesel-Lange et al., 2017). However, their career choice motivation—understood as the factors or reasons that are influential for the decision to choose teaching as a career (Han & Yin, 2016; Thomson et al., 2012; Watt et al., 2012; Wenström et al., 2018)—is little studied so far.

In this study we therefore examine pre-service VET teachers’ career choice motivation. A high proportion of them completed a vocational training themselves before entering their teacher training and their share in VET teacher training is far higher than it is in general education teacher training (Stellmacher et al., 2019). Future VET teachers thus part from a different starting point than those in the general teaching profession. It can be further assumed that their professional experience gained during vocational training leads to a different weighting of the career choice motives.

This is why we also compare the motivation of pre-service VET teachers to those of future general school teachers, more specifically to those who will teach at a comprehensive school (Integrierte Sekundarschule). We aim to shed light on possible differences between these two groups in order to be able to shape future recruiting strategies to their specific career motivations. Our research therefore addresses two gaps in the existing literature: First, we analyze what motivates persons to start their training in order to become VET teachers. Second, we compare their motives to pre-service comprehensive school teachers, and address the specificity and commonalities between both groups. There is paucity of research on both research topics. The results might help to decide whether and which specific recruitment strategies for pre-service VET teachers can be more successful than those of the status quo.

Before presenting our study, we will describe vocational education and training in Germany as well as the course of training to become a VET teacher. We then concentrate on career choice and career motivation and give a brief overview of the current state of research.

2 Vocational Education and Training in Germany

VET systems exist in almost all European countries. They strongly differ in terms of their characteristics. In a survey, the European Centre for the Development of Vocational Training ([Cedefop], 2017) found 30 different VET concepts in Europe. However, within this variety, they identified four ways of how VET is understood: (1) As work-based or dual initial training, (2) as initial vocational education, (3) as further training, or (4) as (part of) lifelong learning. Apprenticeship programmes, also known as dual system, belong to the first of the above-described groups and build the main pillar of the German VET system.
2.1 The Dual System

The dual system consists of two learning venues or learning places: Companies of the according industry or occupational field and vocational schools. 70% of the two-year or three-year training programme is work-based. Students typically work three to four days at their apprenticing company. The apprentices are employed by the company and receive a salary that is regulated by collective agreement and is increased with each year during the training period. Companies may only employ apprentices if they can fulfil a set of standard qualifications (Hippach-Schneider & Huismann, 2019).¹

The other 30% of the dual programme are school-based. Students spend the other one or two days within a week at their vocational school (ibid.). The vocational school fulfils the task of imparting basic vocational education and vocational training and extending the previously acquired general education. Due to the frequent alternation between theoretical and practical training phases within the dual system, apprentices quickly gain professional experience and knowledge, while getting a realistic perspective on the daily work life in their profession from the very beginning (Blaß & Himmelrath, 2016). Hippach-Schneider and Huismann (2019) summarize the core of the German VET systems as a “cooperation between state, companies, and social partners, who set together national standards and training regulations (for both learning places)” (p. 14). Both institutions—vocational schools and companies—fulfil this joint educational and pedagogical mission as equal partners. The successful completion of training, both at the vocational school and at the company, qualifies the graduate to exercise a profession as specialist (ibid.). Currently, there are 327 recognized VET occupations in the fields of industry and commerce, crafts, agriculture as well as in the liberal professions, public service, home economics, and health care (Federal Institute for Vocational Education and Training [BIBB], 2018).

In addition to the dual system, there are other VET programmes in Germany, such as full-time and part-time school-based vocational trainings, e.g. in the sectors commercial, languages, crafts, health care, or nutrition, which take between one year and three years to complete. Another type of VET are transition programmes² which aim to support students in their professional orientation and prepare them to start further training. Participants in transition programmes often suffer from social disadvantages, insufficient German language skills, learning difficulties, and other impairments (Hippach-Schneider & Huismann, 2019).

¹ These regulations also ensure a uniform national standard (Hippach-Schneider & Huismann, 2019).
² Transition programmes include the pre-vocational training year (BVJ), the basic vocational training year (BGJ) and the introductory training (EQ).
2.2 Training of Future VET Teachers

In the dual system, there are in-company trainers and VET school teachers, who have different responsibilities and tasks. In-company trainers accompany the apprentice's practical training at the workplace. VET school teachers impart theoretical knowledge. Due to the wide range of VET programmes addressing different target groups, there are some teachers and trainers who are specialised to teach certain groups or in specific settings: VET teachers and trainers who lead disabled persons to a dual system diploma, VET teachers for full-time vocational schools, and learning facilitators (Hippach-Schneider & Huißmann, 2019).

In Germany, the VET teacher training is regulated by the Conference of Ministers of Education and Cultural Affairs (KMK) and is sectioned into two phases*: A first phase taking place at university focusses on the theoretical education (Hippach-Schneider & Huißmann, 2019). It is followed by the second phase, the preparatory practical service, also called the probationary period (Referendariat*) emphasising on the practical learning (Hippach-Schneider & Huißmann, 2019). University education should consider both scientific findings and professional practice, it should further enable prospective teachers to apply their professional and pedagogical competence (KMK, 2016). Students who aim to become VET teachers usually combine a vocational subject, e.g. economy and administration, health science, electrical engineering, or information technology, with a general educational subject, such as mathematics or biology (Frommberger & Lange, 2018). The study program comprises scientific subject-related, didactic, and pedagogical components, as well as first practical experiences, both at a vocational school and within a company (Hensen & Hippach-Schneider, 2016). After a standard study period of 4.5 to 5 years, graduates receive a Master of Education or the First State Examination (named erstes Staatsexamen). During the subsequent Referendariat the aspiring teachers continue their education by applying the scientific education to real-life situations (KMK, 2016). In this phase, the prospective teachers are to be prepared for their work and their responsibility as teachers and educators. In supplementary seminars, usually conducted by VET teachers holding an additional qualification, their professional, pedagogical, and psychological training continues (Frommberger & Lange, 2018). The Referendariat lasts at least 12 and at most 24 months and leads to the (Second) State Examination (zweites Staatsexamen). Upon passing this examination, students completed their formal training and can be then seek employment as VET teachers (KMK, 2016).

Because of the wide range of vocational programmes, VET teachers work depending on their vocational subject in schools of different vocational focus. Depending on the vocational speciality of the respective school, they are facing a very heterogeneous group of students. The student body at vocational schools might consists of students without any school-leaving

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* In the teacher training is also a third phase consisting of further education and training of teachers.

* Although the term Referendariat essentially focuses on teacher preparation for higher service it is widespread and often preferred to the broader term Vorbereitungsdienst.
certificate, good graduates of secondary level, graduates holding a university-entry certificate, secondary school dropouts, and/or skilled and experienced professionals. Furthermore, VET teachers should not only be able to convey theoretical content but should also have practical knowledge which they could incorporate into their teaching using examples. So, the spectrum of professional requirements is very broad and considerably more extensive than in all other teaching professions (Frommberger & Lange, 2018).

2.3 Number of Students in VET Teacher Training

Due to the above-mentioned persistent shortage of VET teachers, especially in industrial-technical fields, it is important to examine all possible reasons for this shortage. One starting point for a root cause analysis consists in the VET teacher training. In all German federal states except Brandenburg, a total of 51 institutions—universities or teacher training colleges—offered VET teacher training with a total of 11,552 enrolled Bachelor students in winter semester 2014/15 (Frommberger & Lange, 2018). Since 1990/91 the number of programs to become a VET teacher has almost doubled. Their 3,679 newly enrolled VET students present a solid basis for the consecutive Master programs according to Frommberger and Lange (2018). However, only 1,657 of them planned to also obtain a Master degree or a State Examination, a decreasing number compared to the previous year (ibid.). It seems that some students change their mind during their Bachelor studies not wanting to become a VET teacher anymore. Empirically reliable findings on the reasons why are hardly available so far (Lange & Sülfow, 2017). Hence, one research desideratum is to investigate and understand their motives on why not to follow through with their prospective careers as teachers (Frommberger & Lange, 2018; KMK, 2011). In order to increase the number of those who complete their teacher training, it is essential to look not only for the causes of students’ dropouts but also to investigate the initial motives of current students for choosing a career as a teacher.

3 Research on Motives for Pre-Service Teachers’ Career Choice

Research on pre-service teachers’ career motivation has a long tradition, both nationally (an overview is given in Wiza, 2004) and internationally (Watt et al., 2012). Since teacher training leads almost exclusively to the specific profession of teaching in contrast to more broad-based subjects such as business administration, students take their career decision for this specific career as teachers already at the very beginning of their studies (Spinath et al., 2005). Choosing a career is a developmental process during which a person explores the world of work, aligns them with one’s own skills and interests, and acquires facets of career competence, such as planning or stress management skills (Driesel-Lange et al., 2017). One theory to explain teachers’ career choice is the expectancy-x-value theory of Eccles et al. (1983; see
also Pohlmann & Möller, 2010; Watt & Richardson, 2007). According to the expectancy-x-value theory, career choices are directly influenced by factors such as one’s abilities, beliefs, and expectancies for success on the one hand, and the value one attaches to the task (of teaching) on the other hand (Retelsdorf & Möller, 2012). Choosing to become a teacher is most often based on intrinsic, extrinsic and altruistic motivations (Watt et al., 2012), with motivation understood as the "drive that moves people to do something by nature" (Han & Yin, 2016, p. 3). Examples of motivational reasons include for intrinsic motivation: Interest in the subject or importance of the subject for students, for extrinsic motivation: Job security or a good work-family-balance, and for altruistic motivation: Teaching as a service to society, teaching as a noble profession (Thomson et al., 2012). However, there is no final answer on how to empirically distinguish motivational factors.

Although previous findings are difficult to compare as they differ in terms of sampling, instruments, and methods, one consistent result can be observed across all studies: Intrinsic motivation predominates. The interest or joy of working with children and adolescents is the motivation most often expressed to become a teacher. Regarding other motivations, such as professional interest or feasible work-family-balance, following behind the top position, previous studies offer various, partially conflicting findings (Rothland, 2014). For a more precise view on career choice motivation further comparable results are needed. Therefore, it is important to use theory based, empirical validated instruments.

### 3.1 Validated Questionnaires

Currently, two standardized questionnaires to investigate teachers’ career choice motivation that fulfil the above-mentioned criteria exist: The Factors Influencing Teaching Choice Scale (FIT-Choice) by Watt and Richardson (2007) and the Motivation for Choosing Teacher Education Questionnaire (Fragebogen zur Erfassung der Motivation für die Wahl des Lehramtstudiums [FEMOLA]) by Pohlmann and Möller (2010). As both instruments are based on the expectancy-x-value-theory (Eccles et al., 1983) they share some similarities but also differ in some aspect, as described as follows.

Watt and Richardson (2007) developed the FIT-Choice model specially to examine and measure motives of career choice in teacher training. Influencing factors are "Social influences, prior teaching and learning experiences, followed by the more proximal influences of self-perceptions, values, and fallback career. Higher-order constructs . . . are personal utility value and social utility value" (Richardson & Watt, 2014, p. 7). These motives are operationalized through twelve subscales with a total of 38 items. The FIT-Choice scale was validated in English and afterward translated into different languages to enable international comparisons of career motivation (see the German translation in Watt et al., 2012). Further studies confirmed the factorial structure for the German version. König and Rothland (2013), how-
ever, found good or acceptable reliabilities only for ten of the twelve subscales. Because of insufficient internal consistencies, Watt et al. (2012) only used selected parts of the instrument to compare the career choice motivation of Australian, American, German, and Norwegian pre-service teachers. Its multilingual availability and validation render FIT-Choice particularly suitable for international comparisons.

In comparison, the FEMOLA questionnaire which originally was developed in German is mainly used for national surveys. With only 32 items it is slightly shorter than the FIT-Choice. Three of its subscales measure educational interest, subject-specific interest, and utility representing value factors. Further three subscales—ability beliefs, social influences, and low level of difficulty of the course of study—constitute expectancy factors. Three studies confirmed the validity of this factorial structure (Pohlmann & Möller, 2010).

3.2 Current Research Results

Research based on the FIT-Choice questionnaire shows the highest ratings for the five motives intrinsic value, perceived teaching ability, the desire to contribute to the society, to work with children/adolescents, and positive prior teaching and learning experiences. Job security and time for family as extrinsic factors were rated lower but are also important motives. Choosing teacher training as a fallback career is more likely to be rejected (Richardson & Watt, 2014). International comparisons of Australian, American, German, and Norwegian (Watt et al., 2012), German, Austrian, and Swiss (König et al., 2013), and Finish and German pre-service teachers (Goller et al., 2019) show that their career choice motives across countries have more similarities than differences.

As mentioned above, the questionnaire FEMOLA has been applied exclusively in German-speaking countries. In several studies, for instance from Paulick et al. (2013) or Pohlmann and Möller (2010), educational interest, subject-specific interest and ability beliefs (as intrinsic motives) were rated higher than utility (in some studies divided into family/leisure and financial utility), social influences or a low level of difficulty of the course of study (as extrinsic motives). Retelsdorf and Möller (2012) also compared career choice motivations of pre-service teachers who later will teach at different school types such as elementary school, secondary school, and high academic school track (Gymnasium). Their findings indicate that a strong educational interest is more likely to lead to choosing to become a teacher at an elementary or secondary school. At the same time, people with a higher professional interest are less likely to choose such posts. The stronger the motive utility, the higher is the likelihood of being a teacher at the Gymnasium instead of the elementary school. In addition, a higher belief in ability is associated with a lower probability of choosing an elementary school to teach at, a perceived low difficulty of the course of study however increases this probability. Pohlmann and Möller (2010) also determine a higher level of professional interest and a
lower assessment of study requirements for teachers at the Gymnasium than for secondary school teachers. As a consequence to those differences, the authors conclude that future research on career choice motivation should extend to other school types of such as vocational schools.

So far only a few studies investigated the career choice motivation of pre-service VET teachers and to what extent might exist differences to the motivation of those pre-service teachers later working at other school types. Müller and Zeitz (2007) conducted a survey with 153 first-year students in VET teacher training at the Technical University of Munich, Germany. According to their findings, which are based on a self-developed instrument, the main career motives were subject-specific interest, educational interest, the proximity to one’s own skilled occupation and the desire for personal development.

A Norwegian study examined the career motivation of 195 VET students with the Academic Self-Regulation Scale (SQR-A) which is based on the self-determination theory. The SQR-A comprises four subscales (external regulation, introjected regulation, identified regulation, and intrinsic motivation). The students rated their identified regulation highest, followed by their intrinsic motivation. External regulation was rated lowest. The identified regulation had significantly positive and the external regulation significantly negative correlations with self-efficacy and perceived motivating teaching (Cents-Boonstra et al., 2018).

Using the FIT-Choice questionnaire, Berger and Girardet (2015) polled 605 teachers of vocational subjects who either teach full-time or part-time at a vocational school or worked in training workshops or inter-company courses in Switzerland. The results show that similar to primary and secondary school teachers, also VET teachers’ career decisions are mainly driven by intrinsic and social motives. One limitation must be kept in mind while interpreting these results: Only a selection of FIT-Choice items was used in the questionnaire. Therefore, it remains unclear whether the strongest motives were identified.

3.3 Research Question and Hypotheses

So far there is a paucity of quantitative studies with standardized instruments focusing on the motivation for choosing a career as VET teachers, also compared to other school types. According to a comparative study by Driesel-Lange et al. (2017), students training to become VET teachers show a significantly higher level of career certainty than those to be teaching at the high academic school track (Gymnasium). Compared to their fellow students, for them intrinsic motives and work-family balance were significantly less pronounced motives in their decision to become a teacher. This first comparative study between students who study to become VET teachers and those who will become teachers at a general education school indicate a distinct constellation of career choice motivation of future VET teachers.
The specific motivational structure of pre-service VET teachers—also in contrast to other pre-service teachers—should be further explored, for example to implement the findings in universities’ recruitment strategies for teacher training programs. Our research question which derived from this requirement asks about the differences in terms of career choice motives of students who train to become a VET teacher compared to students who have chosen a career as a teacher at a comprehensive school. Based on the above described previous research, we formulated the following hypotheses: (1) For pre-service VET teachers’ intrinsic motives to become a teacher, like subject-specific interest, educational interest, and ability beliefs, are more important than extrinsic motives, like utility, social influences and a low level of difficulty of the course of study. (2) Concerning sociodemographic factors, age is associated with higher utility motives and lower social influences. Prior pedagogical experience is related to higher educational interest. We do not have specific expectations concerning the relation of gender and career choice motives. (3) Compared to students who will teach at comprehensive schools, future VET teachers show a higher subject-specific interest and lower educational interest.

4 Method

4.1 Sample

The sample consists of $N = 79$ pre-service teachers at a German University. Most students were at the beginning of their studies. 30 students (38%) were enrolled to become VET teachers (i.e. electrical engineering, metal technology, or gardening). 49 students (62%) will later teach the subject vocational studies/technology (Wirtschaft - Arbeit - Technik [WAT]) at a comprehensive school. Teacher training at university is built the same way for both groups. But upon successful completion of their studies, pre-service VET teachers will receive permission to teach at vocational schools (as part of the VET system), while students who are studying the subject vocational studies/technology will obtain permission to teach at comprehensive schools, mostly at integrated secondary schools (as part of the general educational system).

We chose this latter group because the subject vocational studies/technology at comprehensive schools has a high share of practical work, for example in metal, electrical or textile workshops and therefore a certain similarity to the contents taught at vocational schools. Regarding their career choice motives, a comparison between those students who choose...
a practice-oriented subject at a comprehensive school and those students who will teach practice-oriented at a vocational school seems particularly interesting.

The overall sample was 68% female (n = 54) with a mean age of M = 22.90 (SD = 5.10) years. Gender and age proportions differed between the two subsamples: VET students were 50% female (n = 15) and in average M = 23.33 (SD = 5.28) years old. In contrast, the future comprehensive school teachers were 80% (n = 39) female and with a mean age of M = 22.04 (SD = 3.74) years slightly younger. Data were collected during regular classes using a standardized self-report questionnaire. To respond students could choose between a paper-pencil version and an online version.

4.2 Instruments

Career Choice Motivation

Motives to become a teacher were measured using the above described standardized Motivation for Choosing Teacher Education Questionnaire (FEMOLA) including six subscales (Pohlmann & Möller, 2010; see also Paulick et al., 2013). Students rated each statement on a four-point likert-scale (1 = does not apply at all, 4 = applies completely), for subscales, number of items, example items, and Cronbach’s alpha see Table 1.

Table 1: FEMOLA: Subscales, Number of Items, Example Items, and Cronbach’s Alpha

<table>
<thead>
<tr>
<th>Subscale (N items)</th>
<th>I chose teacher education because …</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational interest (6)</td>
<td>…I like working with adolescents and young adults.</td>
<td>.81</td>
</tr>
<tr>
<td>Subject-specific interest (5)</td>
<td>…I find the contents of my subjects interesting.</td>
<td>.84</td>
</tr>
<tr>
<td>Ability beliefs (5)</td>
<td>…I think that I am a capable teacher.</td>
<td>.76</td>
</tr>
<tr>
<td>Utility (7)</td>
<td>…I am financially secure as a teacher.</td>
<td>.83</td>
</tr>
<tr>
<td>Social influences (5)</td>
<td>…friends and acquaintances advised me to study as a teacher.</td>
<td>.81</td>
</tr>
<tr>
<td>Low level of difficulty of the course of study (4)</td>
<td>…it is easier to study as a teacher than other courses of study.</td>
<td>.74</td>
</tr>
</tbody>
</table>

Individual Variables

We also included students’ responses regarding their age in years, their gender (1 = female, 2 = male) and their designated school type (1 = comprehensive school, 2 = vocational school). Furthermore, we asked them to indicate their prior pedagogical experience by checking none, one, or several of eight possible pedagogical activities (i.e. babysitting or tutoring). Those activities were summed up, resulting in a total score of 0 (no prior pedagogical experience) to 8 (experience in eight different pedagogical activities).
4.3 Data Analysis

In a first step, we performed descriptive analyses. In a second step, we examined the distributional differences regarding gender, age, and prior pedagogical experience between the two groups of teacher students. We, therefore, computed a chi-square test with gender and t-tests with age and prior pedagogical experience as variables. In a third step, a multivariate analysis of covariance (MANCOVA) was performed to detect mean differences across the six scales of motivation for choosing teaching education between pre-service VET teachers and future comprehensive school teachers. Gender and prior pedagogical experience were included as covariates in this analysis.

5 Results

The results of the descriptive statistical analysis are presented in Table 2. The data indicate the highest means for educational interest \(M = 3.40, SD = 0.42\) and subject-specific interest \(M = 3.34, SD = 0.51\). So, students rated them as their most important motives for choosing the teaching profession. Except of the low level of difficulty of the course of study, all six FEMOLA subscales are on or above the statistical mean of the scale.

The chi-square test confirmed that the two groups significantly differed in terms of gender, \(\chi^2(1) = 6.64, p = .01\), with more women in the comprehensive school group (female = 80%) than in the vocational school group (female = 50%). T-tests showed no significant difference in age distribution between the two student groups, \(t(76) = -1.26, p = .21, r = .14\). Students training to become comprehensive school teachers \((M = 2.45, SD = 1.46)\) had significant more pedagogical experience prior to their studies than VET teacher students \((M = 1.67, SD = 1.18), t(77) = 2.48, p = .02, r = .27\).
Table 2: Means, Standard Deviations, and Intercorrelations of the Study Variables

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1.34</td>
<td>0.50</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>22.90</td>
<td>5.07</td>
<td>0.15</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior pedagogical experience</td>
<td>2.16</td>
<td>1.41</td>
<td>-0.16</td>
<td>0.11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational interest</td>
<td>3.41</td>
<td>0.43</td>
<td>-0.00</td>
<td>-0.08</td>
<td>0.05</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Subject-specific interest</td>
<td>3.34</td>
<td>0.52</td>
<td>-0.09</td>
<td>-0.05</td>
<td>-0.02</td>
<td>0.34**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability belief</td>
<td>3.18</td>
<td>0.49</td>
<td>0.05</td>
<td>0.12</td>
<td>0.08</td>
<td>0.35**</td>
<td>0.22*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility</td>
<td>3.08</td>
<td>0.59</td>
<td>0.06</td>
<td>-0.13</td>
<td>-0.18</td>
<td>0.12</td>
<td>0.16</td>
<td>0.22*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social influences</td>
<td>2.50</td>
<td>0.72</td>
<td>-0.04</td>
<td>-0.34**</td>
<td>-0.19</td>
<td>0.28**</td>
<td>0.09</td>
<td>0.18</td>
<td>0.32**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Low level of difficulty</td>
<td>1.75</td>
<td>0.51</td>
<td>0.08</td>
<td>-0.18</td>
<td>0.06</td>
<td>-0.11</td>
<td>-0.03</td>
<td>-0.02</td>
<td>0.24*</td>
<td>0.28**</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. M = mean; SD = standard deviation; ***p < 0.001; **p < 0.01; *p < 0.05; gender: 1 = female, 2 = male.

Table 3 displays the mean values of the different motives to become a teacher for both groups. Pre-service VET teachers rated their subject-specific interest (M = 3.35, SD = 0.50) descriptively in average as their most important motivation for choosing teacher education, followed by their educational interest (M = 3.22, SD = 0.45) and their ability belief (M = 3.17, SD = 0.46). In average they attribute the least importance to the low level of difficulty of the course of study (M = 1.69, SD = 0.48). This confirmed our first hypothesis that the most important motivations of students for choosing to become a VET teacher are intrinsic motives, such as the subject-specific interest (compared to extrinsic motives).
Table 3: Means and Standard Deviations for the Motivation of Choosing Teacher Education as Function of the School Type While Controlling for Gender and Prior Pedagogical Experience

<table>
<thead>
<tr>
<th>FEMOLA</th>
<th>Vocational (n = 30)</th>
<th>Comprehensive (n = 49)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject-specific interest</td>
<td>3.35 0.50</td>
<td>3.34 0.52</td>
</tr>
<tr>
<td>Educational interest</td>
<td>3.22 0.45</td>
<td>3.51 0.37</td>
</tr>
<tr>
<td>Ability belief</td>
<td>3.17 0.46</td>
<td>3.18 0.51</td>
</tr>
<tr>
<td>Utility</td>
<td>2.97 0.60</td>
<td>3.17 0.55</td>
</tr>
<tr>
<td>Social influences</td>
<td>2.13 0.59</td>
<td>2.69 0.65</td>
</tr>
<tr>
<td>Low level of difficulty</td>
<td>1.69 0.48</td>
<td>1.80 0.51</td>
</tr>
</tbody>
</table>

Note. M = mean; SD = standard deviation

Table 4 presents the results of the MANCOVA. Prior to running the MANCOVA, multivariate normality was tested as a necessary condition. As the Kolmogorov-Smirnov test indicated, not all dependent variables demonstrated a normal distribution within the two groups of teacher education. However, this assumption can be discarded under the condition of two approximately equally sized groups in an adequately large sample (Bortz & Schuster, 2010). The required sample size was estimated from the table of Bortz and Döring (2006, p. 628) and is N = 26 (for a big effect) for each subgroup. The existence of homogeneity of variance was also checked and validated. As the t-test did not show any statistically significant differences in terms of age between the two teacher education tracks, we did not include age as a covariate in the model.

The results of the MANCOVA show no statistically significant multivariate effects for the covariates gender ($F(6,70) = 0.96, p = .46$) and prior pedagogical experience ($F(6,70) = 2.14, p = .06$) thus answering our second hypothesis on their effects on motivations for choosing teacher education. While prior pedagogical experience was not related to higher educational interest and age was not associated with higher utility motives (against our expectations), age showed indeed a negative bivariate relation to social influences (see Table 2). However, the second hypothesis mostly has to be rejected.

Focusing on our third and final hypothesis about possible motivational differences, the following results add to the answer: In contrast to the future VET teachers, students in the track for teaching vocational studies/technology in comprehensive schools descriptively rated their educational interest ($M = 3.51, SD = 0.37$), their subject-specific interest ($M = 3.34, SD = 0.52$) and the utility, like work-family-balance, ($M = 3.17, SD = 0.55$) as the most important motivations for them to become a teacher. In the order of the motivations there already
consists a difference between the two groups of students, because pre-service VET teachers descriptively rated their subject-specific interest ($M = 3.354, SD = 0.50$) higher than their educational interest ($M = 3.22, SD = 0.45$), followed by the ability belief ($M = 3.17, SD = 0.46$).

Furthermore, the aspired school type in which the students will later teach has significant effects on the perceived importance of three motivations to become a teacher. Regarding students’ educational interest as a motivation to become a teacher, the school type has a medium-sized effect ($F(1,75) = 9.37, p < .001, \eta^2 = 0.11$). Students in the track for teaching vocational studies/technology in comprehensive schools not only perceive their educational interest as the most vital motivation of all, they also rated it significantly higher than their fellow students in the vocational track did. Thus, as expected in hypothesis 3, future VET teachers reported lower educational interests compared to students for Vocational studies/technology at comprehensive schools. However, we could not verify the expected higher subject-specific interests in future VET teachers.

Regarding the utility, the two school types have a medium effect on its importance as a motivation to become a teacher, $F(1,75) = 4.53, p = .04, \eta^2 = 0.06$. However, for future comprehensive school teachers, it is the third most important motivation for choosing teaching as a career and their rating was significantly higher than that of future VET teachers.

Finally, there is a large effect of the school type regarding social influences as motive to become a teacher, $F(1,75) = 19.66, p < .001, \eta^2 = 0.21$. For the future teachers in comprehensive schools, the influences of their social environment were significantly more important than for the future VET teachers.

**Table 4: MANCOVA Results for the Effects of the School Type on the Motivation of Choosing Teacher Education While Controlling for Gender and Prior Pedagogical Experience**

<table>
<thead>
<tr>
<th>Source</th>
<th>Gender</th>
<th>Prior pedagogical experience</th>
<th>School type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>F</td>
<td>p</td>
<td>\eta^2</td>
</tr>
<tr>
<td>Multivariate (df=6, 70)</td>
<td>0.96</td>
<td>.46</td>
<td>.08</td>
</tr>
<tr>
<td>Univariate (df=1, 75)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject-specific interest</td>
<td>0.94</td>
<td>.34</td>
<td>.01</td>
</tr>
<tr>
<td>Educational interest</td>
<td>0.83</td>
<td>.37</td>
<td>.01</td>
</tr>
<tr>
<td>Ability belief</td>
<td>0.20</td>
<td>.65</td>
<td>0.00</td>
</tr>
<tr>
<td>Utility</td>
<td>0.73</td>
<td>.40</td>
<td>0.01</td>
</tr>
<tr>
<td>Social influences</td>
<td>0.08</td>
<td>.78</td>
<td>0.00</td>
</tr>
<tr>
<td>Low level of difficulty</td>
<td>2.04</td>
<td>.16</td>
<td>0.03</td>
</tr>
</tbody>
</table>

*Note. \( \eta^2 \) = partial eta square.*
6 Discussion and Conclusion

The purpose of this study was to investigate the career choice motivation of future VET teachers with a validated questionnaire and to compare their motives to those of prospective comprehensive school teachers. The results add to the scarce research on the motivation of pre-service VET teachers and their specificities compared to other pre-service teachers.

All FEMOLA scales, except the level of difficulty of the course of study, have shown a mean above the statistical mean of the scale. They all seem to have mattered in the decision-making process to decide for the course of study. For the future VET teachers subject-specific interest was the most important motive for their career choice, followed by their educational interest. While the subject-specific interest of the comprehensive school teachers showed equal importance, their educational interest was even more important as a career choice motive. Extrinsic motives like utility and social influences were lower in future VET teachers compared to comprehensive school teachers. So, we found significant differences between pre-service VET teachers and vocational studies/technology teachers in comprehensive schools in terms of the motives educational interest, social influences, and utility.

An explanation for the prospective comprehensive school teachers’ significantly higher educational interest could lie in the age of their future pupils. In Berlin, the subject vocational studies/technology is taught throughout grade seven to ten at comprehensive schools. Pupils in these classes are therefore in average between 13 and 16 years old, while only 39% of pupils in vocational schools are 19 years or younger (Autorengruppe Bildungsberichterstattung, 2018). Studies of Retelsdorf and Möller (2012) and others show that educational interest losses of importance as career choice motive with the increasing age of the pupils taught, e.g. in comparison of elementary and secondary schools with the Gymnasium.

The lower degree of the perceived social influence as a motivational trigger to become a VET teacher could possibly be explained by a low level of awareness of the VET teaching profession (Frommberger & Lange, 2018) compared with the general teaching profession. Since this occupation is little known, its probability to be recommended by friends or family is comparatively lower than that of teaching in general schools. Further, depending on economic development, social influence to become a VET teacher might differ: In times of a rather sound economy (at the time of the survey), friends and family might be less inclined to propose the teacher profession compared to times of economic downturn, where becoming a teacher could seem as a more secure job opportunity which could be more often recommended by the social environment.

A possible explanation for the differences in the motive utility (with a medium but significant effect size) could be the observed gender difference between the two sample groups. The comprehensive school sample has a significantly higher proportion of women than the vocational school group. It might therefore be possible that aspects such the work-family compatibility play a more important role for female than for male students. The general framework
for teachers in Germany is characterized by a high degree of reliability and certainty. For example, teachers receive a decent salary and pension, have an above-average number of holidays, and are entitled by law to switch to part-time upon their request (Füssel, 2014). Even if it is presuming old role models, a guaranty to be able to return to their original job after a pregnancy could weight importantly in a women’s career decision, maybe more importantly than for a man.

6.1 Conclusions and Practical Implications

An important theoretical implication of the current study is that VET teacher students are indeed a special subgroup of teacher training students with a differential pattern of career choice motivation. The subject specific interest was the most important motivation for choosing teacher education, followed by educational interest, while social influences and utility were comparably far less important. As shown for other types of teacher training students like elementary school versus high academic school track (Gymnasium) teachers (Retelsdorf & Möller, 2012), VET teacher students differ in their career choice motives. Against the backdrop of the paucity of research on this group of teachers and the light of the teacher shortage especially in vocational schools, more empirical studies on VET teachers seem highly recommendable.

Practical implications derive from the findings on the different motivations of the pre-service teachers. One implication is that our knowledge on their career choice motivations could be applied in the recruitment strategies of universities to increase the number of students who become teachers at vocational schools. Adapted recruiting and communication strategies could incorporate career choice motives to promote the profession of vocational school teacher. Through the motivation of passing on one’s own specialist knowledge, for example, it would be possible to specifically address professionals who are looking for a career change or who are interested in continuing career development. In counteracting the shortage of teaching staff at vocational schools, not only must more students be recruited, but the conditions for a successful course of study and for remaining in the teaching profession later must also be ensured. Again, career choice motivation offers a valuable starting point for the initial counselling of prospective students in order to convey a realistic picture of their studies and everyday working life as teachers which then can be compared with the career choice motives of the prospective students.

Because we surveyed pre-service teachers, results may not be directly transferred to VET in-service teachers. However, their motives to become VET teachers may prolong to later occupancy at VET schools. Considering motivating and demotivating features of the working environment and the initial motives also could further evolve (Han & Yin, 2016). The analysis of changing and enduring motives to teach, starting with of pre-service teachers to con-
continued education in the Referendariat to in-service teachers at VET schools is due to future research, both cross-sectional and longitudinal. Independently from this, students should be prepared in the best way in their studies for the challenging job as VET teachers in order to keep them in the teaching profession permanently.

6.2 Limitations and Future Research

Although this study provides valuable insights into career choice motivation of pre-service VET teachers, some limits must be acknowledged when interpreting its results. First, our sample was comparatively small due to the low number of students in the VET teacher program at the participating university and with this sample size we could only prove big effects. We are dealing here with a general problem in researching the profession of VET teaching. In addition, our aim was to measure students’ career choice motivation at the beginning of their studies which further reduced the available number of prospective participants. Therefore, concerted initiatives to further research career choice motivation across universities are of particular importance in the future.

Second, the group of pre-service vocational studies/technology teachers constitutes a representative comparative group for general schools only to a limited extent. On the one hand, the subject of instruction includes a broad spectrum of subjects ranging from nutritional science to metalwork and vocational orientation, so that vocational studies/technology teachers have a broader range of content than teachers of other subjects at general schools. On the other hand, the subject contains many elements of practical work, for example in textile, carpentry or electrical workshops. Hence, the teaching activities of vocational studies/technology teachers have a stronger practical focus than that of other subjects at general schools. Because of the practical activities, vocational studies/technology teachers could in terms of their career choice motivation be closer to VET teachers than other subject teachers in comprehensive schools.

The third constraint results from the cross-sectional design of our data which allows no conclusions about possible changes in terms of the perception of one’s initial career choice motivation. Future research might examine whether the framing of one’s initial career choice motivation may change in the course of one’s studies (e.g., between the beginning of the Bachelor’s program and the Master’s program). Ideally, students of the same cohort would be interviewed several times over the course of their studies in order to assess possible changes in their perception of their initial motivation to become a teacher. It is also of interest weather and how practical training might affect it. A hypothesis in this respect would be that with the increase in pedagogical knowledge and on-the-job experience through the obligatory internships, students will increasingly adopt the role of teachers for themselves. In the retrospective
assessment, the extrinsic motives could thus recede further into the background in favour of the intrinsic motives as central career choice motives.

Forth, the last limitation is due to the fact that our analyses are based on retrospective self-assessments, which in general entail the risk of socially desirable responding. According to Paulhus (1984), respondents embellish their own answers towards socially accepted views in order to appear in a better light towards themselves and/or third parties. In the present case, extrinsic motives, such as the high compatibility of the teaching profession with family obligations or job security, might have been rated as less important than they were in the decision-making process. Respondents might feel that in society extrinsic motives are considered as less noble and contradict the public opinion on why someone should want to become a teacher. The same reasons may have led to a stronger evaluation of the intrinsic motives.

Taking these considerations into account, we believe that the current study offers new and relevant insights into the career choice motivation of pre-service VET teachers. Their high subject-specific interest, combined with educational interest on the one hand and their comparatively low utility and social influence as career choice motivations on the other hand, lay a solid motivational foundation for studying to become future VET teachers. Gaining more motivated per-service VET teachers and preparing them with the necessary knowledge, abilities and attitudes in the course of their studies presents a good starting point to reduce the teacher shortage in an important area in our educational system—the vocational schools.

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Teacher Continuing Professional Development and Team-Working Competences: A Case Study From Italy

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Abstract

Context: European policies describe the key role of teachers’ Vocational Education and Training (VET) in improving students’ learning outcomes. In order to improve teacher education, Organisation for Economic Co-Operation and Development (OECD) policies identify competency models as the main framework for understanding teacher professionalism and designing VET policies. By reinterpreting these models through the capability approach, this article aims to identify more relevant competences of preschool teachers in the public and private services of northern and central Italy.

Methods: The research began with a comparative analysis of VET policies for preschool teachers to outline more common competences used to define their professional profile. This led to the creation of a new, re-thought competency model used to design a quantitative survey to describe teachers’ competences in preschool settings. The self-assessment questionnaire was built on the following competence areas: Management of educational and relational processes, teamwork and large-scale teamwork, networking and governance. The self-assessment questionnaire evaluated 65 preschool teachers’ pre-acquired competences and development levels and those more desirable for the future (called “ideal” co.). The comparison of areas and their values reveals critical results, particularly related to teamwork competences at different levels.

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Results: The study outlines the structure of preschool teacher professionalism based on “traditional” competences (e.g., educational relationships with children) and some “innovative” competences (e.g., networking and governance), which appeared to be more desirable in teachers’ evaluations. However, the comparison of the data reveals that governance competences are better evaluated than teamwork, introducing some hypotheses about the quality of relationships in the community of practice.

Conclusions: The research outlines how the competences emerging as relevant for teachers need to be better activated in professional settings to become strategically important. The results related to teamwork and governance competences focus on the importance of informal and extended learning contexts to teachers’ socio-relational competence development. The organization of the school system needs to be re-thought and extracurricular competences need to increase to foster the generative development of informal learning communities at intra- and extra-school levels. According to the capability approach, the research reveals the extreme complexity of preschool teacher professionalism. For vocational education and training, it underlines the re-thinking of the preschool teacher profile as a co-designer of learning environments, which includes building formal and informal competences to foster communities of practice as a learning and generative process.

Keywords: Teacher Professional Development, Teacher Education, Teacher Training, Preschool Teacher, Competency Model, Agency, Vocational Education and Training, VET

1 Agency and Teacher CPD

The increasing attention of European vocational and educational policies on the issue of teacher Continuing Professional Development (CPD) results related to better support teaching and learning improvement and its efficacy (European Commission, 2007; Council of the European Union, 2009; European Commission et al., 2015). This is particularly so in preschool services, where education and care systems qualification appear more linked to the quality of teachers and assistants’ professionalism (Urban et al., 2011; Peeters et al., 2016).

Many reports (Organisation for Economic Co-Operation and Development [OECD], 2009, 2013; Urban et al., 2011) underline how teaching professionalism cannot be described only in terms of technical competences (e.g., knowledge, methodological and didactic co.). On the contrary, the latter should be integrated with others that better support and enhance these skills, in addition to extending their sense and value (Urban et al., 2011).

Moreover, the analysis on teacher education and training policies (OECD, 2009, 2013) gives the possibility of highlighting the new role of informal learning contexts and their return on professional qualification, in a way to adapt and foster teacher practice to answer today’s social challenges and their new educational needs.
These education and training policies consider competency models as more relevant on professional teacher qualification. Some of them seem to be wary of other variables that affect more or less the efficacy of a professional education based on competency models. This particularly concerns preschool teacher professionalism because of the influence of other "dimensions"—such as learning environment quality, work conditions and cultural background—that may affect competency activation.

As Costa (2012) noted, teacher CPD cannot be evaluated only by formal and institutional models for teacher education and training. In fact, they consider and understand competency models and their competences as teaching requirements, taking for granted the ability to read, further understand and make choices. However, the following points need to be considered: i. Teacher CPD does not necessarily coincide with the competence meaning; ii. Other elements must be taken into consideration to foster competency activation; iii. These elements appear strictly involved in effective conditions and opportunities, in school contexts, to take advantage of them.

Therefore, it appears necessary to integrate competency models with the capability approach as it focuses the evaluation of tools, conditions and really accessible opportunities to activate personal resources in a capability process that enable to qualify professional agency.

The research on preschool teachers' CPD wants to investigate the opportunity of the integration between competency models and capability approach, to support CPD and its connection with self-education and agency increase. The analysis of policies and capability models (Sen, 1999; Nussbaum, 2011) identify as conceptual fundamentals of the agency defining the following dimensions:

1. A *process dimension*, within professional competences have to be involved for their activation. Professionalism today stems from a set of knowledge, skills and values that are created through the interaction with socio-cultural environments in continuous evolution. In Lazzari's (2012) study on “Early Childhood Education and Care” (ECEC), teacher preschool professionalism is understood as an evolutionary dimension, strongly related to the individual capability process that takes place in ECEC "entire competent system" (Urban et al., 2011), that includes all of the educational stakeholders and social participants in the qualification of the processes.

2. A *fulfillment dimension*, within the individual assumes the responsibility of personal choices and objectives, as the strategies to better achieve them (Margiotta, 2012; Costa, 2012). Sen (1999) considers the capability process for personal agency as a development process of freedom of choice for goals achievement, which influence human structuring. Nussbaum (2011) describes essential functionings, as "states of being and doing", for human flourishing, clarifying how resources and competences turn from environmental factors to functionings' activation.
3. A relation dimension, that recalls the importance of social participation and democratic negotiation on goals choice, in order to emphasize the common advantage and prevent self-referential and preferential criteria. In other words, competency activation has to take into consideration the discussion of main values and principles, to select effective strategies to better agree personal aims with social ones.

These process, fulfillment and relational dimensions concern conditions and opportunities, but also the freedom of choice activation to convert competences into practice efficacy, and development personal and professional agency. Sen (1999) states, sure enough, that individual ability to fulfill personal aims depends on not only the availability of conditions and opportunities, but most of all from personal ability to activate them for personal achievements and functionings enhancement (Nussbaum, 2011).

In other words, a CPD basically centered on skills and competences collection, without any reference to its activation dimensions does not seem to be able to satisfy the needs and challenges in today's educational contexts. In fact, teacher education and training have to support a strategic rise of activation dimensions to better improve professional practice as well as non-formal and informal learning contexts participation (European Centre for the Development of Vocational Training, 2014).

Therefore, investment on the development of activation dimensions coincides with the sense of the capability approach. This leads on to the need to identify the research question: Can the capability process qualification improve the competency practice? And so, how can competency and capability process together affect teacher CPD? Again, what are the elements that better qualify the capability process and competency activation to agency development?

2 Competence and Capability Process

This research will study how the capability process and competency activation contributes to improve professional agency and better qualify teacher CPD. This helps to re-define professional vocational and training policies and to re-design the organizational, management and institutional agreements that support teacher professionalism.

On agreeing with the theory of empowerment (Alsop et al., 2006; Alkire & Ibrahim, 2007), it becomes necessary, on the one hand, to integrate competences and new elements for their activation, but on the other, it becomes very important to give more attention to conditions and opportunities really available—as "conversion dimensions" of Nussbaum (2011)—to make it as practicable as possible. In other words, even if the conditions/opportunities of professional efficacy appear strongly linked to organizational, management and institutional arrangements, the real focus of capability process goes on the freedom and personal capacity to choose the main personal goals and give the "shape to the action" (Costa, 2012) to better
pursue them. Sen (1999) remind us that the real opportunities to convert competences in functionings come from the freedom/capacity to select between different options of agency, as from the freedom/capacity to convert the selected option into practice, carrying out and putting into effect those option as really achievable.

In order to more precisely define the agency capability process, the first step of the research will focus on the correlation between specific levels of pre-acquired competences and the corresponding levels of standard agency performance. By doing so, we will emphasize the strong importance of activation dimensions supporting effective pre-acquired competences practice, and its influence on teacher professional development as on training and organizational devices (e.g., learning communities building, and organizational development at school institution). This kind of process, and its significance—just like the meaning of flourishing, as Nussbaum (2011) imply—identify the teacher CPD in a "generative process" (Costa, 2015), so as to create a virtuous circle of positive effects and returns in terms of empowerment. This can be achieved not only for teachers involved in educational and school contexts, but also for external participants (stakeholders), holding technical, administrative and political posts, in addition to families, associations and third sector.

In second step, therefore, the link between competency activation and a "generative CPD” recalls the importance of informal and extended learning contexts, understood as the contribution of social collaborations and stakeholders’ interaction (Raffaghelli, 2012) on self-development processes.

Through these research steps, we will define which specific dimensions would support better than others the professional agency activation, involving informal and extended learning contexts and extra-school environments. This allows the outlining of a new model of teacher CPD more substantial and credible than others based on competency acquired.

Finally, this research aims to take advantage of results on teacher CPD to stimulate the reformulation of political, institutional and regulatory frameworks really capable of supporting its qualification.

3 The Research Tool

The study on existing competency models led to the creation of a new model of competences addressing the professionalism of preschool teachers, in order to support the design of a specific self-assessment questionnaire which describe teachers’ competences in preschool settings. The method consists of three steps:

1. Creating a new model of professional competences and a related questionnaire. The competences were selected and mapped by the researcher among those arising as strongly connected to the preschool teacher professional profile (European Commission et al., 2013, 2014; Peeters & Lazzari, 2011; Urban et al., 2011). This led to the creation of a new com-
petency model ("the model of professional competences") made up of 6 areas of competence with total of 22 competences inside (Table 1). These areas are made up composed of: a. The management of educational processes with the child (REL); b. The relationship process with families (FAM); c. The team-working process at school group level (COL T.); d. The large-scale team-working process at the institutional level (COL A.); e. The networking process in school networks (NET); f. The governance process with local stakeholders (GOV). These last competences (networking and governance), emerge from CoRe report (Urban et al., 2011) as the most relevant in the composition of today’s preschool teacher professional profile. The structure of the competency model constitutes the central reference for the creation of an original self-assessment questionnaire made up of different items, which require the teachers involved to self-evaluate pre-acquired competences, their desires for the future, the level of competency development achieved (Tessaro, 2012), and the types of learning involved (formal, non formal, informal), from which the contexts of education and training originate.

2. **Quantitative research.** The self-assessment questionnaire on professional competences involves 65 teachers from different preschool services as well as different background and in-service practice experiences in several regions of northern and central Italy. The analysis and processing of data discloses: a. The areas of coincidence between competences evaluated in terms of pre-acquisition and development; b. The areas of emergent criticality (e.g., in the intersection between pre-acquired competences and their development levels); c. The backgrounds of teacher practice training (Nussbaum, 2011; Mortari, 2010) mainly endorsing educational professionalism.

3. **Qualitative research.** The following step, not mentioned in this paper, regards a participatory observation (Trinchero, 2004) and reflexivity process (Schön, 1993; Mezirow, 1991) where teachers compare reported competences, some of which are expressed in school practice. This step of the research carries out the design of a self-development plan based on priorities choice, recorded by "school practice logbooks".
Table 1: The new Model of Competences for Preschool Teachers (Urbani, 2016).

<table>
<thead>
<tr>
<th>Co of Management of Educational Process (with Child)</th>
<th>Co of Management of Relationship Processes (with Families)</th>
<th>Co of Team Working Processes (at School/Group Level) COLT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>REL</td>
<td>FAM</td>
<td></td>
</tr>
<tr>
<td>(e.g. School planning, project design, methodology, leaning assessment...)</td>
<td>(e.g. communicative hold responsible, inclusive Co)</td>
<td>(e.g. reflective, creative cooperative Co)</td>
</tr>
<tr>
<td>4. Co of Large-Scale Teamworking Processes (at Institutional Leel) COLA.</td>
<td>5. Co of Networking (School Networks) NET</td>
<td>6. Co of Governance (Local Stakeholders) GOV</td>
</tr>
<tr>
<td>(e.g. organizational cooperation, social empowerment, vision &amp; mission awareness)</td>
<td>(e.g. resource sharing, socio-relational and political Co networking)</td>
<td>(e.g. pedagogical awareness creation, professional enrichment, partnership set-up)</td>
</tr>
</tbody>
</table>

We then examine several results emerging from the questionnaire items, describe the competences self-evaluated by preschool teachers, and the environmental factors and conditions that influenced the answers provided.

4 Analysis of Partial Data

In the quantitative survey by questionnaire, we collected data from 65 preschool teachers located in several regions of northern and central Italy. They were selected according to criteria of maximum diversification between geographical and socio-cultural contexts, schools (public and private preschool services), and teacher long-service practice. For example, in the survey preschool teachers coming from national institutes, municipality services, private companies, parental associations located in different areas (big cities, suburbs, small towns, countryside, regions) were involved. According to the research record, the teachers involved must hold at least five years of school practice to meet the survey criterion of in-service and professional development.

The questionnaire is structured displaying a first part with teachers' personal data, followed by several items regarding their self-evaluation on: Pre-acquired competences (In your opinion, what are your personal pre-acquired competences?), the development levels of competences (What are their development levels?), their desires for the future (What competence is more desirable to you, in order to integrate it in your professional profile?), and the kinds of
learning involved (Formal, non formal, informal) linked to their education and training settings (What were your initial training settings that help you to develop your competences?).

A first reading of data allowed us to identify the most critical areas of competences in professionalism of preschool teachers. The result is that the area of competence of Networking (NET 1, 2, 3) describes some of the more significant variations in teachers’ responses (value of standard deviation from the average), informing on important differences in individual assessments of the development levels of competences.

Figure 1: Development Levels of Competences

Note. Approximation of the relation between the average values of the levels of the competency development (horizontal axis) and the values of its standard deviation from the average (vertical axis) (Urbani, 2016).

Figure 1 shows the average value of the teachers’ assessments and the standard deviation from this value. The most important results concern the competence of Vision and Mission (COL A. 4) in the area of collaborative competences in institutional cross-school levels. This competence is related to the ability to establish and enhance an institutional identity in its entirety, as well as the ability to jointly build the best course of action. Its value of standard deviation appears significant in comparison to the value of the average, informing on high level of discordance in teachers’ evaluations (e.g., some evaluations are very “negative”, whereas others are very “positive”).
This evidence indicates how, in the area of networking competences, only a part of respondent teachers feel involved in an extended-levels collaborative process able to foster teachers’ professionalism and support their action to affect professional community development and improvement. The data analysis focuses on the relevant differences between self-evaluated development levels of networking competences in the following areas: i. Cooperation as “ability to work in net”; (Networking competences, NET 1); ii. Ability to exploit the network opportunities in order to “strengthen and expand professionalism” (Strategic Networking competences, NET 2); iii. Ability to exploit the network action in order to “influence political decisions” (Socio-relational and Political Networking competences, NET 3).

The development level of these competences appears more variable—and interesting for us—than that of other competences typically assigned to the preschool teacher professional profiles, such as educational relationship competences (area of educational process, REL) or relationship with parents (area of related process with families, FAM). Overall, the development level of Networking competence in teacher responses shows a high variability in terms of standard deviation, and quite a low value of average. These results help to identify the area of Networking competence as the most critical in all the 6 areas comprehensively evaluated.

![Figure 2: Ideal and Pre-Acquired Competences](image)

*Note. Comparison between the values of ideal and pre-acquired competences (Urbani, 2016).*
Figure 2 describes the comparison between pre-acquired competences and ideal ones too (these last, understood as what teachers wish to achieve in the future, in terms of CPD). The graph points out the existence of a greater gap within the Governance area of competence, referring to extracurricular planning and joint collaboration in local community with the educational stakeholders, to reach common goals. A first analysis of the comparison between pre-acquired competences and ideal ones informs us about an important increase of the value assigned to the Governance competences in the professional profile, for both pre-acquisition and ideal too.

Additional levels of analysis and data processing will make it possible to compare teacher’s evaluations on these “new” Networking and Governance competences and more traditional ones. In fact, the former appear essential to support and qualify the development of the latter. In other terms, these socio-relational competences (Networking and Governance) that we can call a sort of “complex competences” of professional interaction: What kind of requirement do they take advantage of, and how can they act on CPD to a generative process?

5 The Processing of Quantitative Data

The final assessment and analysis of the 65 questionnaires reveal interesting tendencies in the socio-relational and cooperative competences that influence teachers’ CPD. Moreover, these tendencies suggest some notable implications in terms of adult education.

Figure 2 illustrates the final comparison between the levels of pre-acquired and ideal competences. For those pre-acquired, the final analysis confirms that the main competences teachers self-evaluated are those of Governance called “Concert” competences (GOV 1, referring to the capacity for project and activities implementation with different stakeholders of the local community), and Educational Project Design (REL 1, into Area of Educational Process, referring to the ability of educational and curricular project designing and planning).

The ideal competences most recurrent in teachers’ responses (e.g., what teachers desire even more) is part of the area of Governance (GOV 3, referring to the ability of personal enrichment through extracurricular planning and collaborative interaction with social stakeholders of the local community that hold educational returns).

The most critical competence evaluated, however, concerns the area of School Team collaboration and cooperation (COL T. 2, referring to the capacity for team working within groups of teachers). This specific point reveals a significant discrepancy between a low evaluation in the “pre-acquired” item and a high evaluation of the “ideal” one.

This result suggests the existence of a certain level of instability in team working competences, in direct opposition to a relevant tendency of deeming those abilities desirable and essentially fundamental in teacher professional profile. But even more so is the answer: How is it possible that teachers state they have only few competences, lacking those in team wor-
king area at school level, and declare having the best in the area of extended collaboration with extra-school stakeholders at the same time?

![Graph showing the comparison of final results into the levels of pre-acquired and ideal competences of teachers.](image)

**Figure 3: Final Results of Pre-Acquired and Ideal Competences**

*Note. Comparison of the final results into the levels of pre-acquired and ideal (in term of more desirable) competences (co.) of teachers (Urbani, 2016).*
The crucial piece of evidence, however, emerges from the graph in Figure 3, which shows
the development level of those competences that in figure 2 showed only pre-acquisition and
desirability. Teachers highly evaluated their Governance and Networking competences, whereas collaborative competences in team working showed a lower evaluation. Indeed, a more
consequential result would have been a higher evaluation granted to collaborative competences within educational professionals with the same type of functions, and holding similar responsibilities (that is, between teachers). On the contrary, the respondent teachers seem to compare themselves to professions that are quite- or even strongly- different (e.g., not having intra-school roles and functions).

In general, the quantitative survey highlights that the development levels of competences
(of those pre-acquired as well as ideal too) progressively become increasingly weaker compared to the more traditional competences (regarding, e.g., educational, didactic and practical work) reaching those socio-relational ones, as are collegial and collaborative (for example, team-building, communicational and cooperative competences). Also, while in the area of Related process with families (FAM) the evaluation of teachers produced positive responses, the evaluations with school team collaboration competences (COL T.) worsened. Finally, development level of collaborative Cross-school competences (COL A.) and Networking ones (NET) received the lowest evaluation. Scores only increased with the Governance competences (GOV).

Therefore, we find ourselves facing the paradoxical situation in which Governance competences receive better evaluation than the Team working ones. That is, teachers prefer joint collaboration and social interaction with educational stakeholders of the local community, and/or extra-curricular professionals more than team working collaboration and decision-making amongst professionals who are placed in the same school, sharing the same issues, problems and working conditions.

The development of Governance competences does not appear linked to a kind of formal initial teacher education, or to a pedagogical and theoretical pre-acquisition competence. On the contrary, the Governance competences result as those related to an informal learning dimensions in extra-curricular and extra-institutional contexts. Tracing a correlation with cross-section sample elements, we can notice that the respondent teachers did not hold high initial training levels: Only 20% of them hold an academic training profile (which, sometimes, is not considered coherent with the professional profile). Therefore, we presume that teachers involved would appoint an informal origin also to other competences, that teachers of other school levels have reached with a formal initial education. At the same time, however, it should be noted that all the initial training pathways of preschool teachers, from high school level to academic education, are lacking in contents related to Networking and Governance competences.
The relevant difference in evaluations in Vision and Mission competences (Figure 1) suggests a likely connection with the double focus on the professionalism of teachers (on the one hand, traditional Educational competences related to formal training; on the other hand, Governance competences and their informal training implications). In other words, teacher professional agency involves both traditional competences and more innovative ones in a capability process that request the qualification of the intra-school relationship process, both at a team working level and an institutional one.

The most interesting evidence emerging from the quantitative survey, however, is the low evaluation of school collaborative competences (team working competences, COL T). As we have seen, this data indicates that teachers better evaluate a kind of “external” professional competence, rather than one more related to teaching professionalism. But the fact that team working competences (Figure 2) are considered highly desirable, despite being rather neglected in the previous questions of the survey, suggests the existence of a kind of awareness about the need to integrate them into teacher professionalism.

6 Conclusions: Hypothesis of Professionalism Expansion

The evolution of teacher professional requirements calls for a new investment in terms of capability process to find effective strategies and opportunities for CPD improvement (European Commission, 2017; European Commission et al., 2014). Far from a concept of work (and its professionalism) as being a functional and performative act, professionals today have to focus on the capability of process and fulfillment dimensions including socio-relational ones, in order to plan both personal and professional meaningful pathways (Costa, 2008, p. 271).

The topic of collaborative competences and learning communities among teachers still produce discussions in the international scientific community (Johnson & Johnson, 1994; Hord, 1997; Vermette, 1998; Wenger, 2006; Alessandrini, 2007). In the survey, quantitative results on the variability of the development in team working competences of teachers lead to make their connection with formal and informal settings. As desirable as it may be, the increase of more “innovative” competences need a strong pre-acquisition of communicative and socio-relational competences. However, the importance of informal and extended learning contexts on socio-relational competence development endorses the re-thinking of the formal ones, such as schools and institutions of initial education and training. This goes back to the evaluation of the quality in formal settings, and about its educational and organizational choices. In other words, it would be necessary to evaluate in advance whether the above-mentioned system is able to face the much needed change, and to effectively support it (Costa, 2015, p. 181) or if this should be rethought at the source. The development of team working competences entails a radical re-thinking of the organization of the school system,
as well as the need to increase extra-curricular competences, so as to foster and support the generative development of informal learning communities at extra-school level. Consequently, the following points need to be taken into consideration:

- **The re-thinking of the learning environment.** School spaces, both physical and mental, must become qualifying environments where learning opportunities and skills can be activated, fostering real and professional development. The capability process on professional agency depends on the availability of these opportunities and other, shared, collaborative and participative practices between teachers. This makes it possible to re-define priorities and pathways to better achieve teacher competences, and activate them in practice (Urbani, 2018).

- **The school leadership qualification.** It becomes necessary to identify the school manager as a transformer of the school culture: The investment on the development of conditions and opportunities for teachers to really achieve personal and professional goals would foster an authentic culture of autonomy. This challenges new organizational and management models able to include and empower educational governance.

- **The definition of a systematic policy of teacher vocational and educational training.** Socio-relational competences have to be supported in initial education and training pathways, and in teaching qualification courses. The insertion of communicative, cooperative, management, organizational, and strategic skills in teacher training curricula can foster a new awareness on self-determination and capability process in working and decision-making settings (Urbani, 2018).

The survey results indicate the increasing importance given to the extra-curricular dimensions of Networking and Governance. The quantitative data suggest new interpretations of the teacher role and function as an active agent of change and transformation, particularly in relations and process dimensions. This implies a reshaping of teacher professional vocational training and adult education, according to a model based on capability process. This, in turn, suggests new planning and project designing dimensions for social inclusion and collaboration (governance). It also points towards new policies and approaches in support of individual CPD, thereby defining new vocational training pathways.

Critical issues regarding development levels of Networking competences suggest both an investment in the technological and infrastructural sector, as the building of networking cooperative agreements. The data collected thus far indicate a need to rethink the institutional, regulatory and organizational conditions, but also contractual ones too: New, real possibilities for teachers to meet each other and exchange different views in school practice should be
created, at wider and extended levels. More than local community, these type of experiences, related to the professional competency development and activation, need to be formally recognized in terms of career advancement. For example, it is important to provide:

- Institutional, regulatory, contractual and organizational opportunities that are able to enhance and support communities of practice (Wenger, 2006); experiences of extended collegiality; new relational and planning contexts, at intra-curricular and extra-curricular level.

- Contractual work guarantees that add new dimensions of professionalism (e.g., interaction with informal and extended learning contexts) to the definition of the professional profile. These additions should be combined by incentives and appropriate career plans.

- The existence of initial formal and informal training pathways, as well as in-service training courses, would allow teachers to come in contact with new realities and to experiment new personal activation opportunities. This approach would aim to determine the qualification of professionals who are capable of a team-working relationship with their peers, engaging and exchanging views in a socio-cultural context. These professionals would be able to face the problems and accept new challenges and create new opportunities for innovation with collective returns.

A substantial need for the requalification and redefinition of the professionalism of teachers at all levels, and its development is apparent.

On the one hand, the growing importance of reorganizing collaborative practices at school level will allow teachers to acquire new Team working competences, in order to efficaciously challenge themselves with extra-school contexts (in agreement with individual capability process). On the other hand, the insertion of new competences (such as the capability to manage extended learning contexts) will produce positive effects not just in terms of participation of these contexts (social capability process) but also, in turn, on the empowerment of efficacy and achievement of student outcomes. In fact, formal learning contexts will benefit from the improvement of the overall working climate, due to its capacity to positively reflect important aspects such as flexibility, openness and adaptation to changes. The growth of the socio-relational and collaborative working competences of teachers at school level requires a punctual assessment of the consequences both in terms of adult education and vocational training, as well as in social and democratic culture development. This, according to the following perspectives includes:
Teacher Continuing Professional Development and Team-Working Competences

- The rethinking of professional, vocational and training policies which must include informal aspects of extended learning contexts within learning communities (Krašovec et al., 2014).

- The redefinition of a new image of the teacher as a professional who is actively involved in co-designing the learning environment as an educational integrated system with inclusive importance (Ellerani, 2013).

- The support of reflexivity competences in collaborative practices will allow for the transfer of competences from the institutional level to an informal one, thereby stimulating community learning in terms of "learnfare" (Margiotta, 2012; Costa, 2012).

- The creation of communities of practice that hold political and pedagogic value, and are based on participatory processes and democratic negotiation, support social emancipation and the challenges of inequality (Sorensen & Murchú, 2004).

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Biographical Note

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Vocational Training for Rural Populations: 
A Demand-Driven Approach and 
its Implications in India

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Abstract

Context: Vocational training is viewed as a significant tool that increases employment outcomes and provides potential career advancement opportunities for individuals. Many countries are witnessing a shift from supply-driven to demand-driven approaches. The demand-driven approach in vocational training is often explored at the macro level and is associated with the perspectives of employers and labour markets. In contrast, this article explores the demand-driven approach at the micro level by focusing on the perspectives of individual learners within the context of their localities in order to position them at the centre of the skill development process.

Methods: This study used a qualitative exploratory research method and a mixture of focus group and face-to-face semi-structured interviews to obtain data to identify the practical problems that arise in real life contexts when attempts are made to prioritise vocational training demands in line with the needs of all the stakeholders. Based on the demand from the targeted learners, a competency-based vocational training course especially for women was designed, tested and evaluated in selected villages.

Findings: The results show clearly that the demands of the rural population varied, and their participation in the training course was highly influenced by access to a training centre, the duration of the training, economic returns and socio-cultural factors. The demand-driven approach works best in vocational training when it involves the relevant stakeholders and the target groups in the planning and designing process.

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Conclusion: The findings illustrate that demand-driven approach should be context specific, responsive to individuals'/learners' demands, relevant and flexible.

Keywords: VET, Vocational Education and Training, Vocational Training, Demand-Driven Approach, India, Needs Assessment, Women

1 Introduction

The notion of a "demand-driven" approach has gained importance in the development strategies of international development and donor agencies (Carney et al., 2007). The term "demand" has a similar meaning to need, want and desire, however, demand is a distinct approach that used in a different context (Ramasamy, 2016, p. 31‒39). In many countries, the concept of a "demand-driven" approach in Vocational Training (VT) is gaining momentum and reforms are taking place (King, 2012; Majumdar, 2008; Kingombe, 2012; Wallenborn, 2010). These reforms are accompanied by advantages and disadvantages according to country policies and implementation mechanisms. Current supply-demand approaches to traditional VT are presumed to be inadequate for delivering the competences required by the labour market (McGrath, 2012; Pavlova & Maclean, 2013). Another key point to remember is that many of the VT programmes in the past were considered as supply-driven due to insufficient adaptation of the training strategies of employers and/or state agencies, socio-economic conditions and institutional frameworks which failed to meet the emerging market needs (Keating, 2009; Mehrotra et al., 2013; Tara et al., 2016). In contrast, the demand-driven approach as used in the context of international development reflects the notion of personal well-being, quality life of individuals including an effect on attitude, motivation and personality, and the development of a society (Bennell, 1999).

The concept of a demand-driven approach in VT is often discussed in the literature (Keating, 2009) and in other empirical studies as skill demand in the labour market, which response to changes in the technological and economic environment. These studies pertain mainly to the macro level of the demand-driven approach, which is mostly connected to industrial, labour market and/or employers’ demand. It can be argued that access to training mostly remains limited to the formal VT sector which does not meet the needs of the illiterate, less-educated and the poor. Against this backdrop, our study focuses on the demand-driven approach of VT from the perspectives of individuals, learners and society by keeping them at the centre of the vocational skill development process. Specifically, we explore to what extent the demand-driven approach of VT is possible and its implications for a rural population. We examined this empirically through a pilot vocational skills training programme in India.

This paper highlights three major aspects which include: VT demands of the targeted group; individuals'/learners' needs; factors influencing those (vocational) training needs; and
the response to those demands. To set this in the research context, we first provide a brief description of the "demand-driven" discourse in the research literature relevant to this study. We also define our own understanding of the concept of "training demand" relating to the conditions of rural South-India. In the next section, we frame the study in the context of skillling the rural labour force in India. This is followed with a description of our study design and methods. We then discuss and analyse the results of the study. The outcomes are discussed in the light of other findings and the VT programme design.

2 Definitions of the Demand-Driven Approach in the Research Literature

Most of the studies on VT from a development perspective (Anderson, 2003; Bennel, 1999; King, 2012; Kingombe, 2012; Maxwell et al., 2000; Palmer, 2015) have provided ample evidence that many developed and developing countries have realised and witnessed the transition from supply-driven to demand-driven approaches to meet the current economic and technological challenges. In most of the countries, VT is viewed from economic aspects and focuses on employability and productivity (McGrath, 2012) that primarily correspond to industry and enterprises' expectations. This perspective generally gives little importance to the needs of individuals and regional/societal demands and, hence, does not consider the learners/target group with due importance in the (learning) process.

Palmer's (2015) study of countries in the Pacific region has noted that the funding regimes of VT systems are based on the supply-driven training model. This top-down approach does not adapt to market needs, and, hence, the resultant training strategies remain supply-driven. In order to make VT more equitable, demand-driven, responsive and relevant, Palmer (2015) argues that financing programmes need to be strongly linked to policy objectives. Similarly, Majumdar (2011) has asserted that VT in the Asia Pacific region has been supply-driven and has had limited impact on the labour market. He argues for a needs-based approach using labour market information to overcome the problem of skill mismatch.

In Sub-Saharan African countries, where the (formal) VT system has been largely supply-driven, the implementation process of such programmes has dominated and impeded the development of transparent, demand-driven and low-cost training markets (Palmer, 2007; Ziderman, 2003). The training markets have failed to develop due to labour market imperfections (i.e. insufficient incentives exist for employees and individuals to invest in training) on both the demand and supply side.

Stockmann and Silvestrini (2011) examined the VT programmes supported by the German Technical Cooperation (GIZ) in its partner countries. They found that factors such as relevance, efficiency and sustainability were not sufficiently present to enable the achievement of the intended goals. Further, they argued that the lack of systematic need identifi-
cation and stakeholder analysis, poor planning and implementation were the main reasons which made the programmes supply-driven.

The above literature reviews make it clear that VT systems tend not to give importance to the demand of individuals or societal perspectives and also often even fail to meet local employer needs. Many experts (Goovaerts et al., 2005; Mkandawire, 2001; Rakodi & Lloyd-Jones, 2002) in the fields of extension, community development organisations, aid-agencies and practitioners of human resource development often use the "demand-driven" approach in relation to individual demand. They believe that it enhances social inclusion, access to disadvantaged groups in a society and facilitates education, training, and (self-) employment.

However, only minimal attention has been paid to the demand side from the individuals' and/or target groups' point of view (Bennell, 1999; International Labour Organization [ILO], 2011, 2012; Mitra, 2002; Wallenborn, 2014). This includes lack of awareness of the vocational career aspirations of individuals, meeting learner or target group preferences, and considering their capabilities from a pedagogical perspective at the micro level (Maitra & Mani, 2014; Noronha & Endow, 2011).

Therefore, it is worth exploring how a demand-driven approach to VT at the grassroots level might support and respond to the individual demands of rural people in India by considering their needs beyond those of employers and the wider labour market.

The rationale of the "demand-driven" approach as used in this paper is a "bottom-up" method of designing a programme with the active participation of the target group and relevant stakeholders. It refers to "decentralisation" of participatory decision making in a real-life context, which helps to improve any education and training programme, and focuses on contextually appropriate strategies for the learners or target groups (Ramasamy, 2016). Further, the growing economic and technological changes in the labour market require individuals to play a greater role in and take more responsibility for choosing their own education, training and career development in their lives, based on the political and social context and their personal aspirations (Anderson, 2003; Arulmani, 2009). In many developing countries, there is an increasing attention on the process of shifting education and training systems to a demand-driven approach to take account of the learners'/clients' perspectives (Ramanujam & Sodhi, 2010). Similarly, it is argued that vocational skills training systems should increase learning opportunities for specific target groups to enhance their employment outcomes and address the challenges such as entry-level qualifications, affordable cost, and access by school dropouts and disadvantaged learners (Schofield, 1996). In this way, it is proposed that the system can support the demand from individuals and encourage training providers to respond. In addition, this approach can increase the degree of determination in an individual to realise their goals and take appropriate decisions about their vocational learning. To portray this with respect to Maxwell et al.'s (2000) terms, this approach is closely associated with a VT framework that is relevant and based on the real-life context of learners. Thus, it is es-
essential that VT should address the social objectives of the deprived, less-educated and rural populations as well as industry priorities (Ramasamy, 2016; Fisher, 1993). Mutso (2007) calls this a “consumerist approach” where the learners choose VT (and the providers they want to study with) in the competitive labour market because their skills and abilities vary, which in turn affects their career choice. Thus, the proposed bottom-up approach is said to be more flexible and responsive to the needs of local people, students, employers and communities. By contrast, the centralised approach has been criticised for not sufficiently considering the education and training needs of individuals and/or learners’ preferences (Rupasingha et al., 2000; Schofield, 1996). Consequently, the bottom-up approach encourages training providers to organise VT programmes in consultation with learners, communities and other key stakeholders. Further, it increases efficiency with flexibility and is also connected with local culture, social needs and market realities, including options of self-employment and entrepreneurship (Mitra, 2002; Ramasamy, 2016). More importantly, this approach can respond to deprived learners who will have or have had little or limited formal education and training (Ramasamy, 2016; Mitra, 2002). As Billett (2000) asserts, meeting the demands of people and/or stakeholders beyond only those of enterprises is one of the most important principles of VT. To sum up, we define the demand-driven approach in this study as follows. Demand-driven VT identifies and meets the endogenous needs of potential target people and/or learners in rural areas through decentralised, active participation. The potential target learners will be involved in planning and designing process of VT programmes which is tailored to fit their real-life context and have relevance. More importantly, VT should respond to the prioritised needs of its intended target group in terms areas of interest, flexibility, accessibility, affordability, in the light of their social realities and circumstances.

3 Pilot Intervention in the Indian Context

To gain a better understanding of the socio-economic environment in which our study took place, we give a short overview of the research context and situation of rural India. India is a developing country with the potential to become one of the largest economies in the world. In order to achieve such development and to meet the needs of labour markets locally and globally, the country would require an adequate number of skilled and semi-skilled people to provide quality goods and services (Chenoy, 2013). Therefore, VT is considered as one of the significant means to accelerate the supply of a quality workforce, enhance productivity, and help individuals to attain gainful employability and improve their earnings (Agrawal & Agrawal, 2017; Pilz, 2016). As mentioned in the introduction, the demand for skills in the Indian labour market in various emerging sectors and in manpower planning has been studied by many scholars and organisations (Agrawal & Indrakumar, 2014; Institute of Applied Manpower Research, 2012; McKinsey Global Institute, 2012; Mehrotra & Saxena, 2014; Ministry of
Labour and Employment [MoLE], 2010). As the country is facing structural changes in the economy, it is essential to tap the opportunity afforded by the demographic dividend of so many young people entering the workforce in the next twenty years. Another main factor is that around 70% of the Indian population is living in rural areas as the country remains predominantly an agrarian-based society. The agricultural sector has seen reasonable growth in the five decades since independence in spite of a substantial increase in agricultural production. However, the general livelihood of the rural population still remains low (Mehrotra & Saxena, 2014). Further, it is noted that during the last two decades employment in agriculture fell by 14 million and is moving to non-agriculture activities (Mehrotra & Saxena, 2014; Parida, 2015). It is essential to point out that the current growth in employment is mainly urban-centred and has failed to incorporate the vast majority of the rural population and other less developed sections of the society (Mehrotra et al., 2013). These arguments clearly indicate that a broad shift in the occupational structure of the Indian economy, from farm to non-farm, has created demand for new skill requirements among the emerging workforce (Srivastava, 2008; Tara et al., 2016). This has led to migration of youth from rural to urban areas for profitable employment. Therefore, VT is considered to be an important means to realise the twin objectives of creating skills for the future and for providing livelihood opportunities for young people, rural populations and disadvantaged people (Singh, 2012). Whilst details of the formal Indian vocational education and training system can be found elsewhere (e.g. Wessels & Pilz, 2018; Pilz, 2016; Schneider & Pilz, 2019; Anderson & Lightfoot, 2019), it is important to note here that in many parts of rural India there is no formal vocational education and training system (Sodhi & Wessels, 2016). Rather, informally organised training structures dominate (Sodhi, 2014; Pilz & Wilmshöfer, 2015). This underlines the need for demand-driven approaches to locally adapted training in rural areas.

4 Study Design and Methods

The study focused on Tamil Nadu, South India, which is the sixth largest state by population in India. This region has a number of industrial clusters including electronics, auto components, leather, textiles, heavy industries, food processing, IT and healthcare. The secondary and tertiary sectors have been major drivers of economic growth in this region. These economic developments and changes in the labour market have created more demand for skilled people to enhance productivity and raise business profits to the next level. Moreover, this scenario influences labour market requirements and changes in rural areas where people have difficulties in accessing VT (Regel & Pilz, 2019). A flexible mode of training curriculum is required to achieve the individuals’ demands in terms of field of interest, duration of training, competence requirements, and the need to find either standard or self-employment. The study took place in four villages. These were selected because they represent typical rural
communities which lack accessibility in terms of road, transport, and (training) infrastructure and the opportunity to participate in economic activities for income generation. Three villages were located in a less-developed region and one was located in an industrial region. We selected the combination of these regions to assess the similarities and differences of VT demands and to examine how the geo-economic conditions affect the demand in these regions. The selection process and the field approach were supported by local experts in training and realised over four-month duration. The study used an exploratory research method and a mixture of focus group discussions and face-to-face semi-structured interviews (Murti & Bino, 2014) to obtain the data we required to identify: a) The practical problems in real-life situations; b) the contextual factors; and c) prioritise the VT demands in line with the needs of all the stakeholders. Further, it was important to consider the learners’ personal VT demands.

In total, four focus group interviews with 45 participants (23 male, 22 female) and 15 face-to-face interviews (8 male and 7 female) were conducted by a research team combining international research experience and local expertise, including regional culture and language competencies. The selection process in the villages followed a random approach combined with access and willingness of the participants. To enable the research team to gain insights from a sufficiently broad range of people, the respondents for both focus group and face-to-face interviews were comprised of community members of all ages, including, young people, village leaders, and representatives of Non-Governmental Organisation (NGO) and Farmers Association. It was important to include both male and female interviewees to enable exploration of gender issues in local labour market needs. The elders and local village leaders are rich resources of information to understand the economic and employment trends, available infrastructures and resources for education and training in their respective villages. Similarly, views of young people may be different regarding current labour market trends and their vocational career choices and aspirations may be different.

The details of demographic information, current education and training infrastructure, the role of NGOs in VT, local employment scenarios and migration for jobs, aspirations to learn a particular vocation and expectations of the training were discussed in the focus group discussions. Each discussion lasted between 45 minutes and 90 minutes. The individual interviews lasted between 30 minutes and 45 minutes and were audio recorded for the purpose of preserving and transcribing. The transcripts were analysed using an inductive process, thereby aggregating the central training needs, the demands concerning the shape of training activities and their rationale. All central training needs were backed up with anchor examples in the form of original quotations, which are listed below in extracts.

Our analysis of the data showed that there was considerable demand for sewing as a VT need among the surveyed villages. The focus on sewing limited our approach to some extent, as traditions in the rural areas mean that sewing as a semi-profession is female dominated.
Furthermore, the labour market in rural areas is characterised as less-regulated and no proper system exists to identify the labour market demand in villages. Thus, the bottom-up approach focusing on only individuals’ employment demand reflects employment opportunities in the local labour market. Therefore, we developed over a time period of 1.5 years a demand-driven sewing vocational course based on a competence-based curriculum and tailor-made teaching and learning materials as an intervention strategy (Ramasamy & Pilz, 2019). This was piloted in four villages.

5 Findings and Analyses

In this section, we will first present the findings of the needs assessment survey followed by the results of the pilot intervention study. We then discuss the results of the research as a whole.

5.1 Findings of the Needs Assessment Survey

The needs assessment survey in the selected regions identified varied VT demands from individuals. The analysis of the data showed that there were no big differences between the villages. However, we could only find slight variations of training demands. In three villages, beside sewing, leather product making, and automobile repair, some young people also cited air-conditioning and refrigeration maintenance, masonry and carpentry.

As mentioned before, a large proportion of the Indian population lives in rural areas with a high amount of people employed in the informal sector (Palanithurai & Seerangarajan, 2018; Pilz et al., 2015; Pilz & Wilmshöfer, 2015; Singh, 2005; Sodhi, 2014; Koops & Pilz, 2019). The low level of education in the labour force and especially people engaged in agriculture has rendered it harder to provide the needed VT. Also, there is an increasing shift in the labour market from agriculture to manufacturing and service sectors (Mehrotra et al., 2013). The quotes below, from our individual interviews and focus groups, illustrate this shift in the labour market:

Livestock can be provided for the present generation to generate income and vocational skills such as leather products manufacturing, tailoring can be offered to the young people in the villages. (Farmer [father] A1)

Construction is one of the income fetching jobs here and many low and uneducated people go as mason in the construction field. (Youth B1)

The leather shoe tailoring training which even can be work from home by job orders from shoe companies. (Women [mother] A1)
Non-farm employment is one of the key factors for economic development in rural areas. The decline in agriculture has caused diversified livelihood opportunities for rural people (Parida, 2015). Indeed, most young people in the 15–35 age group are asking for adequate skills through education and training to enter the productive workforce (Mehrotra & Saxena, 2014). The above examples illustrate that some parents, whose occupation is farming, do not want their children to continue in a farming occupation, and it also shows that young and older people exploring non-farm vocational skills. The respondent in one village, where many leather-based industries are located, indicated that more opportunities for self-employment are needed. It implies that training demand is closely linked to local labour market conditions and it is believed that it could provide (self-) employment outcomes (Agrawal & Agrawal, 2017).

Due to the fact that we selected sewing as the vocational area for our pilot with women aged between 18–60 years as targeted learners, we now discuss some implications about the special role of women in the rural areas are important to recognise (Palanithurai & Seerangarajan, 2018; Ramanujam & Sodhi, 2010).

Analysing the female learners’ local socio-economic conditions and their role in the family is one of the important factors in designing such VT. Moreover, learners, especially women, choose skills that align well with family circumstances. They mostly prefer to work from home and their participation in VT tends to be limited. Despite such issues, the poor and marginalised show interest in acquiring and/or participating in VT. While the choice of VT is often influenced by economic benefits and better (self-) employment opportunities, women respondents, in all the four villages, reported that they wished to learn sewing.

If you offer training on tailoring, it will, even if we are not stitching for others, we can at least use those skills to make blouse for our own use and could save Rs. 40 per blouse. (Women A2)

If my daughter knows tailoring, she can do this tailoring job even if she gets married and goes to her husband’s place where she could work from home and look after her family as well. Today, the labour charge is Rs. 30 per blouse, if she stitches minimum of four blouses per day, she can make Rs. 120 in a day. Is it not enough? (Women B1)

The main reason is that traditionally women in rural areas are responsible for domestic work and receive very little support and motivation from their families, which impedes their participation and employment opportunities (Sandhaas, 2005). It is important, therefore, that training providers consider social dynamics, history and traditional norms of the people they target for their courses (Noronha & Endow, 2011).

Another advantage of VT is that it has the potential in supporting human resource development, economic growth and social development processes in the country to also improve the quality of life (Eichhorst et al., 2015). Therefore, one of the main arguments is that the de-
mand for training in sewing was highly influenced by the anticipated (self-) employment and earnings of the individuals. When they learn and start sewing, it will yield returns in many ways such as an increase in earnings, improved self-confidence and social status (Ramasamy, 2016; Regel & Pilz, 2019; Maitra & Mani, 2014). With a greater demand for sewing blouses in rural areas, trainees have an opportunity to earn more. Some trainees also said that they could save the labour charge on tailoring if they sewed their blouses themselves.

We paid Rs. 25/- to sew a blouse, the sewing cost is increased to Rs. 40/- and Rs. 80/- for an ordinary blouse and lining respectively. (Trainee C1)

Tailor is asking Rs. 40/- to sew a blouse, but if we learn sewing ourselves we can save this money. Normally they [tailors] charge Rs. 100/- to sew one blouse. I will be able to sew myself, Rs. 100/- is saving for me. (Trainee B1)

These quotes provide further evidence that the economic benefit on completing the training was one of the primary objectives of the trainees. The income generation and local labour market conditions are important factors triggering the demand for specific VT in rural areas. It was evident especially among unemployed and underemployed people (Lent et al., 1994). This supports the claim that needs assessment at the micro level involving individuals, end users and communities sheds light on the general demand of a specific region and local labour market/enterprises (Stockmann & Silvestrini, 2011).

5.2 Findings of the Pilot Study

The 200-hour pilot course was based on a competency-based curriculum including providing teaching and learning materials related to learners’ needs with inputs from sewing experts. The pilot training was conducted by trainers who had experience in providing sewing training for rural people and were familiar with a practice-oriented approach. Due to the fact that tailoring deals with some sensitive components like anatomy and body measurements, the gender of the trainers was an important criterion in selecting them and therefore we decided to deploy only female trainers for the pilot study. All four training centres (one in each village) were equipped with sewing machines and necessary tools.

The piloted sewing training was evaluated shortly after the intervention to examine whether the course had met the trainees’ demands as articulated in the interviews and focus group discussions. Several evaluation models exist in the literature (Fretwell, 2003; Stufflebeam, 2000). Kirkpatrick’s (1967) four-level framework is one of the most popular and commonly applied frameworks for summative evaluation, focusing on training outcomes and assesses the benefits of training to individuals and organisations. He distinguished the four-level framework as: (1) Reaction – participants’ emotional reaction to the training; (2) Learning – acquisition of knowledge, skills and attitude change by attending training;
(3) Behaviour – application of knowledge, skills and attitudes acquired from training at a workplace; and (4) Results – the organisational impact of training. According to Grohmann and Kauffeld (2013) level 1, reaction, is often divided into affective responses and utility, in other words, satisfaction with training and perceived training utility which is helpful for evaluating the short-term outcomes. Hence, we analysed the findings from our study using level 1 of the four levels. Wang and Wilcox (2006) claim that obtaining learners’ feedback in terms of motivation to learn about a specific vocational field will be a more realistic method for measuring trainees’ reaction. Thus, we did not evaluate or measure the competencies learnt, but, examined to what extent the two-months’ training had met the demands of learners. Also, it is important to consider that most of the trainees who participated in the sewing VT were semi-literate and the training was only a two-month "pilot" programme. Hence, measuring all the variables of the four levels was not realistic as the evaluation was done immediately after the training.

The quality and effectiveness of a training programme can be measured by trainees’ motivation (Katansky, 2008). The quantitative data on participation gave a highly positive outcome. In all four villages, a total of 80 women trainees participated in the pilot training (20 in each village). Only two trainees dropped out during the course due to personal reasons.

The following quotations reflect the trainees’ perspectives on how the sewing training motivated them to be active participants in the course:

Before starting the [sewing] training, I used to wake-up at six or seven in the morning. But during these two months of training, I gets-up at four or five o’ clock in the morning to complete all our domestic work and send kids to school to come for training. So we were very active at that [training] time. (Trainee, B2)

I was going for 100 days [Federal Government Scheme in India] work in my village, but I gave up it to learn this sewing and it is important for us. (Trainee, A1)

The underlying assumption is that trainees believed that sewing training would yield the outcome they desired. As discussed before, motivation to learn is one of the convincing methods to ensure imparted VT is demand-driven. Further, in the skill acquisition process, motivation is considered to be a crucial influencing factor in learning specific vocational skills.

Training location, proximity and access to a training centre, and flexibility in the timing of the training, all played an important role. Indeed, the location of the VT centre played a vital role in enhancing the trainees’ participation. In our case, the centres were located directly in the four villages. The majority of the trainees interviewed said that they attended the two-month sewing training as it was organised in their own village and so was accessible to their houses.
Access to the [training] centre was very easy as it was located closer to my house. I would have not been permitted [by family members] if the training program was organised somewhere outside of the village. (Trainee B2)

We saved time and bus [transport] cost. If we go outside for training, we have to be on time and also some financial problems [for transport fee] will be there. We wonder if we would have been able to attend the training if it was organised outside of our village. Since this training had been organised nearby [in an accessible place], we had an opportunity to learn. (Trainee C1)

We would have not gone if the training was organised even in our next village. Because we need to take care of our kids, prepare them for schools . . . so they [husband] will ask how you will manage domestic work if we go to the training. (Trainee C2)

From the above quotations, it can be argued that the choice of VT centres by the participants was influenced by the proximity to home and the flexible time schedule of the course. As discussed in the earlier section, women's participation in VT often depends on socio-cultural characteristics like marital status, number of children and economic requirements and family support. Similarly, this investigation also confirmed that easy accessibility to a training centre and flexibility around the timing of the course enabled female trainees to participate in sewing training. They were also able to manage their family needs and fulfil social obligations.

Noronha and Endow (2011) argue that reducing barriers such as access to training, cost, education level and flexibility in the training time and location could increase the participation level in VT. Similarly, training which is organised in the trainees' village or in an accessible venue had significant impact on their participation, motivation and maintained their interest throughout the course. The demand-driven sewing training provided adequate socio-personal support to enable the trainees to overcome the obstacles of low-educational level, mobility, socio-cultural norms and domestic responsibilities. The training evaluation also revealed that increased motivation among trainees and self-efficacy resulted in active learning, acquiring knowledge and skills. In this scenario, individuals mostly prefer or take-up an occupation which they regard as giving the most of what they want (Arulmani, 2009), therefore, VT should consider individuals as “consumer groups” in addition to industry groups in the VT market.

The economic theory of education and training also recommends that some portion of the cost needs to be borne by the trainees or participants (Schofield, 1996). Whilst the trainees wanted to extend the training for two more months and were eager to learn further, they were also ready to pay for the training cost, even though in our pilot no charge for training had been included. For example, a few trainees said the following:
If you arrange a few more machines in the training centre for two more months, we are ready to pay [fees] and learn. We [trainees] are ready to pay salary to the teacher to continue this training to learn more. (Trainee D1)

You give only the machines; we shall pay the salary to teacher and learn it [sewing]. (Trainee C2)

The pilot training offered only initial sewing training as free of cost, so the trainees are willing to pay themselves for further training. According to Garforth (2004), a demand-led approach can reveal that there is a functioning market for service provision in which people voluntarily pay for the service they receive to meet their demand. This is ample evidence that the pilot programme can be said to be demand-driven because the participants were actually ready to contribute or pay for the product or services.

One final point is of interest here. From a pedagogical point of view, we have to define the concept of demand from a different, but also important viewpoint. The teaching style and the methods and learning materials (e.g. instruction sheets) have to be in line with the overall education level and the previous experience of the participants. In our case, many of the trainees were semi-illiterate, so all the teaching materials were designed on the basis of pictures and pictograms. The comments of two trainees underline the necessity of this pedagogical approach:

The trainer taught us well, even if we asked the same questions ten times they explained without any hesitation, she [trainer] never showed angry on us for this. (Trainee, B1)

Our batch has both literate and illiterate people. So when they [trainer] teach us by demonstrating it is understandable for all. So the [trainee'] teaching method can be understood by everyone. (Trainee, B2)

6 Discussion

The results of this study indicate that, to design a demand-driven VT programme, some highly important aspects have to be taken into account. We have to ensure the involvement of all relevant stakeholders including potential learners, enterprises, VT providers, in order to understand the varied VT needs that will realise the individuals’ employment, career goals and also address local enterprise needs (Billett, 2000). The basic premise of these arguments is that the demand-driven approach has the potential to address a local problem, be accountable, transparent and have an efficiency of providing result-oriented efforts that are more responsive to the learners and targeted population. Our study shows that the cost, entry-level educational qualification, abilities, flexibility in terms of course time, and the access to the
training venue are critical elements in a demand-driven approach and should be considered while planning for and delivering VT particularly for rural and disadvantaged populations.

Our study offered another interesting dimension. Despite the fact that local people had a very clear view about their VT needs, they were not able to relate their viewpoints to a broader perspective beyond their immediate circumstances. In order to balance the individuals’/learners’ demands with the local or regional economic conditions and also the demands of the regional labour market, it is very important to involve regional, sectoral and labour market experts in the validation of the data that emerges from the local training needs surveys. This expert knowledge should be considered as an important factor in developing VT programs which are embedded in the regional eco-system and pave the way for sustainable development. In our study, we sometimes found that training demands related to old technologies or sectors of the economy which are no longer suitable for the region (for example missing transport systems for raw materials and delivery of produced goods). In this respect, it is important that demand also takes into account the needs and special characteristics of the local economy and the local labour market conditions. Therefore, at the local level, the initially discussed distinction between individual demand and demand by employers is at least partially eliminated and results in an integrated understanding of demand.

As a consequence, expert knowledge in the design of a demand-driven approach is also needed for a different reason. In some ways, the people we interviewed in the villages were mostly focused only on technical "know-how" and unaware of other important aspects. As a result, some fields of knowledge and dimensions of competences were neglected or undetected. For example, entrepreneurial skills to run a small business were not discussed. To develop successful knowledge and competencies with a long-term impact, we also integrated basic knowledge of price and cost calculation, marketing and also customer interaction (personal skills) to support self-employment and entrepreneurial thinking (Ramasamy & Pilz, 2019).

We argue that it makes no sense to train using modern technologies of tailoring (for example electronic machinery) if financing an electrical sewing machine is not affordable for the trainees and given that they live in areas experiencing regular power cuts (Regel & Pilz, 2019).

Women in rural India usually look for female-dominated occupational training because the social and local conditions play an important role in the choice of VT and in the attainment of a vocational career. This underlines the importance of the socio-cultural factors which eventually influence women and other disadvantaged groups to participate in the VT that best suits them. Therefore, VT providers in rural areas have to recognise the primary requirements of learners, including their interest and understand the socio-economic conditions to make the programme more client-oriented and help trainees to improve their conditions (Maxwell et al., 2000).
A demand-driven approach emphasises the need for discussion and planning with local stakeholders to ascertain the available local resources and for identification of socio-economic opportunities for training delivery. VT providers should adopt more dynamic, innovative approaches and integrate the expressed needs of individuals with local socio-economic development agenda in order to design more effective VT programmes that are demand-driven. Further, this approach of decentralised planning and implementation has provided space to voice the concerns of the disadvantaged community as the demand varies according to the type of industry, availability of business enterprises, training infrastructure, and nature of the geographical locations. These factors play a key role in individuals/learners’ access to VT programmes. Despite the advantages of the demand-driven approach, if the participation of the targeted group is low, it would affect the service delivery system of VT. Hence, the VT system should promote the active participation of individuals/learners in the process, in order to enable them to play a significant role in local labour market. Indeed, the trainer in the demand-driven approach plays a substantial, diverse role in meeting the target groups’ demands and hence they should be involved in the curriculum development process. Accordingly, for our pilot sewing training, we identified trainers who were experienced in teaching rural people and who were able to impart more of hands-on practical training than theory-based instruction. An orientation programme was conducted for the female trainers to have an overview of the designed curriculum and in the preparation of teaching plans for effective implementation. As discussed in the theoretical framework, in an educational context, a decentralised, demand-driven approach to VT should consider the needs identification, curriculum development, and implementation and evaluation process. Since the individual/learner’s role is important in educational decision-making, the curriculum development process should also recognise the institutional factors of those associated with enterprise, individual and regional needs (Mayoux, 2005).

In the theoretical part of this paper, we discussed how individuals/learners might be considered as consumers in the training market in terms of their career aspirations, learning attitude, social factors, economic returns and wellbeing, which are important aspects of participation in VT. Similarly, as skills are essential for meeting an individuals’/learners’ employment outcomes to increase production and facilitating the growth of a country, policies at the national level that incorporate demand-driven approaches with adequate institutional arrangements to address these issues appropriately are highly needed. While individuals/learners’ vary in terms of educational background, income, age and learning abilities, policies should not ignore these disadvantaged rural people and a structured institutional mechanism need to be framed to address these issues appropriately.
7 Conclusion

Our demand-driven sewing training project has its limitations. For example, a cost-benefit analysis was not considered in this study, though this would clearly provide further valuable data with regard to the evaluation of demand-driven initiatives. We did not examine the effect of trainees’ social status nor long-term economic development because of the limited data and timeframe. As our approach focused on a pilot study in a limited number of villages in South India, the data cannot be generalised, replicated and transferred without critical reflection to other regions in India or parts of the world. Also, the findings of the study suggest the following directions for future research. A comparative study of similar initiatives within India (if they exist) and in other countries may be helpful to generate further insights on the demand-driven approach.

Nevertheless, the evidence from our study makes a significant contribution to the literature on the relevance and importance of the demand-driven approach to vocational skills training in rural communities. First of all, our work demonstrated that to properly identify the VT demands at the grassroots level especially among a rural and less-educated population, an assessment of individuals’/learners’ needs is imperative in addition to identifying the needs of the local labour market. As pointed out at the beginning of this paper, VT needs vary according to the target group’s age, level of education, socio-cultural background, income and available infrastructure (Overwien, 2009). In this context, training providers and curriculum planners should keep in mind that a personalised approach is needed while they design VT programmes rather than implementing a pre-designed course or strive to meet conditions imposed by funding agencies (Ramanujam & Sodhi, 2010; Wallenborn, 2014). Consequently, this training approach enables the VT system to move towards a sector-specific one with adequate institutional arrangements in meeting the current labour market needs.

Secondly, the pilot training course demonstrated that the demand-driven approach is an effective tool to achieve the desired VT needs and that the degree of its success depends on the ability to customise the programme so that it is suitable for the specific context and needs and ability of targeted learners.

Thirdly, the trainers have to play a wider role in meeting the needs of their target groups. In order to have a qualified workforce, it is essential to ensure there is a supply of qualified trainers, especially in a country like India, which needs to shift from a theory-based learning approach to the development of practical skills (Mehrotra & Saxena, 2014).

As discussed in the introduction, many funded programmes were not effective because they were not relevant to the targeted people due to poor training needs analysis. They were also limited due to their top-down approach, including lack of awareness of available local resources and market situation. This paper articulates identifying VT demands at the grassroots level especially among the rural poor and less-educated. This needs-based assessment is imperative to design and implementation of demand-driven VT considering learners/trai-
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needs real-life context and to meet labour market requirements locally. As Wallenborn (2014) claims, the local targeted people are the experts. They very often know what their skill-needs looks are like and are much more familiar with the challenges of the local and regional economic development.

The findings from this study show that demand-driven VT is more effective when it is based on the participation of the target group, involving them in planning and decision-making process of VT programme.

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Vocational Student Teachers’ Self-Reported Experiences in Creating ePortfolios

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Abstract

Context: The context of this study is vocational teacher education and the participants are vocational student teachers studying part-time in a blended learning setting. They represent several disciplines of vocational education and training. The vocational teacher studies take one year and are 60 credits. The study relates to the discussion of vocational education and training and teachers’ competencies which they are transferring to their students by sharing their knowledge of their subject area and working practices. This study is an exploration of one of these working practices making competences visible in a digital format.

Approach: Student teachers’ descriptions of their practices and recommendations of supportive methods for composing an ePortfolio are reviewed and their motivation to compose an ePortfolio is studied as a part of the Personal Learning Environment (PLE) philosophy.

Findings: The data revealed some typical practices, such as creating an ePortfolio (the most popular ways of doing this were recording reflections in a learning diary and using digital tools to document artefacts) and demonstrating vocational teachers’ competence in an
ePortfolio (understanding the difference between workspace and showcase portfolios and what kinds of competences to document). The recommendations mentioned by participants were supportive methods of composing an ePortfolio (collaborative learning processes with peers, lecturers’ feedback and assessment and clear instructions) as well as methods of displaying vocational teachers’ competence (e.g. orientation to ePortfolio work using learning objectives and assessment criteria for ePortfolios). Participating student teachers were motivated to work with ePortfolios in various ways and expressed an intrinsic motivation to pursue personal growth and become a vocational teacher.

Conclusions: The study revealed vocational student teachers’ perceptions of scaffolding and motivational orientations to make their competences visible through ePortfolios. These can be used to design scaffolding methods to support students’ ePortfolio activities. ePortfolios are used as a study method to promote student teachers’ career development and personal growth and to help them acquire teacher competencies.

Keywords: ePortfolio, Motivation, PLE, Scaffolding, Self-Determination Theory, Vocational Student Teacher, Vocational Education and Training, VET

1 Introduction

Personalised learning environments (PLEs) are a contemporary approach to organising learning in a digital learning environment. The requirements for PLEs are that individuals may use any web tools, networks and formal and informal learning processes they desire in order to achieve the competencies required in today’s working world (Fiedler & Väljataga, 2013; Wheeler, 2015). Creating ePortfolios has become a format of studying in personal learning environments. Barrett (2010) divided ePortfolios into two types: 1) A workspace portfolio created through a process of composing, collecting and depositing artefacts for learning purposes; and 2) a showcase portfolio as a method of documenting one’s achievements. Using ePortfolios during learning processes and demonstrating practical mastery of competencies has given rise to new requirements for scaffolding the process.

Previous research has shown that creating an ePortfolio for learning purposes or documenting one’s competencies is not easy for student teachers (Korhonen et al., 2019b; Parker et al., 2012; Plaisir et al., 2011). In their study, Parker et al. (2012) asked elementary education student teachers how to make an ePortfolio process meaningful: The respondents identified several significant themes, such as scope, guidance, timing, alignment with standards, reflection and growth, and making ePortfolios visible to a wider audience. Plaisir et al. (2011) discovered that student teachers needed more support from faculty and more time to study as they work on their ePortfolios. Korhonen et al. (2019b) discovered that vocational student teachers were unable to demonstrate their competencies in an ePortfolio because they lacked
the necessary knowledge or capability to do so, particularly with regard to their pedagogical competencies, digital skills and personal development as vocational teachers. More effort is needed to train student teachers in how to implement ePortfolios as a part of their studies and to demonstrate their competencies.

The current study is in the context of vocational teacher education. Vocational teachers’ competencies are a complex combination of pedagogical knowledge and applied occupational practices they teach to their students (Papier, 2019; Korhonen et al., 2019a; Korhonen et al., 2019b). The occupational practices require that vocational teachers understand and have connections to workplaces in order to prepare students to enter the working world. Nowadays, employees are required to constantly improve their performance to keep up with a constantly changing working life. Teachers need methods to guide their students in acquiring these competencies. Papier (2019) argued that these tools must be the main focus of a curriculum of vocational teacher education. Korhonen et al. (2019b) suggested that in order to advance one’s own professional learning, one must first be supported in creating an ePortfolio during studies and second in continuing to collect and demonstrate evidence of one’s competencies. ePortfolios are also a method of demonstrating one’s competencies to different audiences, which is useful when applying for a job or in making a company’s competencies visible to customers (Cambridge, 2008).

Scaffolding is considered to be just the right amount of support for students to enable them to achieve their learning objectives. It is not intended to be permanent support but should fade as the student becomes a self-regulated learner (Puntambekar & Hübscher, 2005). Chittum (2018) used an ePortfolio as a reflective learning diary written in MS Word. In other educational contexts, ePortfolios have been found to be a valuable means of fostering students’ reflective skills, which are then showcased in mastery-oriented (workspace) and performance-oriented (showcase) portfolios (Cheng & Chau, 2013). The studies mentioned above did not provide an answer as to which practices and supportive methods personally motivate students to create an ePortfolio to demonstrate their competencies. Only Korhonen et al. (2019a) and Korhonen et al. (2019b) investigated portfolios in PLE settings; in Chittum’s (2018) and Cheng’s and Chau’s (2013) studies the digital tools were chosen by educational institutes.

Barrett (2007) and Masters (2013) argued that scaffolding ePortfolios can also enhance intrinsic motivation to continue ongoing learning throughout one’s career. Chittum (2018) concluded that making an ePortfolio can significantly increase the usefulness of student-teacher training. Chye et al. (2012) concluded that teacher students with more self-determined forms of motivation had a more positive attitude toward using ePortfolios in their learning processes.

This study is an exploration of scaffolding activities which help students develop competencies by working on ePortfolios, a process considered to be part of distributed scaffolding
Intrinsic and extrinsic motivations to learn (Ryan & Deci, 2000) will also be explored, as both scaffolding and motivation are considered important in the context of vocational education and training and in the professional world of work. Sociocultural theory was chosen as the framework for the study as it is based on cultural tools which are used in a social world where learning takes place in social practices in communities (Lave & Wenger, 1991; Säljö, 2009) by interacting with more knowing people, and with peers (Vygotsky, 1978). As Lave and Wenger (1991, p. 52) explain "persons, actions, and the world are implicated in all thought, speech, knowing, and learning."

2 Study Aim and Research Questions

The aim of the study is to identify the methods of scaffolding which help students develop competencies by working on ePortfolios. In the investigated setting ePortfolios were a part of student teachers’ PLEs. The research questions were:

1. What kinds of practices do student teachers use to make an ePortfolio?

2. What kinds of scaffolding do student teachers recommend as important during the process of creating an ePortfolio?

3. What motivates student teachers to create an ePortfolio.

3 Theoretical Frameworks

3.1 Scaffolding Organised by a Lecturer

The term scaffolding in an educational sense was coined by Wood et al. (1976) in the context of educating children. The concept is still relevant in education because it represents the amount of support a student requires to attain set learning objectives. Scaffolding is sometimes used synonymously with the word support (Puntambekar & Hübscher, 2005). Stone’s (1998) concept of scaffolding methods necessitates the assumption that learning goals are understood by students and teachers assisting students according to their diagnosis of a student’s skill level, was adapted to this study. Scaffolding includes the idea that support is temporary and should be faded away when the student is able to learn independently (Stone, 1998).

Collaborative learning with peers has been proven to be a successful method of learning by utilising small groups to construct knowledge (Michaelsen & Sweet, 2011). Scaffolding may be collaborative when students participate in guiding their peers (Donato, 1994); it can
also be led by several scaffolding providers, but in such cases, it should be organised by a lecturer as part of instructional management. For instance, scaffolding can be organised as part of a collaborative learning assignment using a digital learning environment (Lajoie, 2005; Tabak, 2004) or even by stakeholders' feedback during practical training. These scenarios require lecturers to create different kinds of meaningful assignments (Dabbagh, 2003). Tabak (2004) suggested utilising the idea of a synergistic scaffold which includes different kinds of support that complement each other to serve a single performance or goal. Walqui (2006) offered a similar definition of scaffolding implementing Vygotsky's and Van Lier's (as cited in Walqui 2006) ideas that the sources of scaffolding are: 1) Experts (e.g. teachers), 2) peers in collaborative knowledge construction, 3) peer-learning while assisting also lower-level learners, and 4) working alone by utilising inner resources and experiences.

De Olivieira and Athanases (2017) suggested that a scaffolding framework comprises the aspects of whom to scaffold, for what purpose(s) and how. In this study of scaffolding, student teachers’ task to make ePortfolios was the setting through which to define what to scaffold and for what purposes; the question of how to accomplish a process was addressed. To be able to understand the phenomena of scaffolding in personal learning environments and ePortfolios in a vocational teacher education context, it is necessary to identify the objects of the scaffolding. In this case, the objects of scaffolding are those parts of the students' work for which they need support.

3.2 The Self-Determination Theory in Educational Settings

In the context of teacher education, Self-Determination Theory (SDT) is attracting a growing level of interest from ePortfolio researchers (Chittum, 2018; Chye et al., 2012). For example, Chittum (2018) found that making a course-based ePortfolio can positively impact student teachers’ motivation and demonstrates their higher-order thinking processes. SDT has been used as a theoretical framework in designing an online course intended to improve learner motivation, engagement and retention (Martin et al., 2018). These studies have prompted an interest in investigating students’ motivation to complete ePortfolios and how they benefit from them.

According to Ryan and Deci (2000), motivation is important because it prompts acts that are based on satisfying individuals' psychological needs – specifically, competence, autonomy and relatedness and when these psychological needs are satisfied, self-motivation and well-being are enhanced in turn. SDT highlights the importance of inner resources for personality development and behavioural self-regulation (Ryan et al., 1997). Motivation varies from internal motivation to act to externally pressured activities. These are studied as conditions which cause intrinsic and extrinsic motivation (Ryan & Deci, 2000). Ryan and Deci (2000) explained that intrinsic motivation is seen as the inherent satisfaction of an activity itself,
the completion of which provokes interest and brings joy. Intrinsically motivated learning activities do not depend on external rewards. Extrinsic motivation, on the other hand, refers to activities undertaken in order to attain separable outcomes, e.g., acts that are driven by the value of the learning activity (Ryan & Deci, 2000). Ryan and Deci (2000) divided extrinsic motivation into four different categories according to regulation styles, which differed in their level of perceived control. The first style is called extrinsic regulation, in which one is controlled by extrinsic recompense. Next is introjected regulation, where the student feels as though he or she has little autonomy due to feeling pressured to engage in an activity. The third style, identified regulation, focuses on feeling some sense of autonomy, as a result of which a student perceives the personal importance of an activity as being tied to career goals. The last style, integrated regulation, is achieved when a student's actions have become self-determined and the student has internalised learning (cf. Jacobi, 2018). Because students are expected to be self-determined and motivated to learn, their orientation to learning must be examined. Ryan and Deci's (2000) SDT explains this orientation as reaching one of three levels: impersonal, controlled and autonomous orientation. Autonomously oriented students find learning objectives important for their development and personal growth.

Reeve and Halusic (2009) stated that SDT emphasises the instructional task of vitalising a student's inner motivational resources. According to SDT, motivation exists along a continuum; this theory helps researchers understand student motivation and engagement arising from that motivation (Reeve, 2012). Furthermore, the theory can be used to identify a student's inner motivational resources and present recommendations as to how teachers can involve, cultivate and vitalise these resources (Niemiec & Ryan, 2009).

## 4 Methods

### 4.1 Context of the Study

In the country under the study, vocational teacher studies include 60 ECTS (European Credit Transfer System), which usually take one year to complete. Most students study part-time, as they are already working as teachers or in other positions in educational organisations, or in different professions and positions in companies. The teacher education curricula include topics such as education sciences, pedagogical studies, teaching guidance and assessment, building a community, practical teacher training, and development of personal expertise in pedagogy. Those student teachers who participated in these studies enrolled in a special teacher education program focused on, among other subjects, to digital approaches to learning and teaching methods. Digital tools were studied via a self-directed massive open online course (MOOC).
The study was conducted with one vocational teacher student group during the academic year 2017–2018; it was guided by the Personal Learning Environment philosophy and utilised ePortfolios as workspaces and showcases. This means that the student teachers were able to build their ePortfolios in any digital environment they found relevant and interesting. They chose such applications as WordPress, Blogger, Wix and Google Sites as their ePortfolio environment which are all free to use. The student teachers themselves decided how public to make their ePortfolios: only to the lecturers and peers or anybody via the internet. The lecturers used an open-source digital environment (WordPress) to share learning assignments, instructions and learning materials. The lecturers instructed the student teachers to produce the following content for their ePortfolios: A learning diary to reflect lessons learned during the teacher studies and practical training period (relating only to their workspace); learning outcomes as artefacts of learning assignments focusing on vocational teachers’ competence; and other relevant information about their own competence (showcase). The lecturers gave instructions to student teachers throughout the year, starting with instructions for workspace ePortfolios and later for a showcase ePortfolio in which student teachers could demonstrate their teaching competence to different audiences in a digital format. The instructions for the learning assignments included details of how to save artefacts in one's own workspace portfolio. More generalised instructions were included for showcase portfolios, because it was important that each ePortfolio reflected its creators’ personal touch and discipline-specific view. The lecturers gave feedback and instructions for each learning assignment and at the end assessed the artefacts the students included in their ePortfolios. The feedback was given directly to the students via their ePortfolios. However, the lecturers offered only general instructions for the layout of the showcase ePortfolios and did not give feedback until the end of the study.

4.2 The Participants

The participants consisted of 14 female and 6 male participants, whose ages varied between 31 and 54 years. They represented all disciplines of vocational education, from upper secondary vocational education and training to lecturers at universities of applied sciences. For upper secondary vocational education and training, the following disciplines were represented: ICT, business and management, tourism and catering, early childhood education, forestry, the textile industry and health care. The participants who represented universities of applied sciences were from disciplines such as communication and information technologies, art, education, craft, graphic design and social sciences. Participants’ experience of vocational teacher’s work varied from no experience to five years of experience; the average length of experience was 1.5 years. Eight participants were working as teachers and five were employed in other positions in educational institutions; seven worked outside the educational field.
Fourteen of the participants had a master’s degree in one of the above mentioned disciplines, while six had a bachelor’s degree. All participants gave their consent for the collected data to be used for research purposes.

4.3 Data Collection

The data were collected from focus group discussions based on predefined questions. The focus group sessions were conducted at the end of the participants’ teacher studies and all were conducted at the same time. The group of participants was divided into four smaller groups, each of which was asked to take part in a dialogue and answer the same questions. Each of the groups named a chair who read out the questions and took care that all of the questions were discussed. The length of the discussions varied, taking 36, 42, 46 and 56 minutes, respectively. All of the participants in each group took part in the discussions. The dialogues of the small groups were recorded using a voice recorder. The questions related to the participants’ motivation to compose an ePortfolio, how they understood their competence to be represented in their ePortfolio, and what kind of scaffolding they recommended to their lecturers. The questions concerning scaffolding were defined according to the idea of distributed scaffolding (Tabak, 2004). The questions related to motivation were based on Ryan and Deci’s (2000) definitions of extrinsic and intrinsic motivation. The following questions were asked in the focus group discussions:

- What inspired me to create an ePortfolio?
- What kind of competence is illustrated by my ePortfolio?
- How do ePortfolios work in documenting and assessing the learning process?
- How did my ePortfolio promote my learning?
- How did I demonstrate the way I work and collaborate with my students?
- What kind of scaffolding is needed from a lecturer while working with ePortfolios?
- I was/was not inspired and motivated by the following aspects of the ePortfolio process:
  - obligatoriness
  - freedom to choose a form and tool
  - demonstrating competencies
  - setting my own goals
  - empowerment
  - grade
The data were created in the format of a dialogue, which means that the participants worked with each other’s comments and words in an effort to clarify everything which was said. They also asked each other further questions to clarify their shared understanding of each question and related topics.

### 4.4 Data Analysis

The recorded group discussions were transcribed and then transcriptions were analysed using NVivo software. The data were read through several times and the answers (nodes) were categorised according to the research questions. Each individual comment was counted as one item. The unit of analysis was any phrase, sentence or another expression of words that featured the meaning related to the phenomena.

The analysis was conducted in three phases according to the research questions. The first author conducted analyses using NVivo software, which were then examined several times together with the three other authors. All authors agreed on the final categorisations. During the discussion, the participants mixed up issues related to workspace portfolios and showcase portfolios, so these were categorised as a single ePortfolio.

The two first phases of the qualitative analyses were conducted using abductive analysis by gathering information from focus group discussions, reading theory, working with data and active inquiry combining theory-based and data-grounded approaches (Tavory & Timmerman, 2014).

The first question explored was “what practices were used to create an ePortfolio as described by the students?” The data were categorised according to the types of practices and the following main categories emerged: 1) practices of creating an ePortfolio; and 2) practices of demonstrating a vocational teacher’s competence in an ePortfolio.

During the second phase of the qualitative analysis, the participants were asked what kind of scaffolding they found to be important when making an ePortfolios during their studies. Their various suggestions were the data that were defined as categories describing types of supportive methods. The main categories were defined by the objects of scaffolding as 1) methods of composing an ePortfolio and 2) methods of illustrating a competence using an ePortfolio.
The third phase of the qualitative analysis focused on the participants’ discussion of motivation to learn and to represent their vocational teacher’s competence in their ePortfolio. Deductive analysis was used to study the relationship between the data and existing theory (Schreier, 2012), and Ryan and Deci’s (2000) SDT was used to study the extrinsic and intrinsic motivation manifested in each regulation style and orientation. This theory is described in Table 3 below, which also explains the analysis categories.

4.5 Findings

Practices for Creating an ePortfolio, as Described by the Participants

The practices for creating an ePortfolio are listed in Table 1. These concerned 1) the practices involved in creating an ePortfolio and 2) the practices involved in representing a vocational teacher’s competence in an ePortfolio.

The highest number of nodes regarded the practices involved in creating an ePortfolio by writing reflections in a learning diary. These included activities such as learning to reflect on one’s work and the kind of lessons learned during teacher studies. However, there were only a few nodes of reflection practices that measured personal growth as a teacher via a learning diary. Using digital tools by testing different kinds of tools independently for documentation and ePortfolio activities also played a big role in the practices involved in creating an ePortfolio. There were only a few nodes related to lecturers providing feedback on and assessing the creation of ePortfolios.

Concerning the practices of documenting vocational teachers’ competence in an ePortfolio, most of the activities mentioned related to understanding the difference between a workspace ePortfolio and a showcase ePortfolio. However, there were only a few such nodes. There were a variety of approaches regarding which teachers’ competencies can be documented in ePortfolios, such as teaching activities in a classroom or online, received feedback and assessment, and pedagogical competence and other competencies. Only a few nodes concerned the audience and how to show an ePortfolio to others.
<table>
<thead>
<tr>
<th>Main Categories</th>
<th>Types of Practices</th>
<th>Description of Items</th>
<th>Examples of the Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practices involved in creating an ePortfolio (61)</td>
<td>Reflections recorded in a learning diary (25)</td>
<td>Personal growing process as a teacher via a learning diary (4)</td>
<td>&quot;I think my ePortfolio shows my own development and growth as a teacher.&quot;</td>
</tr>
<tr>
<td></td>
<td>How to do reflection (12)</td>
<td>&quot;Learning to do the reflection. If I had not written it anywhere, I would not have reflected on and thought about these situations and occasions.&quot;</td>
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<tr>
<td></td>
<td>Lessons learned (9)</td>
<td>&quot;What I have learned here during the year.&quot;</td>
<td></td>
</tr>
<tr>
<td>Using digital tools (18)</td>
<td>Testing tools (14)</td>
<td>&quot;Would it be a part of the process of one searching for tools on one's own, thinking and testing.&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Documentation tools (4)</td>
<td>&quot;It is a supportive tool where one's thoughts can be saved, not only in order to memorise them.&quot;</td>
<td></td>
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<tr>
<td>Doing learning assignments (6)</td>
<td>All learning assignments completed and saved in an ePortfolio (6)</td>
<td>&quot;All of one's own artefacts are linked.&quot;</td>
<td></td>
</tr>
<tr>
<td>Actively following up peers' ePortfolios (9)</td>
<td>Tips from peers' ePortfolios (9)</td>
<td>&quot;It was clear when I saw someone else's showcase that was accepted: I thought, 'Oh, this is like a CV but extended.'&quot;</td>
<td></td>
</tr>
<tr>
<td>Receiving lecturer's feedback and assessment (3)</td>
<td>Tips from lecturers (3)</td>
<td>&quot;The feedback was given as a commentary on the text, so it was clear what was the feedback about. It worked well.&quot;</td>
<td></td>
</tr>
<tr>
<td>Practices involved in representing a vocational student teacher's competence in an ePortfolio (48)</td>
<td>Understanding the difference between a workspace and a showcase (11)</td>
<td>Portfolio as a process (6)</td>
<td>&quot;Making a showcase without a workspace portfolio is much more difficult.&quot;</td>
</tr>
<tr>
<td></td>
<td>Workspace and showcase documentation (5)</td>
<td>&quot;I sort of extended my workspace portfolio into a showcase portfolio.&quot;</td>
<td></td>
</tr>
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<td>Portfolio as a process (6)</td>
<td>&quot;Making a showcase without a workspace portfolio is much more difficult.&quot;</td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
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<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workspace and showcase documentation (5)</td>
<td>&quot;I sort of extended my workspace portfolio into a showcase portfolio.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documenting teaching activities (classroom and online) (10)</td>
<td>Videos, photos and reports of acting in a classroom or online (10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documenting received feedback and assessment (8)</td>
<td>Students’ feedback for student teachers (5)</td>
<td></td>
<td></td>
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<tr>
<td>Documenting competencies beyond the pedagogical (7)</td>
<td>Project work competence (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documenting received feedback and assessment (8)</td>
<td>Lecturers’ assessment for student teachers (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-assessment and peer assessment (2)</td>
<td>&quot;I had the peer-assessments, and I wrote the assessments of my teaching training period into my ePortfolio.&quot;</td>
<td></td>
<td></td>
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<tr>
<td>Explaining the pedagogical approach (7)</td>
<td>Learning design as a whole (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explaining the pedagogical approach (7)</td>
<td>Learning methods used in learning situations (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taking the audience into consideration (3)</td>
<td>How to show one’s ePortfolio to others (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Documenting all study courses (2)</td>
<td>Learning assignments of all themes and modules</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;In the end I asked my students to complete the questionnaire and I shared it in my showcase portfolio.&quot;</td>
<td>&quot;In my ePortfolio the lecturer’s assessment is visible.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Everything is visible: Work experience, education…. It is a wide sample.&quot;</td>
<td>&quot;There are my learning designs for the teacher practicing period.&quot;</td>
<td></td>
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</tr>
<tr>
<td>&quot;I should have written more about the pedagogical model I use in the classroom and online. It might be interesting for those who want to know more about me and what kind of teaching activities I conduct.&quot;</td>
<td>&quot;Think and structure it in a way that is easy to show to others.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;All phases and modules are reported there.&quot;</td>
<td>&quot;Think and structure it in a way that is easy to show to others.&quot;</td>
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</tbody>
</table>
Participants’ Suggestions Regarding how to Organise Scaffolding for Students Making ePortfolios

The data included several suggestions about how to provide scaffolding in making ePortfolios. The two categories of these suggestions were 1) supportive methods of composing an ePortfolio and 2) supportive methods of illustrating a vocational teacher’s competence through an ePortfolio. All of the expected objects of scaffolding from lecturers are presented in Table 2.

The suggestions for supportive methods of creating an ePortfolio mainly concerned collaborations with fellow students. The suggestions were to implement collaborative learning processes, make students follow and comment on their peers’ ePortfolios and giving presentations more often in order to prompt discussions of how to create an ePortfolio. The less-often-mentioned recommendations were having more feedback, commentary and assessments from the lecturers in order to improve ePortfolios as well as having more detailed instructions on how to continue. Support for personal growth, getting clear instructions for learning assignments and getting instructions on how to use web tools in alternative ways were also mentioned as suggestions for supporting students composing an ePortfolio.

The recommendations for supportive methods for documenting a vocational teacher’s competence in an ePortfolio also included an orientation session prior to beginning work on an ePortfolio, setting learning objectives and assessment criteria for an ePortfolio, explaining what kind of competence to show and what kind of audience the ePortfolios should be presented to. Related to this, the participants suggested giving instructions for the processes of creating workspace and showcase ePortfolios, starting with an explanation of the difference between the two. Giving examples of good ePortfolios was also mentioned.

Scaffolding providers were found to be lecturers, peers, and given instructions related to learning assignments.
Table 2: Recommendations for Important Support for Making an ePortfolio Based on the Participants’ own Experiences

<table>
<thead>
<tr>
<th>Main Categories</th>
<th>Types of Support</th>
<th>Description of Items</th>
<th>Examples of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive methods of creating an ePortfolio (91)</td>
<td>Collaboration with peer-student teachers (49)</td>
<td>Using a collaborative learning process in peer-group work (17)</td>
<td>“The peer-learning could have been utilised in some way.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Following and commenting on each other’s ePortfolios (16)</td>
<td>“It would be nice to have had some kind of communication there.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Presentation and discussion with one’s peer group (16)</td>
<td>“There should have been presentations of workspace ePortfolios at some point in the middle of the season.”</td>
</tr>
<tr>
<td>Lecturers’ feedback, comments and assessments (15)</td>
<td>Feedback and suggestions for improvements and how to continue (12)</td>
<td></td>
<td>“We should have had some communication while working on our ePortfolios. It is the lecturer’s role to show somehow that she/he follows all of our common issues and to lead a discussion about them.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Following those who might drop out of the ePortfolio process (3)</td>
<td>“If someone in the group is about to drop out and forget the whole thing, they should be noticed immediately and persuaded to pick up the process again.”</td>
</tr>
<tr>
<td>Getting support for personal growth (10)</td>
<td>What is professional growth and how is it accomplished? (4)</td>
<td></td>
<td>“ Somehow give better instructions for reflection and professional growth.”</td>
</tr>
<tr>
<td></td>
<td>Creating a personal development plan in the beginning and reflecting on it later (6)</td>
<td></td>
<td>“We were instructed to make a development plan (in the beginning), so what if there had been a second task at the end of the studies in which you had to compare your present competence to what it was in the beginning?”</td>
</tr>
<tr>
<td>Getting learning assignments (9)</td>
<td>Clear learning assignments given for each topic (5)</td>
<td></td>
<td>“Give even too clear instructions.”</td>
</tr>
<tr>
<td>Supportive methods of illustrating a vocational student Teacher’s competence through an ePortfolio (39)</td>
<td>Assignments given regularly (4)</td>
<td>&quot;Maybe some questions could be asked every time, so that you have to document your responses in your ePortfolio on a regular basis.&quot;</td>
<td></td>
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<tr>
<td>Getting instructions on how to use web tools (8)</td>
<td>Using more new alternative tools (e.g. vlogs, voice recordings) (4)</td>
<td>&quot;We think that you could make a vlog, a blog in video format.&quot;</td>
<td></td>
</tr>
<tr>
<td>Being obliged to open an ePortfolio (2)</td>
<td>Providing technical instructions (in a classroom) (2)</td>
<td>&quot;Some part of the ePortfolio must be open.&quot;</td>
<td></td>
</tr>
<tr>
<td>Getting instructions on the process of creating a workspace and showcase ePortfolios (13)</td>
<td>Differences must be explained thoroughly in the beginning (10)</td>
<td>&quot;This is it! Was it clear for us a year ago what this was going to be?&quot;</td>
<td></td>
</tr>
<tr>
<td>Teacher’s competence through an ePortfolio (39)</td>
<td>Defining one’s competence(s) (4)</td>
<td>&quot;What is the purpose of the ePortfolios: Are they meant for us as a way of keeping track of what we have learned or are they a means of selling ourselves as part of a job application?&quot;</td>
<td></td>
</tr>
<tr>
<td>Attitude towards ePortfolio work (16)</td>
<td>Having set learning objectives and assessment criteria for ePortfolios (6)</td>
<td>&quot;Some kind of frame is needed in order to know the minimum requirement; we need to know what kind of content we need to build our ePortfolios.&quot;</td>
<td></td>
</tr>
<tr>
<td>Getting examples of an ePortfolio (10)</td>
<td>Provide examples of good ePortfolios</td>
<td>&quot;Our lecturers could take examples from our showcases and use them to explain to the next course that we started with this part a year ago. . . .They have sample cases now.&quot;</td>
<td></td>
</tr>
<tr>
<td>How to start the process (3)</td>
<td>Identifying one’s audience (3)</td>
<td>&quot;Making something like this without any clear goal.&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;When the work starts is probably the most important aspect of getting started.&quot;</td>
<td>&quot;Making something like this without any clear goal.&quot;</td>
<td>&quot;When the work starts is probably the most important aspect of getting started.&quot;</td>
<td></td>
</tr>
</tbody>
</table>
Motivation to Learn and Demonstrate one’s Competence Through an ePortfolio

Three sources of motivation were identified in the data: 1) Interest in portfolio activities/process; 2) one’s teaching competence; and 3) digitalisation and technology. The categories used to analyse the participants’ motivation are presented in Table 3.

The findings show that the most common motivation for working with ePortfolios was an interest, in general, to learn and a desire to make one’s competences visible in an ePortfolio. The main orientation was controlled and non-self-determined, as the reason for wanting to complete an ePortfolio was that it was obligatory to do so in order to pass the course. However, some participants also demonstrated autonomous and intrinsic motivation was shown in the participants’ personal interests and target-setting to learn teaching competence.

The motivation to demonstrate competence using an ePortfolio was discussed by mentioning aspects that are considered intrinsic. This was shown in the interest in personal growth as a vocational teacher. For example, one student said, “It is fruitful to think from time to time what kind of skills my teacher competence includes.” At the same time, motivation to demonstrate one’s competence in an ePortfolio was discussed by the participants in an extrinsic manner, because the ePortfolios were created for external purposes such as job applications. For example, another student commented: “It was nice to do it because I have applied for jobs many times and may do so again in the future, so this kind of ePortfolio could be used then instead of just a boring CV.”

The explanations of motivations concerning digitalisation and technology were quite fragmented, but still showed an autonomous orientation which can be interpreted as relating to extrinsic motivation. The participants’ comments highlighted that it was important to document artefacts according to their learning assignments and to adapt the learning objective to document their competence in a digital format. One student said for example: “It was good that there was one place to make the reflections. I utilised that already when we had to do those Open Badges and made those artefacts there and so on. So everything was not spread out.”

Some participants mentioned in the focus group discussions that they were learning to use technology in a natural way which would continue to be useful once they had finished their studies. One participant mentioned: “And now we have digital tools we can really use, like Google Drive collaborative documents . . . we don’t need to make any extra effort to use those.”

Intrinsic motivation was also demonstrated when a participant explained the new methods and learned technology: “First of all I was inspired that we started to work with ePortfolios and a kind of blog writing, as I have never done anything with blogs. So I was inspired by just the tool itself to start working on my ePortfolio.”
Table 3: Motivation to Learn and Demonstrate Competence in an ePortfolio According to the Self-Determination Theory (Ryan & Deci, 2000)

<table>
<thead>
<tr>
<th>Category</th>
<th>Orientation: Controlled</th>
<th>Orientation: Autonomous</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest in ePortfolio activities/process</td>
<td>Extrinsic motivation / external regulation and introjection</td>
<td>Extrinsic motivation / identification</td>
</tr>
<tr>
<td></td>
<td>To pass the course</td>
<td>Freedom to choose web tools (8)</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Personal interest in working with ePortfolios as requested (6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Personal target-setting and vision (7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>One’s teaching competence</td>
<td>Included as a part of studies (1)</td>
<td>For job application purposes by sharing one’s ePortfolio (14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demonstrating one’s competence online (5)</td>
</tr>
<tr>
<td></td>
<td>43</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For personal growth and learning purposes (11)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feeling proud to start working on one’s ePortfolio (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For teaching purposes with students (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Looking at one’s own notes and artefacts afterward and reflecting on them (6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Digitalisation and technology</td>
<td>Open environments to demonstrate and share competencies (5)</td>
<td>The ePortfolio process starts during studies and continues after (3)</td>
</tr>
<tr>
<td></td>
<td>Documenting artefacts related to given assignments (9)</td>
<td>Added value for studies (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Natural use of technology during studies and after (6)</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Being inspired by new methods and technology (5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reflections on one’s own development which can be read later and learned from (6)</td>
</tr>
</tbody>
</table>
5 Discussion

To summarise the practices student teachers used to make their ePortfolios (research question 1), the most common practice mentioned was recording reflections in a learning diary. Testing and using digital tools independently were also frequently mentioned. The participants used different approaches to document their vocational teachers’ competence, such as documenting visual evidence of teaching activities in a classroom or online and, documenting received feedback and pedagogical and other competencies. The possible audiences of the participants’ ePortfolios were rarely mentioned.

The participants offered many suggestions regarding how to organise scaffolding (research question 2), the most important of which were the various methods of creating an ePortfolio. Collaborative learning using several learning practices, including following and commenting on peers’ ePortfolios and giving presentations on one’s own ePortfolio more often were found to be very important. Next was a request for more feedback and assessments from the lecturers, which were expected to include instructions on how to improve and continue ePortfolio work. The recommendations for supportive methods of documenting a vocational teacher’s competence in an ePortfolio focused on an orientation that would include set learning objectives, assessment criteria, instructions for what kind of competence to show and who the ePortfolios would be viewed by.

The stress of scaffolding objects varied. There were three objects of scaffolding that student teachers recommended but did not feel they had: 1) support for personal growth and how to compose related topics in ePortfolios; 2) examples of good ePortfolios in order to illustrate one’s competence; and 3) clear assessment criteria.

The aspects of scaffolding relating to making competence visible through ePortfolios mentioned by the participants in their recommendations were in line with the perspective of distributed scaffolding (Lajoie, 2005; Tabak, 2004). Various scaffolding providers were mentioned as being important in scaffolding, including the lecturer, peers and, written instructions and other materials. In addition, during the teacher training period in educational institution workplace mentors were found to be a scaffolding provider, as well as the participants’ own students through giving their feedback on the teaching activities conducted. Similar to Parker et al. (2012), it was found that the student teachers needed scope, guidance, timing, alignment with standards, reflection on their growth and instructions for making ePortfolios visible to a wider audience in order to make the process meaningful. This finding confirms Lakkala et al. (2005) conclusion about online scaffolding that giving general instructions is not sufficient. For example, the participants found it difficult to understand the role of a showcase ePortfolio by following general instructions. Roberts (2018) found it necessary to provide more scaffolding to students regarding the ePortfolio audience and content for lifelong learning purposes. These perspectives emerged in the students’ focus group discussions also in our study. However, all of the earlier studies on ePortfolios mentioned above
concerned contexts where a certain digital application as an ePortfolio tool was provided by an educational institution or teacher, and thus they did not fully follow the PLE philosophy. Roberts (2018), Masters (2013), Douglas et al. (2019) and Parker et al. (2012) reported that students found it difficult to use these particular indicating that it needed more scaffolding. In this study, however, the participants had no difficulties with digital tools even when they were given the freedom to choose them, in accordance with the PLE philosophy. Digital tools were integrated in several ways in the participants’ studies and the ePortfolio created a beneficial environment to use them in various ways. The participants also found the self-directed online course (MOOC) a good way to learn to use digital tools and digitalisation. This inspired them to test many kinds of digital tools and use them during the course and in their daily work.

To summarise the issues which motivate student teachers to create an ePortfolio (research question 3), the most frequently mentioned sources of motivation were to pass the course and to achieve personal growth by developing one’s teaching competence. The next-most-often mentioned factor was to use the ePortfolio for career promotion purposes and in job applications. The participants demonstrated a self-determined orientation to learning and documenting their competencies in their ePortfolios, but nonetheless they completed their ePortfolios because it was a compulsory element of their studies, so in this their motivation was also control-orientated and regulation was introjected. The participants found they were motivated to create their ePortfolios because they can be used for job application purposes and as a means of demonstrating their competence in a modern way to prospective employers. This is an important motivation, given the necessity of promoting oneself in the labour market, and confirmed the results of Mobarhan et al. (2015), who also studied intrinsic and extrinsic motivations to create ePortfolios. This result also emphasises the significance of some student teachers being strongly self-determined and being intrinsically motivated to work on ePortfolios. However, the results of this study also indicated that the participants’ orientation varied.

Several recent studies on Finnish vocational teacher education have assessed scaffolding students using digital environments and concluded that improving scaffolding was necessary when the new possibilities are afforded by digital environments (cf. Brauer et al., 2019; Korhonen et al., 2019a, 2019b; Ruhalathi, 2019). Although ePortfolios seem to motivate students to demonstrate their competencies in vocational teacher education, more modern approaches may be still implemented.

Figure 1 presents an overview of the objects of scaffolding as well as methods of scaffolding which motivate vocational student teachers to work with ePortfolios under various orientations. It begins with controlled orientation—student teachers who are not yet self-determined learners. Next is autonomous orientation and intrinsic regulation, those student teachers who have become self-determined learners. Figure 1 illustrates by whom the
scaffolding is given (scaffolding provider) in each method of scaffolding also by different motivation orientation. As peers were found to be the most important support for working with ePortfolios they are suggested to consider as scaffolding providers in each motivation orientations. When students achieve autonomous orientation in their personal growth and develop their own teacher competence they are able to work alone by utilising internalised practices and strategies (Walqui, 2006).

![Figure 1: Scaffolding Objects and Methods of Scaffolding With Motivational Orientations of Vocational Student Teachers to Learn and Document Their Competencies in Their ePortfolios](image)

This study focused on the voice of student teachers who worked with ePortfolios during their studies. Another avenue of research would be to study their ePortfolios in order to find how they have followed the instructions and how the methods of scaffolding influenced them. Learning objectives and assessment criteria are also recommended to focus on the future studies of training vocational student teachers as indicated by the findings of the present study. In the future, it might be relevant to study how scaffolding can be faded and how students proceed after that. This study did not address the personal needs of each student for scaffolding, so that is another issue that could be explored in future research. It might also be interesting to explore how student teachers work with their ePortfolios after their studies: Were they offered any jobs based on their ePortfolio, have they documented their progress with their ePortfolios and do they feel that they need them for continuous learning?
Acknowledgement

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References


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The Importance of Authentic Workplace-Based Assessment: A Study From VET Teacher Education


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Abstract

Context: This article is based on a pragmatic theoretical perspective on education, in which theoretical and practical competences are developed through experiences and participation in real-world teaching contexts. Previous research points to a lack of culture for authentic workplace-based assessment in vocational and professional education in many countries. Prior to this study, professors/authors and student-teachers in a vocational teacher education program in Norway experienced that student-teachers were unable to demonstrate comprehensive teaching competence, as examinations and assessments assess theoretical knowledge separately from practice. Research questions: 1) How can an authentic workplace-based exam during placement give student-teachers an opportunity to showcase their comprehensive teacher competence? 2) What factors are important to emphasize in such an exam? 3) How do the student-teachers demonstrate and develop comprehensive teacher competence through an authentic exam?

Methods: Using action research, professors/authors carried out sequential actions to develop a practical-theoretical exam in an authentic professional setting. This included demonstrating elements of practical and theoretical competence conducted during teaching practice. The exam involved planning in line with a guidance document and practical teaching in the classroom in VET-schools, followed by a piece of reflective writing based on teaching experiences. Supervisors and professors/authors observed the student-teachers teaching as part of multiple qualitative methods.

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Findings: The empirical results show how student-teachers demonstrate and develop comprehensive teaching competence. Both the student-teacher and the supervisors in VET-schools experienced the authentic exam as realistic and professionally based. The biggest challenge involved logistics: Compensating the professors’/authors’ time and financial frameworks related to the observation of the student-teachers. However, this kind of authentic assessment leads to stronger coherence between both theory and practice, and between the vocational teacher education at the university and the VET in upper secondary school. It also supports the job-relevant learning process towards comprehensive teacher competence.

Conclusions: This kind of authentic assessment i.e. an authentic exam requires an understanding of the complex role of teachers within their professional context in VET. Therefore, the professors/authors see the need of a broader, more comprehensive teacher competence in VET to meet the work life needs for competence.

Keywords: Comprehensive Teacher Competence, Relevance, Coherence, Work-Based Education, Work-Based Assessment, Competence-Based Exam, Vocational Education and Training, VET

1 Introduction

International research highlights the lack of cooperation between education institutions and working life, showing challenges in both vocational and professional education across a number of North European countries, including Denmark, UK, Germany and Norway (Billet, 2014; Gessler, 2017; Gulikers et al., 2017; Hiim, 2017; Wahlgren & Aarkrog, 2012; Young, 2004). One of these challenges is meeting the need for relevant content, teaching and assessment in conjunction with the need for demonstrating competence in working life. Research conducted by Baartman et al. (2013) and Grollmann (2008) shows that in order to ensure quality, assessment must be undertaken within the context in which the profession is executed - authentic assessment for work. Grollmann’s (2008) research explicitly addresses the need for an assessment where there is a close relationship between practice and theory. This kind of assessment form also requires an understanding of the complex role of teachers within their professional context as teachers in vocational education and training (VET), i.e. hairdressing, cabinetmaker and florist educations. The Norwegian term of "vocational education" alludes to VET playing out in an education context (even school), while vocational training hints at how a vocation (or occupation) is constituted at the workplace" (European Centre for the Development of Vocational Training [Cedefop], 2017, p. 51). This kind of complex understanding is required to avoid the problem of lack of relevance, which has traditionally characterized professional education. More specifically, this lack of relevance has been typical of educational programs where theory and practice are taught separately (Billet,
The Importance of Authentic Workplace-Based Assessment

International research suggests that in order to ensure quality in higher professional education and training (PET), i.e. vocational teacher education at university level, the educational program needs to be job-relevant and have strong bonds to working life (Billett & Choy, 2013; Grollmann, 2008; Heggen et al., 2015; Mulder, 2017). Professional work-centred education is a way to help address this problem of lack of relevance in both VET and PET. Professional work-centred education is when the content, teaching methods and assessment in education are all based on and related to the tasks and functions of professional practice (Hiim, 2013, 2017; Sylte, 2018), but this context is often lacking in both VET and PET, i.e. a teacher education (Billett, 2010; Sullivan, 2005). Political guidelines for teacher education at the PET-level in Norway stress that workplace-based practice should be emphasized in teacher education, as practical relevance is a recurring challenge in most teacher education programmes at university level, including the vocational teacher education (Ministry of Education, 2017). Regarding this challenge, Baartman et al. (2013) also point out that "social skills and attitude in teacher education are particularly difficult to acquire through theory" (p. 11). Sylte's (2018) research also indicates a lack of focus on profession-related assessment and how it can be achieved, in both teaching education and other PETs, i.e. nursing, police and engineering educations.

This paper is based on data from an action research project. The aim of this project was to examine whether a workplace-based comprehensive exam in vocational teacher education on university-/PET-level, i.e. an authentic exam, during vocational-student-teachers (student-teachers) practice placement in VET, would offer student-teachers at the vocational teacher education student-teachers had the opportunity to demonstrate comprehensive teacher competence. The term "comprehensive teacher competence" in this paper focuses on a holistic teacher competence that includes professional subjects and key competences, such as collaborative ability, independence, creativity as well as innovative and critical thinking (Sylte, 2018). The competence that the student-teachers must demonstrate is the ability to plan, teach and assess in VET, as well as their ability to solve complex challenges related to individual pupils and the job-relevant teaching session in VET. This paper aims to show that comprehensive teacher competence can be described as: "A competence consists of an integrated set of knowledge, skills and attitudes, where also personal characteristics and aspects of the professional functioning influence the development of competences in some way" (Koenn et al., 2015, p. 2). Comprehensive teacher competence also includes the student-teachers understanding of the need for relevant workplace-based learning in VET, and understanding of the vocational profession, its function in society, its culture, tradition and development (Sylte, 2018).

The authentic exam is a workplace-based exam in the vocational teacher education on the PET-level, which was implemented in an authentic VET-school-context (upper secondary school, pupils age 16-19 years). It will be defined in the next section.
The authors will first present the Norwegian context, and next provide an overview of the fundamental components of authentic exam as outlined in previous research. Then the theoretical basis will be explained, before describing the research approach and present the results. Finally, a comparison of the findings to previous research in the discussion before concluding, pointing to some implications of the analysis.

2 Norwegian Context

Vocational teacher education at Oslo Metropolitan University (OsloMet) in Norway is a three-year bachelor level degree programme with a strong emphasis on the teacher's job tasks in VET. Over a three-year period, the student-teachers undertake 70 days of pedagogical teaching practice, spread over four placements (Ministry of Education, 2013). Supervisors (teachers in VET with a mentoring responsibility) in upper secondary school assess the placements by using a pass/fail grading scale.

The student-teachers receive written feedback in five competences: Social competence, subject competence, vocational-didactic competence, professional ethics competence, and adaptive and development competence (Ministry of Education, 2013). Vocational-didactic refer to how teachers undertake practical-theoretical planning, implementation (content and teaching methods) and assessment, and critically analyses the teaching in VET, in both upper secondary school and university level (Hiim & Hippe, 2001). Aside from the assessment of teaching practice by a supervisor, there has been no tradition for an authentic workplace exam in vocational teacher education (Haaland & Vagle, 2016; Sylte, 2018).

The four authors as assistant professors/associate professors/professor (professors/authors) who teach student-teachers at the university, experienced that their student-teachers were unable to demonstrate comprehensive teacher competence, as theoretical knowledge was assessed separately from practice. This lack of a suitable assessment form for comprehensive teacher competence formed the grounds for an action research project in vocational teacher education, initiated by the four professors/authors to research their own practice. An authentic exam for student-teachers in practice placement in VET-schools was tested through an iterative process in three sequential actions. student-teachers. This led to the research questions regarding how an authentic workplace-based exam in teaching practice might give student-teachers an opportunity to showcase their comprehensive teacher competence. The components that comprised the exam were that the student-teachers:

1. Plan their teaching in line with a guidance document, with vocational-didactical and pedagogical reasons for why and how to conduct the teaching session.

2. Teach pupils in authentic situations in VET.
3. Produce a piece of reflective writing about their practical teaching considering pedagogical and vocational-didactical theory immediately after the teaching (when they still remembered what happened in class).

This authentic exam is a summative assessment as a part of an authentic assessment implemented in a realistic and complex VET-school-context. Authentic assessment can be defined as an assessment form were student-teachers can demonstrate their comprehensive professional teacher competence instead of proving their accumulated fragmented theoretical knowledge. This is an assessment that involves supporting the job-relevant learning process towards comprehensive professional competence which is based on the competence needed in professional practice (Sylte, 2014, 2018). The authentic exam was inspired by research e.g. Billett and Choy (2013), Grollmann (2008) and Mulder (2017) who emphasizes the need of job-relevance and strong bonds to working life. The working life for the student-teachers in this context was their practice placement in different VET-schools. Gulikers et al.'s (2017) research on the importance of authentic tasks in assessment and Miller's (1990) four-level assessment pyramid, also influenced the authentic exam. This authentic exam involves all levels, and especially the three upper levels of Miller's (1990) assessment pyramid. Miller (1990) divides competence assessment into four levels in a pyramid: The lowest level is knowledge (knowing), the second level is competence (knowing how), the third is performance (showing how), and finally the highest is action (doing), in a realistic and complex context. The assessment form, i.e. this authentic exam is based on authentic workplace-tasks (Gulikers et al., 2017). Simultaneously, it is important that the professional competence requirements are reflected in the assessment criteria (Baartman et al., 2013). Authentic assessment is elaborated in more detail in the next section.

3 Previous Research Related to Authentic Assessment

Research shows that coherence is necessary if education is to be perceived as relevant for work-life competence requirements. Achieving this kind of relevance, requires strong cooperation between education institutions and work life on relevant content, teaching and assessment (Billet, 2014; Canrinus et al., 2015; Grollmann, 2008; Hiim, 2017; Smeby & Heggen, 2012). A comparative research study on teacher education encompassing five countries shows that student-teachers from study programmes with no specific focus on a correlation between theory (at their universities) and pedagogical practice (in their school placements) experienced less coherent learning objectives (Canrinus et al., 2015). This finding points to the need for workplace-learning and authentic assessment of studies involved in practice placements (Billett, 2014; Mulder, 2017). Grollmann's (2008) research on quality in vocational teacher education addresses the characteristics of high-quality vocational teacher educa-
tion in the US, Denmark and Germany. In order to assess the complexity of the teacher role in VET, Grollmann (2008) states that the assessment must be undertaken in the context in which the profession is practiced. The results of his research show that vocational teacher education involves complex competence areas that are difficult to separate into discrete units.

Torrance's (2007) research shows that education on learning-supportive assessment has received a greater focus in recent years. Assessment practice has shifted the focus from an assessment of learning to an assessment for learning, which involves both formative assessment and self-assessment with a focus on learning. A learning-supportive assessment with formative strategies and democratic processes (which were important goals in the authors' actions) promotes learning. When students are actively involved in the assessment process, both motivation and learning outcomes are strengthened (Hattie & Timperley, 2007).

Dutch research points out, however, that neither self-assessment nor formative assessment is enough: A key challenge is whether professional competence requirements are reflected in the assessment criteria (Baartman et al., 2013). The presence of professional competence requirements in the assessment criteria would necessarily involve a professionally related assessment where the student-teacher is given the opportunity to show comprehensive teacher competence (Grollmann, 2008; Sylte, 2018).

Regarding Miller's (1990) four levels (knowing, knowing how, showing how and doing in a realistic and complex context), Gulikers et al. (2017) argue that "this highest level requires an integration of knowledge, skills and attitude in competent performance, assuming that competent performance cannot be done when underlying knowledge and skills are not internalised" (p. 4). The professors/authors' previous experience with assessment in vocational teacher education implied mostly Miller's two lowest levels (knowing and knowing how) where the focus was on a student's accumulation of knowledge through written assignments. Authentic assessment of comprehensive teacher competence however requires methods that touch upon all levels of the pyramid and especially prioritise the highest level (doing). The challenge is that authentic assessments that include Miller's "higher levels of the pyramid (showing how and doing) are not often included in summative assessments" (Baartman et al., 2013, p. 980).

Baartman et al.'s (2013) findings resonates with the authors' experiences from vocational teacher education, where the student-teacher's placement is assessed separately from all the other exams in the study programme. Baartman et al.'s (2013) research shows: " [Supervisors] do not act as assessors (reproducibility of decisions), do not know and therefore cannot accept the assessment criteria (transparency and acceptability), and the assessments are not always practically relevant or take place in the work context (authenticity)" (p. 988). However, it is a problem that supervisors do not know enough about the content of the vocational teacher education curriculum so that they can assess students' competence appropriately. Thus, we see the need for involving the placement-schools and the supervisors in an authen-
tic exam. Gulikers et al. (2017) show that students experienced authentic exams as much
more meaningful and realistic than previous assessments methods. Student motivation in-
creased, and the formative learning prepared the students much better for their further work
in VET, which the authors see as a transferable skill for the student-teachers who will become
teachers in VET.

An assessment that involves supporting the learning process towards comprehensive pro-
fessional competence is based on the competence needed in professional practice, which
simultaneously includes numerous competence goals in several subjects (Sylte, 2014). In the
assessment of work tasks and functions, several different learning outcomes are included
when a student-teacher plans, conducts and assesses a teaching session. Aspøy et al.’s (2017)
study shows that while teachers in VET must have good subject competence in the subject
they are teaching, such subject specific competence is not enough: "In addition to subject
and pedagogical competence, the informants emphasize the teacher’s relationship between
competence and interaction skills" (p. 59). Further, the importance of contact and confidence
with pupils is also emphasized. This emphasis also points to the need for coherence with au-
thentic assessment, which involves comprehensive teacher competence. The same discussion
on the need for authentic assessment is ongoing in a European context, where Mulder (2017)
argues that education institutions have to step out of their comfort zone, and: "move away
from memorising textbooks and doing reproductive tests" (p. 3). In sum, it is well documen-
ted in the literature that teacher education requires a type of assessment which is different
from that which separates knowledge, skills, attitude, responsibility and autonomy. As a con-
sequence, students need to be given the opportunity to demonstrate comprehensive profes-
sional competence rather than proving their accumulated fragmented theoretical knowledge
(Billett, 2010; Canrinus et al., 2015).

Previous research also indicates that assessment in professional education is characte-
rized by a culture of measuring theoretical knowledge instead of comprehensive competence
(Haaland & Vagle, 2016; Sylte, 2018). Another OsloMet study which examined the imple-
mentation of practical exam (in another vocational teacher education subject) showed that
the student-teachers gained greater insight in vocational teacher competence than with the
previous version of the exam (Haaland & Vagle, 2016). Even though approximately two-
thirds of the programme’s learning outcomes were comprised of learning practice-based
teacher skills, and then practicing and understanding the teacher’s work in VET, previous
exams had not taken this into account (Haaland & Vagle, 2016).

Goh and Zukas (2016) also emphasize the importance of the supervisor’s role during the
student-teachers’ school placements in a European context, noting that: "(…) subject know-
ledge which is valued in one context does not necessarily help the learning of individuals
in becoming a vocational teacher in another context" (p. 263). Moreover, they also point
out the need for a stronger focus on broader teacher competences, in which the different
functions of a school are included in teacher education at the university. Our research is also about coherence through authentic assessment, but we focus on empirical examples on how student-teachers can show comprehensive teacher competence in an authentic workplace-based exam.

4 Assessment in a Pragmatic Knowledge Perspective

A pragmatic knowledge perspective (Dewey, 1910; Schön, 1983) characterized this project. A pragmatic perspective on education “implies that experience and language are considered a process where concepts are developed through participation in practical contexts” (Hiim, 2013, p. 313). The core of this perspective consists of contextual learning which is based on job tasks and functions, requires learning and assessment through action, experience and reflection (Dewey, 1910; Schön, 1983). A significant difference between pragmatic professional pedagogic relational thinking in relation to conventional pedagogy is that curricula content, teaching and assessment are based on actual work tasks and practice, instead of context-free abstract theory (Hiim, 2013).

The development of comprehensive teacher competence requires tasks to be realistic and practice-based, as it is through reflecting on the pedagogical and vocational-didactical theory related to the practical implementation that coherence is achieved. Comprehensive teacher competence implies a beginner level of expert knowledge, in which the student-teachers can distinguish between different situations requiring different actions (Dreyfus & Dreyfus, 1986). The student-teachers should develop competence not only about what to teach, but also how and why they teach. They should develop an understanding and an emerging expertise as teachers in VET. This approach also emphasizes the importance of learning to learn in a lifelong learning perspective (Billet, 2010; Dreyfus & Dreyfus, 1986). In this context, competence entails being able to solve problems and carry out work tasks in both known and unknown contexts, as well as the ability to reflect and think critically (Mulder, 2017; Ministry of Education and Research, 2015-2016). Previous studies have revealed a need for authentic forms of competence assessment, however there is still a lack of research showing how such an assessment might be accomplished, something this article will address.

To be able to examine how such an assessment might be accomplished, this project analyse how authentic workplace-based exams that showcase the student-teachers’ comprehensive teacher competence can be developed. To conduct such an analysis, the authors chose action research which is presented in the next section.
5 Method

5.1 The Research Design of the Project

The action research approach was primarily inspired by pedagogical action research (Hiim, 2010; Stenhouse, 1975; Winter, 1989). The authors researched their own practice as professors/authors in interactions with supervisors and student-teachers. According to Cochran-Smith and Lytle (1993), professors/authors researching their own practice has advantages: "This research recognizes that teacher are uniquely positioned to provide an insider’s view that makes visible the way that student-teachers and teachers together construct knowledge” (p. 43). It was important for the authors to gain deeper insight into the student-teachers’ practices. The authors were thus seeking a deeper understanding and insight into how the student-teachers and the supervisors jointly construct pedagogical and vocational-didactical knowledge as teachers in a VET-school-context. Therefore, the action research design was chosen as actions were performed with an authentic exam in collaboration with the student-teachers and their supervisors in VET-schools. The three research questions (RQ) were:

1. How can an authentic workplace-based exam during placement give student-teachers an opportunity to showcase their comprehensive teacher competence?

2. What factors are important to emphasize in such an exam?

3. How do the student-teachers demonstrate and develop comprehensive teacher competence through an authentic exam?

5.2 Empirical Data Basis

The participants in the project were 52 second-year undergraduate students-teachers at the vocational teacher education in the university and their supervisors in their placement in VET at upper secondary school. Most of the student-teachers were women who were between twenty-five and fifty years old. A small number of student-teachers had previous teaching experience. The project was carried out over a three-year period from 2016 to 2018. The action research were carried out in three sequential iterations as authentic exams in the student-teachers’ practice placement in school. The actions and empirical data based on the various qualitative research methods are illustrated in Figure 1.
Various qualitative enquiries were used, all focusing on the opportunities and challenges the practical exam might entail for the student-teachers related to comprehensive teacher competence. Each of the student-teachers’ teaching sessions in part two of the exam were observed and assessed by a supervisor and a professor/author using systematic categories, documented in semi-structured logs. The assessment criteria included: 1) Relationship and dialogue with the pupils (pedagogic), 2) The role of the teacher and classroom management (pedagogic), and 3) The correlation between the teaching plans, and what occurred during the teaching session (pedagogic and vocational-didactic). Criteria such as responsibility, autonomy, attitude and social skills (such as classroom management and communication with pupils) are impossible to assess only through a written exam alone. Therefore, these three assessment criteria were important to assess in part two in the authentic exam. This is in accordance with: Miller’s (1990) showing how and doing in a realistic and complex context, Guilikers et al.’s (2017) integration of knowledge, skills and attitude in competent performance, and Sylte’s (2018) ensuring that the student-teachers develop comprehensive teacher competence.

The role of the professors/authors also involved a dialogue with the supervisors on the observations and analysis of the reflective writing. The supervisors gave formative oral feedback to the student-teachers based on their observations, while the professors/authors gave written feedback to the student-teachers based on their planning, observations and reflection notes. The actions were evaluated through "dialogue meetings" in which all the student-teachers summarized their experiences with the practical exams in groups (Reason & Bradbury, 2008). All thoughts and summaries were documented on posters and further summarized by the authors. In addition, the authors conducted semi-structured interviews with the supervisors and a random sample of the student-teachers about their experiences with the exam (Patton, 2015).
5.3 Analysis, Validity and Relevance

The data were analysed and synthesized during the project period to further develop the actions and to notice any emerging contexts and patterns (Patton, 2015). The analysis was conducted using the analysis tool HyperRESEARCH.

The authors defined categories to produce original and valid knowledge that others could learn from (Hiim, 2010; McNiff & Whitehead, 2006). The categorization was primarily based on theoretical concepts from our pragmatic didactical knowledge perspectives. The main categories for analysis were the areas of competence specified in the national curriculum: Subject competence, vocational-didactic competence, social competence, adaptive and developmental competence, and professional ethics competence. The sub-categories were Miller’s (1990) four levels of competence assessment: Knowledge, knowing how, showing how and doing in a realistic and complex context.

A common critique of action research is that it gives too much leeway to researcher’s judgment and ability to evaluate, such as by Grimen (2004). The authors have attempted to accommodate this criticism by discussing and reflecting critically in a dialogue with the supervisors and the student-teacher about their experiences with the actions (Reason & Bradbury, 2008). Likewise, the authors were conscious of their research role as professors/authors and sought to retain a certain amount of professional distance, to limit any subjectivity influencing the analysis.

6 Results From the Action Research Project

The three iterations of the actions will be presented together based on the observations and evaluations before discussing the challenges and opportunities the exam offered. The results are structured according the three research questions (RQ1, 2, 3).

RQ1: How can an authentic workplace-based exam during placement give student-teachers an opportunity to showcase their comprehensive teacher competence?

In the first part of the authentic exam, the student-teachers detailed their plans in a guidance document structured around the vocational-didactic categories of learning goals, content, pupils’ learning conditions, frameworks, the learning process and assessment. In the first iteration, the theoretical basis was almost non-existent in the student-teachers’ reflection notes. Consequently, the professors/authors discussed how to integrate Miller’s (1990) first and second levels for assessment in the competence pyramid (knowing and knowing how). Advice was given to the student-teachers to develop their teaching plans and include pedagogical and vocational-didactic theory. In the following two iterations, the reflections were
substantially more theoretically based and during the authentic exam, many student-teachers wrote that they experienced mastery of comprehensive teacher competence.

The student-teachers noted their own changing and developing competence through the planning and implementation of the teaching session. For example, one student-teacher reflected on overusing the guidance document with a theoretical basis when planning the teaching session. "I have seen that my teaching was more dialogue-oriented teaching than what I thought, which is based on a more critical view of knowledge and humanistic values." Another student-teacher reflected on their relational and social skills related to pedagogical theory: "I see the importance of Bandura's three perspectives because a lack of confidence in interaction with others will probably provide a poor learning process for the pupils." Many student-teachers reflected on the significance of varied teaching methods, in addition to the need for relevant vocational content based on job functions in vocational teaching. Here, the student-teachers were assessing their own learning through action, experience and reflection. Another student-teacher reflected on their own pedagogical competence in the class: "Bruner's theory of scaffolding is important in this class. When they reflected and shared some of these thoughts with the rest of the class, I feel that it has as much, if not more weight than if I say the same thing." In the reflection notes, most student-teachers showed that they reflected both in and on action.

RQ2: What factors are important to emphasize in such an exam?

In the first and second iterations, the student-teachers performed reasoned connecting their teaching session planning in accordance with the guidance document, justifying the teaching session plan with vocational didactical and pedagogical reasoning. Here they showed how they planned to manage pupils' learning conditions, the frameworks for teaching, the content and structure, the learning goals, the learning process and how the teaching session should be assessed in a whole. By making these connections, many student-teachers showed that they had begun to develop an understanding of comprehensive professional pedagogy and vocational-didactical relationships through the three parts of the exam. However, in the reflective written assignment after their teaching session, there were differences in how they explained their choices considering relevant theory. Some student-teachers separated the theory from what they were planning to do, while other student-teachers integrated it well. In the second and third iterations, most of the student-teachers integrated the theory well. This indicates that how the exam was introduced and how the student-teachers were made aware of the assessment criteria were of significance.
RQ3: How do the student-teachers demonstrate and develop comprehensive teacher competence through an authentic exam?

According to the observations that the professors/authors made in the teaching sessions, the student-teachers exhibited teaching competence through an understanding of pedagogical and vocational-didactic theory in practice. "I was tested on what it means to be a teacher," said one of the student-teachers. During their teaching, the student-teachers had to keep to the framework and the pupils’ learning conditions in the class. "I experienced that I could deal with unforeseen situations and challenges in the classroom", said another student-teacher. The student-teachers also showed vocational-didactic competence by using teaching methods that emphasized contextual learning based on job function. As one of the supervisors said, “the teaching was vocational and differentiated through varied teaching methods and based on the pupils previously documented learning conditions”. The student-teachers also showed teacher competence through the confidence they demonstrated, the subject content and the teaching methods they chose, as well as through their pupils’ participation and engagement. A supervisor's statement (about a student-teacher) from the interviews can serve as an example of how the student-teachers demonstrated this kind of competence: "Good subject content in a relevant topic, which the student-teachers presented in a varied and good way, shows good digital skills and dares to challenge themselves." The assessment, conducted in the school context (the student-teachers’ placement) where the teaching profession is practiced, provided room for the student-teachers to show the complexity of the teacher role in VET.

Many of the student-teachers also showed responsibility, autonomy, good class leadership and social skills. These were demonstrated in the way they handled unforeseen situations, which occurred during the teaching sessions observed by the professors/authors and supervisors. Some student-teachers showed good communication and relationship building skills in addition to subject competence, through the contact and trust they developed with each pupil. One supervisor's observation log read: "Good class management, nice lesson structure, varied, ethically conscious, good values, sees all the pupils and takes them seriously, good at concretizing and leading the process. Would believe the student-teacher- has worked as a teacher for many years." Most of the student-teachers showed that they had established good relationships with the pupils while guiding and engaging them in a dialogue during the teaching situation. One supervisor wrote in the observation log that the student-teacher had "the ability to handle demanding pupils in a calm and good manner (…) which extends even to the most demanding pupils. Proximity to pupils motivates while at the same time giving them room to work." This indicates confidence in the role of the teacher in VET. Another supervisor indicated that even a student-teacher who had had low self-confidence managed to show her potential as a teacher during the teaching session: "Her relations and social skills are very strong; she sees all the pupils."
Opportunities and Challenges With an Authentic Exam

The results of how an authentic exam in teaching practice can give student-teachers the opportunity to demonstrate their comprehensive teacher competence will be discussed here. The results from the professors/authors' observations, evaluations and interviews indicate that both the student-teachers and the supervisors experienced the authentic exam as strongly realistic for working life. This is in line with Baartman et al. (2013) and Hiim (2017). The exam provided greater opportunities for student-teachers to show comprehensive teaching competence and included all of Miller’s (1990) four competence levels, which is important for professionally relevant assessment. The results indicate that this form of assessment contributes to a learning process in which student-teachers develop authentic pedagogical and vocational-didactic competence. Being able to demonstrate responsibility, autonomy, relationship and social skills, and class management in close association with subject competence are all examples of this. Aspøy et al. (2017), Goh and Zukas (2016) and Grollmann (2008) all point to the necessity of focusing on a broader competence base in teacher education, which can be seen in the context of comprehensive teacher competence (Sylte, 2017). The student-teachers confirmed that they were able to showcase their confidence in the classroom, an ability to lead and motivate individual pupils, as well as the whole class. One student-teacher said that they had been “tested on what it means to be a teacher in VET.” The supervisors also expressed similar statements, such as the following: “[it was] great with this authentic exam, because it is important that the student-teacher functions in the classroom - it is not enough to write about pedagogy and Vygotsky, although theory is important to understand what happens in the classroom.”

The authors can also see the need for student-teachers to have exams where they explain and discuss theoretical standpoints: for example, Vygotsky’s theory about learning at Miller’s first, second and third level. On the other hand, there’s also need for the presence of professional competence and skills in the assessment criteria (Baartman et al., 2013). The authors therefore argue that an authentic exam offers a more relevant and professional assessment form than the traditional / written assessment forms. This is because the planning, teaching and assessment that the student-teachers must undertake covers all the levels in Miller’s (1990) pyramid, Gulikers et al.’s (2017) integration of knowledge, skills and attitudes in competent performance and Sylte’s (2018) development of comprehensive teacher competence. Vocational-didactical planning, implementation and assessment are all integrated. As Dewey (1910) and Schön (1983) also emphasize, this emphasis on integration highlights the importance of seeing action, experience and reflection in the same context in order to achieve lasting learning. This authentic exam gave the opportunity to build student-teachers’ comprehensive teacher competence through their own planning, teaching, and self-assessment, which included reflecting in and on action (Baartman et al., 2013; Schön, 1983).
8 Workplace-Based Authentic Exam in a Practice Context

Through the exam the collaboration and dialogue between the university and the supervisors in schools were strengthened, via joint evaluation of the student-teachers. In Norway, there are political guidelines stating that the schools involved in the practice placements will become more responsible for teacher education in the future, and this shift will also require closer cooperation and greater coherence between schools and universities (Ministry of Education, 2017; Smeby & Heggen, 2012). After an observation, one supervisor stated: "I get insight into what to consider - what to look for, which also applies for the entire teaching practice." This form of exam offered closer ties between teacher education and the field of practice, and between theory and practice – in simpler terms - coherence (Canrinus et al., 2015). Several supervisors thought the authentic exam in school strengthened the quality of vocational teacher education, as the student-teachers were better prepared than in other teaching sessions during practice placements in school. Another supervisor stated: "What makes the situation different is that the student-teacher wants to show everything they know about teaching methods, etc., more so than in a normal situation."

Still, many student-teachers were nervous before the authentic exam, which was a challenging endeavour. This may be because they knew they were being observed by both the supervisor and the professors/authors while they were teaching. Other factors might have been their awareness of the unpredictability of the pupils' attendance and behaviour. One supervisor said that they had found it to be: "a demanding exam for the candidate, with a lot of internal stress, but good in relation to being teachers, [it] shows natural teaching and not an 'artificial' session/situation." Most student-teachers said that the form of the exam triggered stress, but at the same time gave a strong sense of achievement afterwards. The student-teachers showed competence in responsibility and autonomy by coping with stress and dealing with unexpected situations. The following is a typical quote from the interviews with student-teachers: "I was very nervous, but in retrospect I found the practical exam as a very useful and a positive experience." Another said that she had: "experienced the exam as incredibly demanding, far beyond my comfort zone, but having tackled so much stress, I felt a sense of achievement and I felt more confident afterwards." The combination of the stress the student-teachers felt, relieved by the experience of coping, is interesting in relation to Antonovsky's (2000) theory that stress management is not about what we are exposed to, but rather with our ability to cope with what is happening. Coping with the stressful situation was perhaps what made so many of the student-teachers feel good about it afterwards.

The biggest challenges in the implementation of this type of authentic assessment involved logistics: compensating professors/authors and supervisors for their time, and the financial frameworks related to the observation of the student-teachers. The geographical distance between many of the schools and the university is considerable, and the authors discussed videotaping the teaching sessions instead of being physically present. However, there are strict
regulations on privacy in schools, and it would not be enough to simply film the student-teacher, as their reactions and interaction with the pupils were also important to observe. It was therefore considered vital to be physically present in the schools, but arguably if authentic assessment is to be scalable and sustainable, this is also an area that needs to be further developed and considered in future collaborations with the practical placement schools.

9 Authentic Exam: Planning, Teaching and Reflection in and on Teaching

Some supervisors experienced challenges with the situation because it was "artificial" for the pupils. For example, one of the supervisors said that "the exam situation clearly affected the class." At the same time, most supervisors experienced that the pupils behaved as they usually did, with one saying, "I thought the pupils would behave better in this session, but they behaved as usual." The time frame for the student-teachers' teaching was a challenge for some, with several supervisors making statements such as: "A little bit unrealistic with a session where a student-teacher is assessed in the middle of a period. The student-teacher performed much weaker in the exam than in previous teaching sessions." "The student-teacher had planned the session as part of a longer segment consisting of many class sessions. [There] should have been a teaching situation where the examiner, for example, observed the start-up, a middle session and the finish."

Because both the student-teachers and the supervisors experienced a 45-minute teaching session as too short for the student-teachers to show comprehensive teaching competence, this was changed to 90 minutes in the second and third iterations, which proved more successful. Nonetheless, this is still a short time to carry out vocational teaching assessment.

Some student-teachers stated that it would have been better with an oral reflection instead of a written reflection. However, one student-teacher wrote in their reflection piece: "I'm glad it was a written and not an oral reflection, as I like to think a little before I answer". Another reflection from the same student-teacher was that "the time given was ok, but I couldn't think about the theory, I was too worn out. It became more of a self-assessment and reflection on what had happened there and then."

Several student-teachers said it was difficult if not impossible to write afterwards about what they had done, and they thought it was of great importance that they were observed in action. A typical quote was: "I see that I couldn't have managed to write about what you observed." Many student-teachers experienced the opportunity to show their "tacit knowledge" as positive and were happy to have been given the chance to show that they could combine theory and practice into action. According to Polany (1996) not all knowledge can be verbalized, which is an argument for showing this unarticulated expertise in practice in this action research project.
The student-teachers indicated that receiving quick feedback in both the oral and written assessment was supportive of learning. One student-teacher said that it was "good to get such a thorough response afterwards (…), [it] gave a good feeling, but I have to read more theory to be able to use it to reflect." This comment supports theories that assessment for learning is of importance for student-teacher learning, even when it involves an assessment of learning in an exam situation (Torrance, 2007). Feedback strengthens motivation and learning outcomes (Hattie & Timperley, 2007). European research also points to the challenges of professional competence requirements not being adequately reflected in the assessment criteria (Baartman et al., 2013; Grollmann, 2008; Gulikers et al., 2017; Mulder, 2017). This situation is reflected in Baartman et al.'s (2013) research about working life, which often does not know about, and/or does not understand the assessment criteria for student-teachers, which in turn makes it difficult to involve such workplaces in student-teacher exams. However, this is made easier in teacher education where the placements supervisor has pedagogical competence.

In addition, this authentic exam for work was conducted as a collaboration between the supervisors and the professors/authors. The authors have developed empirical examples on how to assess comprehensive teacher competence, based on integrating the needs of both work life and school competence into the assessment criteria. It is not enough to assess pedagogical theory separately from practical teaching. However, it was found that the authentic exam did not accommodate for the student-teachers to elaborate on theoretical knowledge detached from practical context (for example on Miller’s (1990) first and second levels) to the same extent as conventional theoretical examinations student-teachers. Instead, the authentic exam provides an opportunity for student-teachers to develop teacher competence in teaching planning with relevant theoretical content in a practical context. They also develop an expertise in being able to articulate how and why they teach, in compliance with utilising all four levels of Miller’s (1990) assessment pyramid.

10 Comprehensive and Authentic Assessing Gives Opportunity to Showcase Comprehensive Teacher Competence

Comprehensiveness was achieved through a combination of preparation by utilising a guidance document, practical teaching and a reflective writing exercise. Here, the student-teachers showed that they were able to distinguish between different situations that require different actions in practice. For example, one student-teacher said that they "felt that I was able to show that I tackled unforeseen situations and challenges." The student-teachers showed competence in solving problems and performing work tasks in both known and unknown contexts, in addition to comprehension and an ability for reflection and critical thinking, as well as the ability to learn – as displayed in their reflective writing (Billet, 2010; Ministry of Education and Research, 2015-2016, p. 28). The student-teachers would not have been able
to achieve this in just a practical or theoretical exam. Hence, it is clear that this type of exam contributes to the student-teachers developing insight and discernment at the starting level of expert competence as teachers in VET (Dewey, 1910; Dreyfus & Dreyfus, 1986), which also includes all Miller’s (1990) levels.

An important dimension in this authentic exam is the possibility to show a comprehensive teacher competence which includes Miller’s (1990) all four levels, and especially the second, third and fourth level, knowing how, showing how and doing in a realistic and complex context. This contrasts with conventional theoretical exams where student-teachers only show Miller’s (1990) first and second level, knowing and knowing how. In the conventional sense, theory is often valued more highly than practice. "In theory, practitioner research may be an attractive alternative to traditional research, but teachers and teacher educators carrying out practice-based research often meet practical problems" (Lunenberg et al., 2007, p. 21). Based on this project’s results, it is argued that an authentic exam shows that comprehensive teacher competence is of a more complex nature and a higher expert level is achieved than if a student-teacher only explains and discusses theory in isolation from the practical context. If the aim is to show academic writing skills and knowledge acquisition other exam forms might be suitable, but to be able to show comprehensive teacher competence, it is necessary to see the student-teacher in action in their appropriate context.

11 Conclusions: The Importance of Authentic Exams in Teacher Education

This research project has provided concrete empirical examples of how a workplace-based exam in an authentic professional setting might be accomplished. The success factors of the authentic exam are based on three components: 1) The first was planning in line with a guidance document where student-teachers had to justify how and why they chose their selected content and teaching methods in relation to job-relevant pedagogical and vocational-didactical theory. 2) The second was practical teaching in a realistic and complex context, where the student-teachers showed that they handled and solved complex teaching situations that could occur in the classroom. 3) The final component was a piece of reflective writing. Student-teachers reflected on what, how and why their teaching went as it did. Through this assessment / authentic exam, they showed an understanding and development of expertise in comprehensive teacher competence.

On one hand, an authentic exam during the student-teachers’ practice placement in VET-schools gives them the opportunity to show their comprehensive teacher competence, including social skills, responsibility and classroom management. On the other hand, the results also show that other exams might be suitable if the goal is to demonstrate academic writing skills and knowledge acquisition. Simultaneously, previous research, i.e. Baartman et
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Billett and Choy (2013), Grollmann (2008), Gulikers et al. (2017) and Sylte (2018), has pointed out that teacher education requires a type of assessment which is different from that which separates theory and practice.

Vocational teacher education involves complex competence areas that are difficult to separate into discrete units (Grollmann, 2008). In order to ensure quality in vocational teacher education, these results show that assessment must be undertaken within the context in which the profession is executed - authentic assessment for work. The results also show that this kind of assessment requires an understanding of the complex role of teachers within their professional context as teachers in VET. Therefore, the need of a broader, more comprehensive teacher competence in VET to meet the work life needs for competence, is shown to be important by the results in this study. The results also show that the student-teachers need to be given the opportunity to demonstrate comprehensive teacher competence rather than proving their accumulated fragmented theoretical knowledge (Billett, 2010; Sylte, 2018). The participants in this project experienced that this kind of authentic exam also leads to stronger coherence (Canrinus et al., 2015) between both theory and practice, and between the vocational teacher education at the university and the VET in upper secondary school. Authentic assessments such as the authentic exam described in this study, are assessments that involves supporting the job-relevant learning process towards comprehensive professional competence, which is based on the competence needed in the student-teachers professional practice as teachers in VET.

Based on the results of this project, the authors will continue to conduct the authentic exam in their vocational teacher education, but will also explore the possibility of filming the teaching sessions instead of traveling to the various schools as a solution to some of the logistic challenges to this assessment form.

Although the study’s empirical context is in Norway, European research indicates that the problem of assessment of practical teacher competence in teacher education is not unique to Norway. As a result, it is highly likely that the challenges and opportunities that have been discussed in this research regarding an assessment of teacher competence in vocational teacher education in Norway also have relevance in a wider European perspective.

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Exit, Voice or Loyalty? VET Stakeholders’ Response to Large Scale Skilled Emigration From Poland

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Abstract

Context: The topic of this paper is how mass emigration of skilled workers affects national policies, and employers’ willingness to invest in Vocational Education and Training (VET) in Poland. In the wake of EU enlargement in 2004, Poland became one of the biggest sending countries for skilled labour to Western European countries. These massive outflows of skilled labour, not compensated by adequate inflows of equally skilled workers, have led to serious skills shortages, especially in the construction sector. The paper investigates whether emigration and immigration constitute a driving force for institutional change of the Polish VET system, by analysing policy development and the attitudes of VET stakeholders towards contributing to VET.

Approach: The paper focuses on the emigration of skilled construction workers in Poland. Drawing on Hirschman’s (1970) framework, when faced with massive skills deficits construction companies are confronted with different options: i) withdraw from the VET system and find other training and recruitment options (exit), ii) attempt to improve conditions by turning to policy makers (voice), and/or iii) remain loyal to the VET system. The analysis is based on an interview study of decision makers responsible for VET policies, employers, chamber of Craft and trade unions, principals of vocational schools, teachers and representatives of regional examination boards.

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Findings: After years of inattention, VET has been regaining a strong position in national policies. We find that construction companies are mostly more willing now, compared to 5 years ago, to take on learners for practical training and to contribute to improving school equipment. The study showed that one of the most significant obstacles to employers investing in the training of VET learners is the fear of losing a young skilled employee through emigration. Yet, dependent on skilled labour, employers of big construction companies saw no other option than to continue investing in training young learners. However, smaller companies seeking the short-term benefits of employing low-cost labour are less interested in investing in VET.

Conclusion: Despite a range of recent policy actions and legislative efforts, several major challenges in the Polish VET system remain unresolved. Continued effort to institutionalise and enhance dialogue between the education system and the labour market appears as the most pressing need. It is currently too early to determine the degree of “institutional stickiness” of the activities observed on the policy level and among employers regarding their increased interest in VET as a response to mass skilled emigration.

Keywords: Vocational Education and Training, VET, Skilled Migration, Labour Shortage, Labour Mobility, Education-Industry Relationship, Educational Policy

1 Introduction

The last decades have seen far-reaching structural transformations due to the increased internationalization of labour markets. The impact of migration flows on national economies and productivity has gained considerable attention in the literature (Campanella, 2015; Campo et al., 2018; Nica, 2015; Beine et al., 2001). Debates on “brain drain” have been among the most prominent, emphasising that the emigration of high-skilled workers depletes human capital in the country of origin, which not only loses workforce but also the investment made in their education and training (Panzaru & Reisz, 2017). However, how the emigration of skilled labour affects Vocational Education and Training (VET) systems in sending countries remains a largely under-theorised and under-researched field. This paper investigates how mass skilled emigration and low-skilled immigration affects national VET policies, and stakeholders’ loyalty to the VET system in Poland.

After years of inattention, VET has been regaining a strong position in national policies since 2007 (Chłoń-Domińczak et al., 2011; Dębowski & Stechly, 2015). This has partly been explained by changes in the labour market associated with the opening of European labour markets, which prompted an increase in national demand for workers with qualifications in skilled occupations (European Centre for the Development of Vocational Training [Cedefop], 2018). The heightened focus on VET has been supported by educational policies and
funding from the EU level (Dębowski & Stechly, 2015). The Polish VET system is organised in schools. However, strengthened linkages to employers are part of recent VET reforms aimed at increasing the relevance of VET to labour market needs, strengthening the quality of interactions between the actors from the education and labour market systems and ensuring a correspondence between skills supply and demand (Bolli et al., 2018).

The paper employs the emigration of skilled construction workers in Poland as its central case study, by investigating how the 2004 EU enlargement represented a "shock" to the Polish labour market. Although construction was an early riser, other industries in the West have also benefited heavily from the expanded craft labour base in Eastern Europe, such as shipyards, food processing industries and the service sectors (Andersen et al., 2009; Black et al., 2010; Hardy et al., 2012). Consequently, significant deficits in the labour force occurred in almost all sectors of the economy. Similar skills shortages in the construction sector are evident in countries such as USA (Toppin, 2018).

We explore the following two research questions: (1) What are the responses of VET policy, teachers and employers in the construction sector when confronted with labour shortages caused by large scale skilled emigration; and (2) to what extent does large scale skilled emigration affect VET policy, teacher and employer responses, leading to permanent changes in VET in Poland? In this effort, the paper brings together two previously disconnected strands of literature: VET research and labour migration research. The potential of this emerging avenue of research lies in addressing concepts, models, tensions, opportunities and innovations around the impact of migration flows on VET institutions, employers and learners.

In the wake of EU enlargement, a massive number of individuals from the New Member States embarked on their migration journeys westwards in search of better jobs and living conditions (Janicka & Kaczmarczyk, 2016). Poland quickly became one of the biggest migrant sending countries in Europe (Migration Data Portal, 2015; Fihel & Okólski, 2017). with skilled low-cost labour in high demand in the western parts of the EU’s common labour market. This development was accompanied by a slight increase in wages for medium-skilled workers in Poland, being the group with the largest relative outmigration rates (Dustmann et al., 2015; Brandt & Sicari, 2016; Škuflić & Vučković, 2018). In 2004, Poland had a considerable surplus of labour in construction. For construction industries in Western Europe, which were experiencing a huge upswing, this provided excellent opportunities to recruit labour from Poland – to an extent that few had anticipated before EU enlargement. Today, Poland still represents one of the biggest sending countries of skilled labour; however, the total number of emigrants is decreasing (Organisation for Economic Co-Operation and Development [OECD], 2019).

In the next section, we present the VET system in Poland and the construction sector. We then outline our analytical framework, which combines insights from the literature on institutional change, and Hirschman (1970) to analyse the impact of the EU’s enlargement
as an exogenous shock to the Polish labour market, before presenting the study’s data and methods. The analysis distinguishes between the responses of VET policy and the strategies of employers. In the last section, the paper discusses whether the consequences of large-scale skilled emigration hold the capacity to (re)shape the Polish vocational educational research agenda by changing the attitudes and behaviours of policymakers and employers.

2 The Polish VET System – In Flux

The comparative literature offers different typologies of national VET systems organised in sets of key dimensions (see Rageth and Renold (2019) for a review). Following the typology developed by Pilz (2016), the Polish VET system can be characterised as a state-regulated, highly stratified, highly standardised system, with low levels of experience of labour market practice. There is a strong stratification between VET and general education pathways (although after completing technical school, learners might acquire a maturity diploma which provides access to higher education). VET suffers from disparity of esteem compared to academic education, despite promotional campaigns and governmental activities to change the negative image of VET. The share of the youth cohort opting for upper secondary VET decreased sharply from 80% in the 1990s and has remained stable at 57% over the last decade.1

The Polish VET system is school based with limited involvement of employers at the stage of curriculum design, curriculum application and curriculum updating. It is the ministry of education and its agencies which are solely responsible for organising the curriculum design process, for the content of the exam and the organisation of teacher training. However, schools can develop learning programmes aligned with the national core curriculum. VET external examinations are also designed and conducted centrally by the Central Examination Board and supervised by eight regional examination boards. Employers – even if they are involved in these processes – play rather an advisory role. The share of enterprises employing IVET participants is also one of the lowest in Europe, at 7.5% compared to an EU-28 average of 30.5%. Weak employer involvement is considered one of the weakest aspects of the Polish VET system (Eurostat, 2015). Thus, recent VET reforms focus on providing better linkages between the VET system and the employment system.

The employment rate of initial VET graduates in 2016, at 74.3%, was slightly lower than the EU average of 75%. Recent VET graduates display substantially lower skills levels in literacy, numeracy and problem solving, which is especially evident among graduates of basic vocational school (Lis & Miazga, 2016; OECD, 2019).

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1 In the 2016/2017 school year there were 672,101 learners in upper secondary vocational education, representing 57% of all learners in upper secondary education.
3 The Construction Sector

Construction is one of the largest sectors of the Polish economy, generating between 6 and 8% of GDP and providing employment for around 6% of employees. Construction services are provided by over 400,000 firms, of which 96% are smaller companies employing up to nine employees. This fragmentation, sensitivity to economic fluctuations, lowering profitability and a persistent skills gap – the unmet demand for qualified employees with high skills – are the most serious challenges faced by the sector (Sectoral Competences Council in the Construction Sector [SCCC], 2018; Rozkrut et al., 2020). The skills deficit is estimated to be around 100-150,000 qualified workers (Polish Agency for Enterprise Development [PARP], 2019). According to the Sectoral Competences Council in the construction sector (SCCC), the occupations in high demand are the technical levels: bricklayers, plasterers, carpenters, concrete workers, and steel fixers (SCCC, 2018).

At the same time, Poland receives a massive number of migrants from elsewhere in eastern Europe and is currently the top temporary labour migration destination (OECD, 2019). Thus, the question of labour market responses to mass skilled emigration needs to take the influx of low-cost labour into account. However, the unmet demand gap is not compensated for despite the mass immigration of workers from eastern countries, especially Ukraine (90%), Belarus (4%), Moldova and others. According to the Ministry of Labour, 900,000 official work permits were issued in the first half of 2019, 175,000 of these in the construction sector. It is estimated that this is only around half of the migrant workers employed in the sector, given the large grey economy and barriers in finding legal employment (Główny Urząd Statystyczny [GUS], 2019, Fundowicz et al., 2019; Growiec et al., 2019; Chmielewska et al., 2019).

The Polish VET system is comprised of more than 50 qualifications\(^2\) related to the construction sector, grouped in 20 occupations. According to the CVTS Eurostat survey, the share of employers in the construction sector involved in initial and continuing VET is among the lowest in Europe (Eurostat, 2015). In 2015, only 8.6% of employers in the Polish construction sector were involved in initial VET provision compared to 39.9% in the EU-28, while 39% of employers were involved in continuing VET compared to 71.5% in the EU-28 (Eurostat, 2015).

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\(^2\) In the Polish VET system, a qualification is understood as a set of learning outcomes following established standards, whose achievement was formally certified by a competent body. To acquire VET qualification a person needs to pass external exam organised central and regional examination boards. VET qualifications are referenced to the national and qualifications frameworks and the European Qualifications Framework.
4 Analytical Framework

This paper combines theoretical insights derived from theories of institutional change with Hirschman’s (1970) notions of exit, voice and loyalty. First, theories of institutional change have been some of the most innovative in the social sciences in the last decade, and we consider them particularly well suited to analyse the constellation of institutions that make up national VET systems. However, migration is just one element in the broader social processes of external and internal challenges forcing changes of VET systems around Europe (e.g. Cedefop, 2018). Thus, the effects of migration on national systems for vocational education emerge in interaction with cultural and institutional patterns. For the purpose of this paper, we define an institution as principally a set of rules or norms regulating the behaviour of individuals, as well as organizations and other corporate actors based on formal elements such as legislation, bureaucratic regulations and/or large-scale agreements (Engelstad & Hagelund, 2015). It is a framework for action with a relatively high degree of stability, albeit subject to constant power struggles and negotiations (Thelen, 1999). However, a policy change might be elicited by exogenous shocks, like new technologies, war or economic crisis (Sabatier, 1988, p. 134). Such shocks open a “policy window of opportunity” for the creation of new rules and a new course of action (Kingdon, 2003). Exogenous shock might additionally prompt decision makers to examine the fundamentals of policy and encourage them to introduce more radical changes to policy within the process of policy learning (Heclo, 1974).

The second analytical strand we draw on in this paper is derived from Hirschman (1970), and addresses sources and processes of potential institutional change. His framework was originally developed to conceptualise ways of reacting to dissatisfaction with organisations and deterioration in business firms, which might result from shifts in supply and demand conditions in the organisation’s competitive environment. Hirschman proposes three main types of responses for members of the organisation: Exit is for the member to quit the organization or for the customer to switch to the competing product (considered the most effective option). The second, voice, is for members or customers to exert influence for change “from within”, either through individual action or collective action, appealing to higher authority. The last type of response is loyalty, which Hirschman perceives as a special emotional attachment to an organization. The presence of loyalty makes exit less likely and gives more scope to voice. Thus, the likelihood of voice increases with degree of loyalty. In this paper, we apply these three concepts to grasp employers’ reactions when faced with skills shortages caused by mass skilled emigration.
5 Data and Methods

This study is part of an international research project on how intra-European labour migration affects skill formation and utilisation in Norway and Denmark and in sending countries ("Moving trades. Skill formation and the role of national vocational training in transnational European labour markets", funded by the Research Council of Norway). A comprehensive qualitative study was undertaken to investigate how mass skilled emigration and consequential labour market changes affect VET policy and employers’ attitudes towards their involvement in VET. The data collection was two-fold. First, qualitative interviews were chosen to identify in-depth subjective accounts and opinions of relevant actors. Second, analysis of VET policy documents was undertaken including strategic documents prepared by the government, legislative acts adopted and reports from the consultation process around these acts. The interviews were carried out in Warsaw, Poland during June 2018 – July 2019, covering a broad range of key stakeholders. Three groups were distinguished:

1. Decision makers responsible for VET policies and representatives of central VET agencies

2. Representatives of the labour market, i.e. representatives of employers’ associations, chamber of Craft and trade unions

3. Representatives of the education sector, i.e. principals of vocational schools, VET teachers responsible for practical training and representatives of regional examination boards.

Decision makers from the Ministry of Education and the employees of the central VET agencies (Central Examination Board, Centre for Educational Development, Erasmus+ National Agency) were interviewed (9 interviewees) to gain knowledge about potential changes in VET policies, and the attitudes of employers regarding their willingness to contribute to the VET system by providing practical training or taking in apprentices. When covering representatives of the labour market (10 interviewees), we aimed to interview employers across various types of companies, i.e. large international construction companies, and medium and small-sized companies were included in the sample, as well as the Chamber of Craft. The main questions posed to employers were whether they were experiencing problems in recruiting personnel with the right skills, how they approach this challenge, whether the situation had changed over the past five years, whether emigration or immigration has affected their attitude towards involvement in VET and if so how. Interviewees from the education sector included principals of vocational schools, teachers responsible for practical training and representatives of regional examination boards (25 interviewees). The sample included schools of different sizes and from different regions (the west of the country is more developed than...
the east). This group of interviewees were asked about changes in employers' attitudes regarding involvement with VET, and perceptions of VET policy interventions around skilled emigration.

Altogether 44 interviews were conducted. Interviewees were identified through purposive sampling. This means including only people who meet a specific set of criteria, based on knowledge of the substantive field of study, recommendations from other researchers and the regional examination boards experts. Most of the interviews were conducted by telephone, but the interviews with policy makers in Warsaw were face-to-face. From the perspective of the purpose of this qualitative study and taking into consideration that social cues of the respondent were not important information sources, we treated telephone interviews as equivalent method of face-to-face interviews (cf. Opdenakker, 2006; Cachia & Millward, 2011; Novick, 2008). Conducting telephone interviews allowed for much broader geographical coverage.

Prior to the interview, each interviewee was contacted via e-mail or telephone and was informed about the purpose of the study. Participation was based on informed consent. All interviews were conducted by the authors of the article. To limit interviewees’ unease of discussing national policies, interviews were not recorded. Rather, in addition to notes during the interview, detailed field notes were written down immediately after the interview. Notes were then anonymised. All interviews lasted 45-60 minutes and followed a semi-structured interview guide. This entails having a predefined set of topics that we wanted to cover, but the order of topics and the relative time devoted to each topic was determined by the dynamics of the interview. The interviews gave room for interviewees to bring up additional aspects of the topic that were important to them.

The data was analysed according to thematic analysis, implying identifying patterns or themes within the data (cf. Alholjailan, 2012). The initial stage of analysis involved text-close coding and clustering data in terms of key topics, building inductively from particular to general themes. In the subsequent sections, VET policy and employers' responses are analysed.

6 VET Policy Response

During 2016-2019, radical reforms were implemented across several areas of policy including general education. After years of inattention, the VET system in Poland became the object of intensified policy actions at an unprecedented scale and pace. Creating an attractive educational offer for young people and adults has been a national priority since early 2010. The exogenous shock that mass skilled emigration represented to the Polish labour market stimulated policy learning. Decision makers in Poland searched for solutions in VET to better adjust it to the current labour market and societal needs by inviting employers and VET school principals into the debate about future changes. A council of 42 vocational school
principals was formed and series of seminars with employer representatives and debates were organised. These consultative meetings significantly contributed to the shape of the solutions adopted. Measures aimed at increasing employers’ involvement in VET were also sought abroad, mostly in Germany, known for its dual VET system.

In 2012, a major curricular reform introduced units of learning outcomes. Since 2012 all VET qualifications can be attained via the validation of non-formal and informal procedures and more flexible learning pathways, especially for adults wanting to broaden their skills or acquire new ones. The scope and pace of reforming activities has intensified since 2016 and materialised in changes to the major items of legislation in 2018-2019. The main aim of the 2018 reform was to bring the world of work closer to the world of education and to increase employers’ involvement in education and training, especially within formal VET.

The interviews with policymakers and document analysis show that national decision makers actively responded to labour market tensions and deficits in qualified workers. The interviewees at policy level stated that this intense policy activity in the field of VET in recent years results from skills shortages caused by massive emigration and economic growth. Employers made use of “voice” (cf. Hirschman, 1970), demanding adequate skills policies and a skilled labour force, which was heard at the central decision-making level. This resulted in the formulation of national strategies strengthening the position of VET and adoption of new legislative solutions. EU-level policies in the field of VET and funds made available from EFS provided an additional impetus to reform efforts at the national and regional levels (Dębowski & Stechly, 2015). Following Howlett et al.'s (2009) classification of policy response, we classify VET policy response in Poland as redesign. Polish VET decision makers made conscious efforts to restructure VET policy and respond adequately to current challenges. The main measures introduced 2018-2019 are described below.

1. Vocational schools providing education in a given occupation must now organise formal collaboration with relevant employers, e.g. participation in work-based learning, equipping school workshops, patronage classes or organising vocational exams. Previously, such collaboration was optional.

2. To establish training in new occupations, vocational schools are obliged to acquire permission from the voivodeship (regional) labour market council, consisting of local employers, representatives of trade unions, chamber of Craft and local authorities. Previously, opinions were collected mostly from the poviat (local) labour market councils and this was not binding.

In 2016, changes were introduced to the school system within formal general (primary and secondary) education and VET. As a result of these changes, 4-year secondary technical schools were transformed into 5-year technical secondary schools (technikum) for students aged 15-20 years. Basic vocational school (zasadnicza szkoła zawodowa) was transformed into the 3-year stage I sectoral vocational school (szkoła branżowa I stopnia) for students aged 15-18 years. Learners attending a 3-year stage I sectoral vocational school can then enter the labour market or attend a newly designed 2-year stage II sectoral vocational school (szkoła branżowa II stopnia).
3. A new form of internship has been introduced (staż uczniowski) which complements previously existing arrangements to enhance employer participation in work-based learning. A new element in staż uczniowski is that it may extend the scope of the school curriculum. The costs of remuneration are treated as tax deductible costs for employers. Employers may transfer funds directly to the schools – for example if they wish to provide funds to buy equipment. Previously, all funds had to be transferred to local authorities.

4. Public VET funding is linked to the labour demand for specific occupations and to the cost of training. Up to now the financing algorithm provided similar per capita funding for different occupations. Schools providing education in occupations in higher demand will receive significantly more public funds. This change aims to incentivise VET school principals and local authorities to provide training in the occupations which are most in demand.

5. VET teachers are obliged to participate in professionally oriented training in enterprises, for at least 40 hours across a 3-year period. Previously, there was no such obligation. This aims to contribute to upgrading teachers’ skills and competences, providing them with access to new technologies and enterprises in a given labour market sector.

6. From 2020, the VET exam will be mandatory for learners in all VET schools, which means that if a person does not participate in the VET exam, he/she cannot be promoted to the next class level and cannot obtain the certificate of school completion. The vocational examination system was recently cofounded with the Ministry of Labour Fund. The Ministry of Labour will cover almost 40% of the total cost of VET examinations in Poland.

To institutionalise the dialogue between VET stakeholders, including representatives of employers and employees, sectoral competence councils were formed with the support of ESF funds. Each council (SCC) represents main stakeholders of a sector and provides recommendations about skills needs, the content of core curricula and exam content. SCCs have been formed in 7 sectors. The Programme Council on Competences was set up to coordinate the work of the SCC. To increase employer involvement in designing exams, the Central Examination Agency, responsible for VET exams, has been setting up what are called national teams of experts for every occupation. In every team, the presence of an employer’s representative is mandatory.

Parallel and in synergy with VET reform, Polish authorities have made significant effort to develop an Integrated Qualifications System (IQS) based on the national qualifications framework. Since 2017, all VET diplomas and certificates are referenced to the NQF and EQF. The essence of the IQS Act is the introduction of a set of consistent systemic solutions for qualifications awarded outside the formal general, vocational and higher education sys-
tems, and the greater integration of all areas within which qualifications are awarded (formal general, vocational and higher education, regulated qualifications and market qualifications). Since 2017, more than 100 qualifications have been submitted to the IQS with the active involvement of employers. The IQS council consists of 29 members representing employers, employees, the education community, the scientific and professional communities, the training market, local government and the Central Examination Board (CKE). The IQS represents an important forum for employers to voice their expectations around the development of IQS and VET policy.

7 Employers’ Responses

From the viewpoint of decision makers, VET school principals and teachers who participated in the study, increased activity by employers was observed both at the central and school levels. Employers significantly intensified their activity of expressing requests for reforms and government actions to provide a skilled labour force. Representatives of employers actively participate in the public debate regarding skill policies and in policy dialogue fora organised by national and regional authorities. They request meetings with decision makers and present their demands in bilateral meetings with the cabinet. Employers use EU funding and their own funds to finance initiatives aiming at improving the quality of competences of VET graduates, either by participation in developing learning curricula or partial qualifications or by participation in pedagogical experiments.

Interviewees report that employers are more willing now, compared to 5 years ago, to take on learners for practical training and to contribute to improving school equipment. Many VET school principals indicated that more than 5 years ago it was very difficult to invite employers to schools even for information seminars organised by schools devoted to discussing possible forms of cooperation with local employers. This has changed dramatically. Employers are now considerably more interested in VET, especially in taking on VET learners for practical learning.

Responses of Small Versus Large Companies

VET teachers distinguished between the approaches of small and medium-large construction companies, consistent with previous research (e.g., Strzebonska, 2017). According to VET teachers, the motivation of smaller companies to take VET learners for practical training is less about equipping them with the right skills and more about using them on the construction site as low-cost labour, seeking short-term benefits. As a result, these learners tend to be trained in a narrower set of skills. However, some schools also provided examples of very good cooperation with small construction companies which have been cooperating with schools for many years even before labour market problems occurred:
We operate in a small town in which there is a good employer involvement, despite all of them being small companies – up to 10 persons. Companies engage only in taking learners for practical training, they do not take entire classes and there are no patron classes. They do not engage in curriculum development or participate in conducting VET exams but there is no problem for them in taking 2-3 learners to the construction site for practical training. (Principal of VET school)

If there were no medium-to-large companies in the immediate surroundings, this might pose challenges to schools in establishing labour market cooperation. Small companies do not have the resources to invest time in more systemic cooperation with schools in areas of collaboration (like patron classes or development of training programmes) beyond taking learners for practical training. Medium and larger sized companies typically have a dedicated human resources unit with more capacities and understanding of longer-term investment in the education and training of learners. They can also organise training to introduce different stages in the construction building process – therefore developing more broad skills among VET learners, whereas small companies usually specialise in a very specific task in a construction building process. A barrier for the involvement of smaller companies in the VET system is that many of them operate partially or fully in the grey economy, so they are not willing to take learners and to have official cooperation with schools, fearing that their practices might be reported to labour office or tax agencies.

Representatives of medium-sized and large companies said that they had to change their approach towards VET significantly. An owner of a 100-person construction company stated:

Before 2010, when unemployment was high, we could recruit skilled labour from the market quite easily. However, since a couple of years ago, the lack of workers has forced us to set up cooperation with a VET school. Two years ago, we launched a patron class of 10-15 learners, hoping that at least 1-2 learners will remain in our company. If more than 3 persons were employed, we would consider it a big success. It is a dramatic shift in our approach but is there any other way? (Employer of large construction company, Silesia region)

This employer felt there was no other option than to collaborate with the local VET school to access the skilled labour which the company relied on, acknowledging that a high proportion of the learners would leave the country post-training. The interviewees who represented labour market actors stated that the emigration of Polish skilled workers represented a huge challenge for them.
Impact of Migration

While some employers chose to invest in the vocational education and training of learners to meet demand in their own company for skilled workers, for other employers, mass emigration constituted a significant barrier to investing in VET:

What is the point of investing my time and resources in young learners if it is more than certain that he will leave the country? A construction site is a very dynamic environment. One may participate in investment in region A and after some time in region B 200 kilometres away. What difference does it make if you are away from home in Poland or in another country? So very often employees choose to work for companies abroad.

(Employer in a small construction company)

Regarding the immigration of (low-cost) workers to Poland, employers reported that they filled the skills gap only to a limited extent. Without workers from countries such as Ukraine and Belarus it would be more difficult to operate, yet the influx of immigrant (temporary) workers is seen as insufficient both in terms of numbers and skills. As a result of immigration, representatives of employers’ organisations are more interested than before in instruments recognising skills. The decision makers interviewed said that employers now more frequently demand better and more flexible competence recognising procedures within the formal VET system and more flexible pathways to acquire qualifications. This study confirms that due to tensions between skills demand and supply, not only emigration but also immigration have tended to prompt more VET activity among employers and employers’ organisations in Poland.

VET Teachers and School Environment

Some representatives of companies indicated that a barrier to cooperation was the attitude of VET school principals, and that their lack of flexibility impedes the involvement of employers in VET at the local level. This opinion was confirmed by VET school principals. One principal (principal of VET school) stated: “If you invest 0% of your time in setting up relations with employers, then you will receive 0% in investment.”

During interviews it was also indicated that VET teachers are overloaded with work and do not have enough time to spend on setting up relations with employers. This might result from the fact that in many occupations there are not enough VET teachers and they often work overtime (which sometimes reaches the 150% monthly norm defined by law) (Lis & Miazga, 2016). Employers also signalled that the character of the mandatory practical training was too limited (one month) for them to see the results of training efforts. This discouraged employers from investing heavily in training this group of learners. However, due to legislative changes in 2019 there will be more options for cooperation and for hiring learners.
by employers which should alleviate this problem, where periods of internship might be pro-
longed, and the learner will be able to receive remuneration.

Social Dialogue

One of the most significant factors affecting involvement of employers in VET relates to the
school-driven VET system in Poland, and the weak traditions of social dialogue in the area
of skills (Bukowski & Dębowski, 2010). There is a general weakness of employers’ and em-
ployees’ associations and industrial relations models in Poland (Gardawski, 2009; Gardawski
et al., 2012; Czarzasty & Mrozowicki, 2018). Only small numbers of employers are represen-
ted by regional, branch or central organisations, and central organisations have very limited
influence on their members – so even if central organisations reach any agreements with
unions and decision makers at the central level, this is not sufficient, as members of these
organisation may not implement the measures. Moreover, employers’ organisations are not
in a position to take responsibility for designing core curricula or exam content on their own.
The interviewees from the examination system confirmed that employer involvement in de-
signing core curricula and content of examinations is lacking. The involvement of employers
in designing VET exams is time consuming and requires knowledge of the methodology for
exam formulation which is too much burden for individual companies. To some extent alle-
viation of this problem might be setting up sectoral skills councils (see chapter 6)

8 Discussion

VET systems remain national, yet labour markets are becoming increasingly international.
Faced with mass skilled emigration in the wake of EU enlargement, most pronounced in the
construction sector, Polish VET stakeholders were faced with different choices. Drawing on
Hirschman’s (1970) concepts, one might imagine that stakeholders would scale down VET
activity and withdraw from the system to find other training and recruitment alternatives,
i.e. exit to avoid losing to emigration the skilled labour which has been the subject of consi-
derable educational investment. Yet on the contrary this study finds that the overall response
has been to increase the interest in VET. Institutional change may occur because political
actors act to change the institutional framework by defining the purpose of a policy reform
and the problems it is expected to solve, and by offering alternative policy instruments and
appropriate methods.

Restoring the importance of VET and creating an attractive educational offer for young
people and adults have become a national priority since 2010. Exceptionally high policy ac-
tivity is partly explained as a response to skills deficits, and partly fuelled by EU-level poli-
cies and EU funds. Prior to EU enlargement in 2004, the common opinion among decision
makers was that VET was not a reasonable or attractive path, and that Poland should rather
place the emphasis on general and higher (academic) education, and that professional colleges could cater to those wanting to acquire professional skills as adults.

The puzzle of why companies train has typically been investigated through economic perspectives. Low economic investments made by employers, given the school-based VET system of Poland – as opposed to dual apprenticeship systems – seem to impose high costs on companies during the periods of practical training (Mohrenweiser & Zwick, 2019). These findings reveal that skills shortages stemming from mass skilled emigration caused significant challenges, especially to medium sized and large construction companies, which depend on access to this type of labour. The findings are in line with the theoretical assumptions of Hirschman (1970); the less the availability of exit, the more likely it is that voice will be used. Given that actors are restricted by institutional regulation, they are often motivated to influence the structure and working of institutions, for example, by calling for legislative reform (Engelstad et al., 2017). Employers’ strategies were to become more involved in VET at the central level in designing policies and voicing for reform of the education system. They are also more involved at the school level in taking on learners for practical training and equipping schools with machinery etc. Thus, employers do largely remain loyal and at the same they used voice for policy actions. However, these responses were not necessarily shared by smaller construction companies, due to lesser resources and perhaps some of them due to operating in the grey economy. An influx of low-cost temporary labour from eastern European countries might contribute to depressing wages and making VET a less attractive path for aspiring learners.

Institutional change is difficult - stability and inertia prevail; the last 25 years of efforts of changing VET in Poland are proof of that. The literature perceives institutional change as generally incremental rather than sudden, i.e. as an accumulation of a range of small changes rather than occasional large changes (North, 1990). Such path dependent mechanisms are also evident in the case of Polish VET, despite the quite sudden mass skilled emigration in the wake of the opening of the European labour markets. Despite a range of recent policy actions and legislative efforts, several major challenges in the Polish VET system remain unresolved. VET is perceived as a second best-option among learners and their parents. Thus, continuous effort is needed to promote VET and increase its attractiveness. This also goes for attracting VET teachers. Currently, there is an acute shortage of competent VET teachers. Regardless of intensified policy activity and great labour market demand, the number of VET learners has not increased. Furthermore, there are challenges to employers’ participation in a highly school-based VET system. Employers would need to achieve a sense of ownership of the VET system in order to be willing to make the (currently highly uncertain) investments involved. Still, there is a large proportion of passive employers. Continued efforts to institutionalise and enhance the dialogue between the system of education and the labour market appear as the most pressing need. The study showed that one of the most significant obstacles for em-
Employers investing in the training of VET learners is the fear of losing a young skilled employee due to emigration. Yet, dependent on skilled labour, employers of big construction companies saw no other option than to continue investing in training young learners.

To compete with low-cost unskilled labour in the construction sector, the VET system would need to be more competitive in the quality rather than the price of their products, to be able to justify increased wages. Poland will continue to face significant skilled emigration, potentially inhibiting employers from being involved in the education system. The costs of these outflows of skills and labour might be a reduction in the overall potential of economic development, serious skills and workforce deficits, and undermined innovation processes (Duszczyk et al., 2013). However, strong commitment and intensified state level policy action hold promises for a renewed and improved agenda for VET in Poland. Decision makers make great efforts to restructure VET policy and respond adequately to current challenges. This state-level response is in synergy with employers’ responses. In this way, large scale skilled emigration might contribute to a positive shift in VET policy, although it is currently too soon to tell whether this will bring about permanent changes.

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Exit, Voice or Loyalty?


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Situationing Vocational Learning and Teaching Using Digital Technologies - A Mapping Review of Current Research Literature

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Abstract

Context: The ongoing change of work life by digital technologies requires vocational education and training (VET) to adapt constantly. This "digital transformation" of work life gives therefore rise to the question how to advance the use of digital technologies in VET. A possible answer may be found by considering that VET should be transferable to work life. This goal may be achieved by coupling educational activities with examples of work situations. Such situated education may be accomplished by using digital technologies. Until five years ago this mainly consisted in using digital photos, videos, and the internet for educational scaffolding or learning tasks. In research this situated digital VET taxonomy is currently expanding. Hence, the use of digital technologies in VET may be advanced by considering current research literature on situated digital VET.

Method: Here, we have searched and reviewed scientific publications on situated digital VET published in the past five years. In the peer-reviewed publications that we had selected, we first identified which digital technologies were used for situated VET and which educational activities were coupled with work situation examples. Subsequently, we identified the categories to which the publications could be grouped together by analyzing the content of their full texts.

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Results: Situated digital VET was accomplished in about half of the reviewed publications by a digital video on a work situation, and in almost half of the publications by a work situation presented in a 3D virtual environment. Digital videos on work situations mostly served all types of learning tasks and rather rarely educational scaffolding. Work situations presented in 3D virtual environments mostly served cognitive or behavioral learning tasks and never educational scaffolding. Situated digital VET was moreover accomplished by using the digital representation of a work situation that either had occurred previously or that was immediately taking place.

Conclusions: Our findings suggest that retrospectively and immediately situated digital VET may be the two categories of an up-to-date basic taxonomy of situated digital VET. Hence, an important question to investigate for advancing the use of digital technologies in VET is the following: Which of the two identified types of situated digital VET can facilitate which kind of vocational learning? Based on the reviewed publications we are not able to give any answers to this. Hence, there is a massive need to investigate which kind of vocational learning can be facilitated by retrospectively, and which by immediately situated digital VET.

Keywords: Situated Education, Situated Learning, Digital Technologies, Video, Hypervideo, 3D Virtual Environment, Literature Review, Vocational Education and Training, VET

1 Introduction

Digital technologies and their use are constantly changing work life in many professions (Harteis, 2018). This "digital transformation" of work life requires vocational education and training (VET) to adapt accordingly (Harteis, 2018; Latchem, 2017). Recent educational policies (Conrads et al., 2017) testify this necessity. For example, the Swiss State Secretariat for Education, Research and Innovation [SERI] (2017) published a document identifying the major challenges on which education and research should focus in order to cope with the digital transformation of work life. Two of the eight fields of action that SERI proposed for coping with these challenges concern improving the professional and educational use of digital technologies. One of the fundamental questions to which the digital transformation of work life gives rise is therefore how to advance the use of digital technologies in VET.

One of the main goals of VET is to prepare apprentices for their future work. Hence, what these vocational students learn through VET should be transferable to their work life. This goal may be achieved by coupling educational activities with examples of work situations (Boldrini et al., 2014; Kaiser, 2019). For example, clothing design students may be asked by their teacher to identify errors (Wuttke & Seifried, 2012) in the sketch of a dress ordered by a real or imaginary customer. This is a simplified approach of situated learning and teaching
(Lave & Wenger, 1991), as it is optional if the work situations with which educational activities are coupled involve social interaction (Anderson et al., 1996). Such situated VET may be accomplished by exploiting the affordances (Bower, 2008) of digital technologies. Until about five years ago this mainly consisted in using digital photos, videos, and the internet for educational scaffolding or learning tasks (Schwendimann et al., 2015). In research this basic taxonomy of the use of digital technologies for situated VET is currently expanding. Learning tasks are for example coupled with work situations presented within “immersive” 3D virtual environments that spatially are including their viewer fully (Carruth, 2017; Schott & Marshall, 2018). Hence, the use of digital technologies in VET may be advanced by considering current research on the use of digital technologies for situated VET. This would require to review the literature on this research. However, there is so far no such review. There is accordingly also no up-to-date basic taxonomy of the use of digital technologies for situated VET to which one could refer to. Here, we have therefore searched and reviewed current scientific publications on such situated digital VET. Stemming from the appraisal of the use of digital technologies in VET, this review seeks to explore the evidence regarding their use for situated teaching and learning in VET. The following three research questions guided this exploration: Which digital technologies are used for coupling educational activities with examples of work situations? Which are the educational activities that using digital technologies are coupled with work situation examples? What are finally the categories of an up-to-date basic taxonomy of situated digital VET?

2 Method

In accordance with the methodology proposed by Booth et al. (2016) we have accomplished a “mapping” review. The procedure of this descriptive review consisted in searching and selecting scientific articles published in the past five years, performing a descriptive synthesis of the selected articles, reporting this synthesis, and finally in discussing it. First, queries were performed in the digital literature databases named ERIC, Education Research Complete, PsycINFO, and IEEE Xplore. This was achieved by using the following combination of keywords: ("technolog*" OR "computational technolog*") AND "vocational education" AND ("learn*" OR "teach*")). Second, from the resulting set of abstracts those peer-reviewed publications were selected that were on (A) vocational education, (B) the use of digital technologies for coupling educational activities with examples of work situations, and which (C) involved results of empirical studies.

The procedure to select publications depicted in Figure 1 was as follows: The queries in the literature databases yielded for the past five years 1 985 publications. By reading the abstracts of these publications, the first author excluded 1 885 publications based on the criteria described in the previous paragraph. Subsequently, the other two authors checked which of
the abstracts of the remaining 100 publications they judged to be eligible as well. The three authors then discussed the discrepancies of their abstract selections. Based on this discussion the authors decided to read the full texts of 40 out of the 100 publications picked initially by the first author. The three authors then discussed again which publications they judged to be eligible by taking their full text into consideration. Based on this discussion the authors decided to keep seventeen publications.

![Diagram showing the procedure to select publications for the literature review]

Figure 1: The Procedure to Select Publications for the Literature Review

The descriptive synthesis of the selected publications involved the following: The coding of the publications followed by its tabular and graphical presentation, a narrative synthesis of the selected publications and finally their thematic synthesis. The authors coded the publications of the final selection using the predefined coding scheme shown in Table 1. Most importantly, publications were coded regarding the work type (Lucas et al., 2012) and the educational activities that were coupled with examples of work situations, as well as regarding the digital equipment and digital media that were used for such situated education. The coded educational activities involved educational scaffolding (Hogan & Pressley, 1997) and learning tasks. These tasks consisted in either cognitive, perceptual, or behavioral tasks. The cognitive learning tasks involved memorizing the parts of a work object, reflecting on a work process (Mann et al., 2009), and the treatment (Hmelo-Silver, 2004) or solving (Merriënboer, 2013) of a problem. Perceptual learning tasks involved the identification of errors
Situated Digital VET (Wuttke & Seifried, 2012), as well as the detection and discrimination (Kellman & Garrigan, 2009; Seitz, 2017) of work objects. Behavioral learning tasks involved simple as well as complex motor action (Wolpert & Flanagan, 2001), the collaboration with others (Dillenbourg, 1999), as well as educational games (Prensky, 2007) and the playing of professional roles. The coded digital media involved digital text, photo, video, as well as "hypervideo" (Sauli et al., 2018) and 3D virtual environments (Dalgarno & Lee, 2010), which being presented with a head-mounted display (Carruth, 2017) were "immersive" (Dede, 2009; Slater et al., 2009), i.e., spatially including their viewer, or which being presented on a desktop display or tablet were "non-immersive", i.e., spatially excluding their viewer. In addition, the authors also coded the sample size investigated, and the research method used in the reviewed publications as well as the type of data that were collected.

Table 1: Coding Scheme

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td>Overall sample size</td>
</tr>
<tr>
<td>Work type</td>
<td>Profession mainly deals with: (1) Physical materials; (2) People; (3) Symbols</td>
</tr>
<tr>
<td>Research method</td>
<td>(1) Case study; (2) Multiple case study; (3) Experimental study (4) Quasi-experimental study; (5) Design-based research</td>
</tr>
<tr>
<td>Educational activity</td>
<td>(1) Cognitive learning task; (2) Perceptual learning task; (3) Behavioral learning task; (4) Educational scaffolding</td>
</tr>
<tr>
<td>Digital equipment</td>
<td>(1) Desktop display and computer; (2) Smart phone; (3) Tablet; (4) Digital camera; (5) Head-mounted display and computer</td>
</tr>
<tr>
<td>Digital media</td>
<td>(1) Digital photo; (2) Digital video; (3) Hypervideo; (4) 3D virtual environment; (5) Digital text</td>
</tr>
<tr>
<td>Collected data</td>
<td>(1) Observations; (2) Interviews; (3) Questionnaire response; (4) Video-recordings; (5) Behavioral measure; (6) Verbal annotations; (7) Knowledge test</td>
</tr>
</tbody>
</table>

The narrative synthesis consisted in summarizing the content of the selected publications. The subsequent thematic synthesis involved the analysis of the reviewed publications regarding their content. This analysis consisted in determining based on the differences and similarities (Aveyard, 2010) of the publications to which categories they could be grouped together. This content-based grouping of the publications served to identify the categories of a basic taxonomy of situated digital VET.
3 Results

The result of the coding of the selected publications by the authors is summarized in Table 2. Almost half of the publications involved single (23.5%) or multiple (23.5%) case studies. A bit more than half of the publications involved experimental (29.4%) or quasi-experimental (23.5%) studies. 11.8% of the publications involved design-based research. The digital technology used for situated VET most was the digital video (52.9%), which includes the use of hypervideos (17.6%). The second most used technology were the 3D virtual environments (47.1%). The other technologies such as digital photos (23.5%) and digital texts (11.8%) were used less.

Table 2: Results of the Coding of the Seventeen Selected Publications

<table>
<thead>
<tr>
<th>Publication</th>
<th>Overall Sample</th>
<th>Work Type</th>
<th>Research Method</th>
<th>Educational Activity</th>
<th>Digital Equipment</th>
<th>Digital Media</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babu et al. (2018)</td>
<td>26</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1;3;5</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Cattaneo and Boldrini (2016)</td>
<td>154</td>
<td>3</td>
<td>3</td>
<td>1;2</td>
<td>1</td>
<td>2</td>
<td>3;6</td>
</tr>
<tr>
<td>Cattaneo and Boldrini (2017)</td>
<td>180</td>
<td>1;2</td>
<td>1;4;5</td>
<td>1;2;3</td>
<td>1;4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Cattaneo et al. (2015)</td>
<td>45</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3;7</td>
</tr>
<tr>
<td>Cattaneo et al. (2016)</td>
<td>72</td>
<td>1;2;3</td>
<td>2</td>
<td>1;2;3;4</td>
<td>1;4</td>
<td>3</td>
<td>2;3;4</td>
</tr>
<tr>
<td>Chen et al. (2017)</td>
<td>62</td>
<td>1</td>
<td>3</td>
<td>2;4</td>
<td>3</td>
<td>1;5</td>
<td>3;5</td>
</tr>
<tr>
<td>Cubillo et al. (2015)</td>
<td>44</td>
<td>1</td>
<td>3</td>
<td>1;4</td>
<td>1;4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Damasceno et al. (2017)</td>
<td>41</td>
<td>1</td>
<td>4</td>
<td>1;3</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hämäläinen and Cattaneo (2015)</td>
<td>39</td>
<td>1;2;3</td>
<td>2</td>
<td>1;3</td>
<td>1;2;3</td>
<td>1;4;5</td>
<td>1;4</td>
</tr>
<tr>
<td>Hämäläinen and Oksanen (2014)</td>
<td>30</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1;4</td>
</tr>
<tr>
<td>Jose et al. (2016)</td>
<td>12</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lucignano and Dillenbourg (2017)</td>
<td>35</td>
<td>1</td>
<td>3</td>
<td>1;2</td>
<td>3</td>
<td>2</td>
<td>4;5</td>
</tr>
<tr>
<td>Motta et al. (2014)</td>
<td>27</td>
<td>1</td>
<td>1</td>
<td>1;3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Pu et al. (2016)</td>
<td>60</td>
<td>2</td>
<td>1</td>
<td>3;4</td>
<td>3</td>
<td>1;2</td>
<td>1;2;3</td>
</tr>
<tr>
<td>Schüld et al. (2018)</td>
<td>24</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1;5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Sirakaya and Cakmak (2018)</td>
<td>46</td>
<td>1;3</td>
<td>4</td>
<td>1;3</td>
<td>2</td>
<td>2</td>
<td>4;3;7</td>
</tr>
<tr>
<td>Sjöberg et al. (2015)</td>
<td>6</td>
<td>1;2</td>
<td>1</td>
<td>1;2</td>
<td>4</td>
<td>2</td>
<td>1;2;4</td>
</tr>
</tbody>
</table>

Coding scheme: Overall sample: number of students. Work type: Profession mainly deals with: (1) physical materials; (2) people; (3) symbols. Research method: (1) case study; (2) multiple case study; (3) experimental study (4) quasi-experimental study; (5) design-based research. Educational activity: (1) Cognitive learning task; (2) perceptual learning task; (3) behavioral learning task; (4) educational scaffolding. Digital equipment: (1) Desktop display and computer; (2) smart phone; (3) tablet; (4) digital camera; (5) head-mounted display and computer. Digital media: (1) digital photo; (2) digital video; (3) hypervideo; (4) 3D virtual environment; (5) digital text. Data: (1) observations; (2) interviews; (3) questionnaire response; (4) video-recordings; (5) behavioral measure; (6) verbal annotations; (7) knowledge test.
As shown in Figure 2, the educational activity that most often was coupled with the example of a work situation consisted in asking vocational students to engage in a cognitive task such as memorizing or reflecting. The second most coupled activity were behavioral tasks, which were followed by perceptual tasks.

![Figure 2: Educational Activities Coupled With Examples of Work Situations](image)

As depicted in Figure 3, digital videos mostly served to couple cognitive, perceptual, or behavioral learning tasks and rather rarely educational scaffolding with work situation examples. The 3D virtual environments mostly served to couple cognitive or behavioral tasks, very rarely perceptual tasks, and never educational scaffolding with work situation examples. Digital photos were equally often used to couple work situation examples with a cognitive task, a behavioral task or with educational scaffolding. Digital text was equally often used to couple work situation examples with a cognitive task, a perceptual task, a behavioral task or with educational scaffolding.

![Figure 3: Digital Technologies Used for Situated VET](image)
The content analysis of the selected publications yielded the following: Digital technologies served to couple an educational activity with a work situation example in two different manners. They served to accomplish an educational activity with vocational students by using the digital representation of a work situation that either had occurred previously or that was immediately taking place. Hence, our analysis revealed a retrospectively and an immediately situated digital VET type.

As shown in Table 3, the retrospectively situated digital VET type emerged from the content-based grouping of seven publications. These publications involve studies in which digital technologies served to accomplish an educational activity for forming either procedural or declarative knowledge by using a past work situation. On one hand, this involved educating vocational students via digital representations of real or played work situations experienced by themselves. Motta et al. (2014) studied for example the training of car mechanics students through digital videos on a work procedure recorded by themselves with a head-mounted camera in a real work situation. Cattaneo et al. (2015) studied future cooks that were asked first to generate a digital recipe book using smartphone photos taken at their workplace and then to accomplish reflection tasks using their recipes. Sjöberg et al. (2015) studied the training of police students through their analysis of digital videos on themselves playing the role of a police officer in a critical situation. Similarly, Cattaneo and Boldrini (2016) studied the training of future office clerks through their identification of behavioral errors in digital videos on themselves playing the role of a vendor in a sales situation. On the other hand, retrospectively situated digital VET involved educating vocational students via digital representations of work situations experienced by others. Cattaneo and Boldrini (2017) studied for example the use of teacher-generated hypervideos on errors occurring during work procedures to educate various types of vocational students. Similarly, Cattaneo et al. (2016) studied, among other cases, the formation of knowledge on IT security by showing IT students a teacher-generated hypervideo on IT security at the workplace. Cubillo et al. (2015) finally studied the acquisition of knowledge on occupational health and safety by showing vocational students a teacher-generated hypervideo on work situations that were relevant for this topic.

As shown in Table 3, the immediately situated digital VET type emerged from the content-based grouping of ten publications. These publications involve studies in which digital technologies served to accomplish an educational activity for forming either procedural or declarative knowledge by using a work situation that was immediately taking place. On one hand, this involved educating vocational students via a mobile digital display in a real work situation. Pu et al. (2016) studied for example if a tablet-based mobile educational system of a nursing school could serve to form the skills of nursing students during their home visits of patients.
Similarly, Chen et al. (2017) investigated if a tablet-based educational system of a gardening technology school could serve to form the skill of their students to discriminate between healthy and unhealthy plants in a botanical garden. On the other hand, immediately situated digital VET involved educating vocational students by exposing them to 3D virtual environments. Hämäläinen and Cattaneo (2015) studied if asking vocational students to play a work life-based game in a 3D virtual environment presented on a desktop display can serve to train them in collaborative problem solving. Further, Hämäläinen and Oksanen (2014) studied if teacher instructions were enhancing the inter-professional knowledge formation of vocational students playing a work life-based game in such a virtual environment. Damasceno et al. (2017) studied if presenting vocational students with a 3D virtual environment on a desktop display could serve to train the skill to install a computer network. Jose and colleagues (2016) studied if a sawing simulator consisting of a computer, desktop display and a haptic feedback device could serve to train vocational students in the motor skills needed to cut wood with different saw types. Lucignano and Dillenbourg (2017) studied if intermixing the real-time video of a physical miniature model of a rooftop with 3D virtual information on rooftop

### Table 3: Content-Based Grouping of the Seventeen Selected Publications

<table>
<thead>
<tr>
<th>Retrospectively Situated Digital VET</th>
<th>Immediately Situated Digital VET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarly, Chen et al. (2017) investigated if a tablet-based educational system of a gardening technology school could serve to form the skill of their students to discriminate between healthy and unhealthy plants in a botanical garden. On the other hand, immediately situated digital VET involved educating vocational students by exposing them to 3D virtual environments. Hämäläinen and Cattaneo (2015) studied if asking vocational students to play a work life-based game in a 3D virtual environment presented on a desktop display can serve to train them in collaborative problem solving. Further, Hämäläinen and Oksanen (2014) studied if teacher instructions were enhancing the inter-professional knowledge formation of vocational students playing a work life-based game in such a virtual environment. Damasceno et al. (2017) studied if presenting vocational students with a 3D virtual environment on a desktop display could serve to train the skill to install a computer network. Jose and colleagues (2016) studied if a sawing simulator consisting of a computer, desktop display and a haptic feedback device could serve to train vocational students in the motor skills needed to cut wood with different saw types. Lucignano and Dillenbourg (2017) studied if intermixing the real-time video of a physical miniature model of a rooftop with 3D virtual information on rooftop</td>
<td>Pu, Y.-H., Wu, T.-T., Chiu, P.-S., &amp; Huang, Y.-M. (2016). British Journal of Educational Technology, 47(3), 494–509.</td>
</tr>
</tbody>
</table>
statics could serve carpentry students to learn such statics. Similarly, Sirakaya and Cakmak (2018) investigated if intermixing the real-time video of a computer motherboard with virtual information on its components and assembly could serve vocational students to learn how to correctly assemble such a work object. Schild et al. (2018) studied if treating a virtual human suffering a life-threatening emergency in a 3D virtual environment presented with a head-mounted display, could serve to train the skills of paramedic students. Finally, Babu et al. (2018) studied if vocational students could better memorize the parts of a motorcycle located in a 3D virtual environment when using a tablet or when using a head-mounted display for exploring this work object.

4 Discussion

Situated digital VET was accomplished in about half of the reviewed publications by a digital video on a work situation, and in almost half of the publications by a work situation presented within a 3D virtual environment. Digital videos on work situations mostly served cognitive, perceptual, or behavioral learning tasks and rather rarely educational scaffolding. Work situations presented in 3D virtual environments mostly served cognitive or behavioral learning tasks and never educational scaffolding. Situated digital VET was moreover accomplished by using the digital representation of a work situation that either had occurred previously or that was immediately taking place. This suggests that such retrospectively and immediately situated VET may be understood as the two categories of an up-to-date basic taxonomy of situated digital VET.

The Role of Digital Videos and 3D Virtual Environments for Situated Vocational Learning

Digital videos most often served retrospectively, whereas 3D virtual environments most often served immediately situated digital VET. Hence, it might appear that digital videos can only serve retrospectively, and 3D virtual environments can only serve immediately situated VET. This is, however, a wrong and misleading impression. On one hand, digital videos can serve immediately situated VET. Two of the reviewed studies (Lucignano & Dillenbourg, 2017; Sirakaya & Cakmak, 2018) were in fact on the educational use of intermixing the real-time video of a work object with virtual information on this object. Technically, it is moreover possible to record digital videos such that they can be presented in 3D. On the other hand, it is technically possible to capture a work situation presented in a 3D virtual environment including everything occurring within this environment as a 2D digital video. Studying the use of 3D virtual environments for retrospectively situated VET, or the use of 3D videos for immediately situated VET is accordingly possible. It is most probably just at the moment that no publications on such investigations can be found. Which digital technology can better serve to facilitate retrospectively situated VET and which immediately situated VET (Lin et
Situated Digital VET (al., 2012) is therefore a secondary question. The crucial question is which of the two types of situated digital VET accomplished by whatever digital technology can facilitate which kind of vocational learning. Based on the reviewed publications we are not able to give any answers to this. Hence, there is a massive need to investigate empirically which kind of vocational learning can be facilitated by retrospectively situated, and which by immediately situated digital VET. In light of our literature review, we hypothesize that the retrospectively situated digital VET type is serving more to facilitate the learning of the cognitive processing of, and the immediately situated VET type more the training of the behavioral skills for coping with a work situation. We moreover speculate that retrospectively situated digital VET is especially suitable for bridging work- and school-based learning in dual VET systems (Aprea & Cattaneo, 2019; Cattaneo & Aprea, 2018).

The Spatial Human-Environment Relation Involved in Immediately Situated Digital VET

Across the reviewed publications, we observed different manners to accomplish immediately situated digital VET. Vocational students were exposed either to a real or to an artificial work situation. The presentation of the artificial work situation was achieved in the following three manners: the real-time video of a work object intermixed with virtual information on this object was presented on a mobile display (Lucignano & Dillenbourg, 2017; Sirakaya & Cakmak, 2018), or a 3D virtual environment was presented either with a desktop (Hämäläinen & Oksanen, 2014) or a head-mounted display (Babu et al., 2018; Schild et al., 2018). These different procedures for exposing vocational students to an artificial work situation do not result in the same spatial relation between the person viewing this situation and the environment in which it takes place. Depending on the procedure this "human-environment" relation (Heft, 2001) can be such that the environment in which a work situation occurs is spatially including its viewer fully. This is the case, when a work situation is taking place in a life-sized 3D virtual environment presented with a motion-tracked head-mounted display or in a real environment. It is, on the contrary, not the case, when the work situation occurs for example in a 3D virtual environment presented on a desktop display. Due to this differential spatial human-environment relation involved in the exposure to a real or artificial work situation a learner's perception and action in this situation may be quite different. For example, the 3D virtual environment in which a work situation is presented may be designed such that it enables a learner more or less, or not at all to explore this situation by walking around in it. The sensation of being "present" in such a virtual environment (Slater, 2009; Slater et al., 2009) may for this reason (Usoh et al., 1999) be differential as well (Makransky et al., 2017). None of the reviewed publications had studied anything like this. It is accordingly an open question if the spatial human-environment relation involved in the exposure to a real or artificial work situation is at all affecting vocational learning. Hence, investigating the role of the
spatial human-environment relation involved in immediately situated digital VET might be regarded as an important avenue of future research.

**Using Augmented Reality Glasses for Situated Digital VET**

Among the reviewed publications there were no studies on using "Augmented Reality" glasses (Azuma, 1997; Milgram et al., 1994; Zarraonandia et al., 2019) for situated VET. Similar to the study of the educational use of 3D digital videos in VET it is most probably just at the moment that no publications on such studies can be found. It is nevertheless important to point out that Augmented Reality glasses may be very useful for situated VET. These glasses could serve for example vocational teachers to restructure their students experience of a problem (Ohlsson, 1984) in a real or artificial work situation through scaffolding. Such educational use of Augmented Reality glasses may thereby serve to educate future workforce in the professional use of this technology for "productive" (Ohlsson, 1984) instead of "reproductive" (Cunningham & MacGregor, 2013) problem solving. It may moreover serve to transfer problem-solving skills (Hämäläinen et al., 2014) trained through a work situation presented within a 3D virtual environment in school to a real work situation. Hence, it appears to be worthwhile to study whether and how Augmented Reality glasses can be utilized for situated digital VET.

**Limitations**

Our review has the following main limitations. First, the amount of selected publications was rather low. About one third of these publications originated, moreover, from the last author’s research group. The latter reflects the replicable fact that in international scientific journals very little empirical research on situated digital VET was published in the past five years. Thus, the reasons for identifying only few publications might have been our focus on English abstracts and our criterion that eligible publications had to involve empirical findings. Maybe not having this criterion and considering non-English abstracts the number of publications selected would have been larger. It is for example likely that the inclusion of German texts would increase the number of eligible publications considering the German VET tradition. However, it is important to point out that our overall impression is nevertheless that situated digital VET is a heavily under-researched field of study. A further limitation of our review is the level of detail of our coding scheme. We had opted for this scheme to be basic, as we were aiming at a basic taxonomy of situated digital VET. As a result, we had not coded the selected publications regarding less basic categories such as didactical design. Finally, an important limitation of our review is that only about half of the reviewed publications involved experimental or quasi-experimental studies. The other half of the publications were on multiple or single case studies. Thus, from a research methodology perspective one can state that the
findings of about half of the reviewed papers were descriptive only. Single and multiple case studies are certainly valuable for the generation of hypotheses in the beginning of research. Yet, we conclude that currently there is a massive need for more experimental or quasi-experimental studies on situated digital VET.

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Situated Digital VET

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Prof Dr Alberto Cattaneo is the head of the learning technologies research group at the Swiss Federal Institute for Vocational Education and Training. His research is focused on the study of the educational use of novel digital technologies for vocational learning and teaching.
Job (In)Security and Workers’ Training Decisions: A Framing Approach

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Abstract

Context: In this study, we attempt to contribute to the scarce evidence about the relationship between perceived labour market insecurity and worker training investments. Drawing on existing research into framing in decision-making, we investigate whether framing the labour market as insecure increases the willingness of workers to invest in training. We also investigate whether this effect is larger when training contract terms are favourable, such as when training is done mostly in an employer’s time, or when no payback clause is included.

Approach: Data are gathered through a vignette-study under a sample of senior Dutch students, with experimental manipulation of frames. Respondents are given a questionnaire in which they are asked to imagine themselves working for a fictitious firm (but presented to them as real). The security/insecurity frames are elicited by randomly stressing either the positive or negative side of a series of events related to the labour market position of people working in this firm. Respondents are then asked to respond to five vignettes, each of these a randomly generated combination of training contract terms. For each vignette, respondents are asked to state whether or not they would be willing to go along with the specified training program under the conditions outlined in that vignette. Data are analysed with multilevel logistic regression.

Findings: The willingness to train is not invariably greater under an insecurity frame. Instead, we find a crucial interaction: the willingness to train is greater under an insecurity frame when training contract terms are favourable, such as when training is done mostly in an employer’s time, or when no payback clause is included.

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frame when training-contract terms are favourable (e.g. when no payback clause is included), but smaller when training-contract terms are unfavourable. Since the positive and negative effects are approximately equal in size, in a balanced design such as ours they cancel each other out, resulting in a close to zero overall effect for the frame variable.

**Conclusion:** Our results suggest that, when workers are aware of the insecurity in their situation, this only makes them more willing to follow training when the risk of losing their investment is low.

**Keywords:** VET, Vocational Education and Training, Further Training, Training Investment, Employability, Employment Security, Perception

1 Introduction

Can workers be brought to invest more in training when they are aware of the vulnerability of their jobs? And what role do the formal terms of the training contract play for this willingness? These are the questions we set out to investigate experimentally by use of a vignette design. As will become clear, the questions are highly relevant for implementing training policy in a context where lifelong learning is still making too little progress.

The issue of lifelong learning has been on national and international agendas for quite some time. The beginning of the international debate on lifelong learning can be traced back to the 1970s, when it became a policy priority for the Organisation for Economic Co-operation and Development [OECD] (Bengtsson, 2013). Lifelong learning is seen as all learning activities, during an individual’s life, aiming to improve knowledge and competencies (Organisation for Economic Co-operation and Development [OECD], 2001, p. 10). The promotion of lifelong learning is seen as essential for countries and citizens, for example to keep up with increased digitalisation (OECD, 2019a, p.3). Accordingly, many reports have addressed the obstacles to lifelong learning and many countries adopt policy measures aimed at stimulating it (e.g. OECD, 2001, 2016; Panteia, 2019; Wetenschappelijke Raad voor het Regeringsbeleid [WRR, Scientific Council for Government Policy], 2013).

A few years ago, the Dutch Council for Education (an advisory body for the government and parliament) commissioned a study into the question “why isn’t the growth rate of lifelong learning in The Netherlands higher, despite the many advisory reports addressing this matter?” The researcher who tried to answer this question found that this was not because the recommendations of those reports were not followed. Many policy measures have actually been implemented, but lifelong learning participation figures have not increased significantly as a result (Golsteyn, 2012). In 2010, 16,7% of the population aged 25-64 had followed some form of education or training in the previous 4 weeks, which fell short of the Dutch Government’s goal of 20%. In the period 1998-2010, participation figures showed an
increase till 2001, but remained stable after that (Golsteyn, 2012, pp. 3–4). A similar picture arises in a more recent report, for the period 2015-2017 (Maslowski, 2019, p. 16). Also the number of training activities in which Dutch adults participate over the previous 2 years seems stable over time (Maslowski, 2019, p. 18). Non-formal learning activities may of course compensate for this standstill, but although these are important, the Netherlands is not outstanding in this regard (Maslowski, 2019, p. 149). Moreover, the groups that participate the least in formal training also profit the least from informal learning (van Echtelt et al., 2016, p. 10), so both types should not be regarded as substitutes. Unsurprisingly, the Dutch Scientific Council for Government Policy characterised its country’s situation with regard to lifelong learning as being in a ‘deadlock’ (WRR, 2013, pp. 312–315).

The issue of participation figures falling short of policy goals is not limited to the Netherlands. For example, average participation figures for the European Union seem to have stabilised around 10% from 2005 till 2010, whereas the goal set for 2010 was 12.5% (Golsteyn, 2012, p. 4). Also, around 60% of adults in surveyed countries of the OECD do not participate in formal or non-formal job-related training in a given year (OECD, 2019b, p. 30).

Thus, it is clear that, despite the attention lifelong learning has received in policy circles and advisory reports for many years, reality still lags behind of what is considered necessary and desirable. This explains why a lot of research is done into training motivation (e.g. Burchert et al., 2014; Kyndt et al., 2014; Sutha et al., 2016). Dutch researchers Fouarge et al. (2013) conclude that the (lack of a) willingness to train is an autonomous factor explaining training participation. The OECD country report on the Netherlands puts it even more sharply: "(D)espite many years of talking about the importance of developing a learning culture and the introduction of a series of policy measures aimed at making it a reality, the country is still far from realising this aim, as evidenced by the low ‘readiness to learn’ of Dutch adults when compared with their peers in other OECD countries" (OECD, 2017, pp. 24–25).

Considering an explanation, the Social and Economic Council of the Netherlands suggested that workers (and their employers) have “an insufficient sense of urgency” of the importance to invest in their development (Sociaal-Economische Raad [SER, Social and Economic Council of the Netherlands], 2017, p. 36). Time inconsistency (efforts have to be made in the present, potential benefits lie in the distant future) is supposed to play a major role in this (Centraal Planbureau [CPB, Netherlands Bureau for Economic Policy Analysis], 2016, pp. 287–289). Elaborating on this argument, one might assume that workers often are insufficiently aware of the importance of ‘training’ and of ‘staying up-to-date’ in their profession. Once assured of a permanent job, they feel secure and cease to worry about the rapid changes in the economy and the labour market outside of their firm. Studies have shown that people are indeed often over-optimistic about things such as their own abilities, chance of entrepreneurial success, risk of accidents or disease, chance of winning lotteries, or risk of getting fired from a job (Sunstein, 1998). Sure enough, most Dutch workers on permanent
contracts actually consider their jobs to be relatively secure (van Vuuren & Smulders, 2018), and arguably, do therefore not experience a need to enhance their employability. This leads to the possibility that workers would be more willing to train if they were to perceive more job insecurity. To find out whether this might be true, is the aim of the present study.

Despite the plausibility of this idea, the influence of job insecurity has received very little attention in research so far. In a systematic review of 56 empirical studies, as many as 117 possible antecedents of the (intended) participation in work-related training were identified (Kyndt & Baert, 2013). However, only two studies addressed the influence of the likelihood of losing one's job (Kyndt & Baert, 2013, p. 289). The first study (Sanders et al., 2011) assumed that "lower educated workers with a higher level of job insecurity will be more motivated to take up training activities in order to prevent job loss" (p. 406). However, the researchers were unable to confirm this assumption in their study. In the second study, Elman and O’Rand (2002) did find a positive relation, but this concerned mostly adult education in regular educational institutions rather than training within firms.

Two other studies that we came across did not produce convincing results either. Lee et al. (2003) report that during a recession employees were more willing to undergo training (and actually spent more time undergoing training). However, their results were distorted by a very disproportional distribution of Thai respondents (who were less inclined to train) and Singaporean respondents (who were more inclined to train) during and after the recession. Van Hootegem et al. (2018) also report that job-insecure individuals are more willing to participate in both internal and external training. They are cautious about this result, however, because it was contrary to their own theoretical expectations.

A number of other studies have addressed the role of contextual factors for training investments (e.g. Evans & Kersh, 2014; Fuller et al., 2007; Leonard et al., 2018). However, we agree with the recent conclusion of Lebert and Antal (2016), who find that "concerning the influence of perceived job and employment insecurity on participation in further training, only little evidence is available" (p. 3). One would, however, expect such a relation to exist, based on what is known about the effects of training. Findings by Bassanini (2006), based on data of 15 European countries, suggest that workplace training foremostly increases the perceived job-security of vulnerable employees. A study of Dutch panel data by Picchio and van Ours (2013) seems to confirm that participation in firm-provided training significantly improves employment prospects, also for older workers. And a more recent German panel-study by Kohlrausch and Rasner (2014) suggests a positive effect of workplace training on perceived job security, not only in the short term, but in the long term as well. The protective effect of following training reported in the literature leads Lebert and Antal to the explicit hypothesis that "the higher the perceived employment insecurity, the more likely participation in further training" (2016, p. 5). In their Swiss study, Lebert and Antal did not find support for this hypothesis (they even found a slight association in the opposite direction). However,
this may have been due to the fact that they looked at actual training participation. In practice, the latter depends not only on workers’ willingness to train, but also on firm policy. For a strict test of the hypothesis, one would have to focus on the pure willingness to train (that is, unconfounded by practical obstacles and the co-operation of other parties).

Therefore, following Lebert and Antal, in the present study, we attempt to test their hypothesis by focusing on an unconfounded measure of the willingness to train. To do so, we study this matter in an experimental setting. We set up a vignette experiment with a framing structure, where subjects are confronted with security versus insecurity aspects of the same objective situation. The choice for framing of the same objective situation is crucial. This is because there is little interest in showing that workers’ willingness to train increases when they are in an overtly insecure situation, such as when there are mass-layoffs or when firm bankruptcy is imminent. The practical relevance of such a finding is doubtful, since at that point there is not much to be rescued anymore. From a policy point of view, it is much more relevant to know if it matters for the willingness to train when people start to perceive a given situation from an insecurity perspective rather than a security perspective. In ensuing research, therefore, people should be made aware of the insecurity inherent in their normal situation, rather than be placed in a situation of overt insecurity; and this explains our choice for a framing design (see section 2.1).

To these varying (in)security frames we added another variable, namely the division of investment costs between worker and employer as stipulated in the training contract. After all, when it comes to the decision to invest in training there are several relevant aspects that employer and worker need to agree to. For instance, they will need to agree on who will carry the financial costs of the training, and in whose time training will take place. They will need to agree if and how high a wage increase will take place after training, or if there are any limitations for the worker after completion of the training, such as a pay-back clause. These are the so-called terms of the training contract. A number of studies suggest the importance of these (e.g. Künn-Nelen et al., 2018; Tuor Sartore & Backes-Gellner, 2014). Now, an increase in the perceived urgency of training that comes with an insecurity frame might stimulate training. However, if, for example, one has to pay a large share of the cost of training oneself, it is less likely that an increase in that perceived urgency will make a difference. The reason for this is that, under an insecurity frame, there is also a perceived increased risk of getting fired. If one is fired before one is able to recoup one’s investment with the current employer, there will always be some risk that one will not find a new job where the remainder of the investment can be recouped. Moreover, if one is fired before the training is concluded, one would not be able to recoup one’s investment at all. Therefore, as a further application of the role of insecurity versus security framing, we will also investigate how its effect on the decision to invest in training is moderated by the terms of the training contract (see section 2.2).
2 Hypotheses

2.1 Framing: Security Versus Insecurity

On the basis of our discussion of the literature in the previous section, our question is if it matters for the willingness to invest in training when workers perceive their labour market situation from an insecurity, rather than a security perspective. This, in turn, leads us to the question how workers could be made more aware of the insecurity of their situations.

From experimental research on framing in decision-making we know that when people focus on different aspects of the same situation, different decisions may ensue. For example, given the choice between a sure outcome and a risky option, people seem to be willing to take larger risks when options are worded in terms of avoiding losses. This is the classical framing result as first introduced by Tversky and Kahneman (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981). Moreover, often, stressing the gains of performing an act seems less persuasive than stressing the losses of not performing it (or put differently: obtaining a good seems not as valuable as avoiding its loss) (Levin et al., 1998).

One particularly relevant kind of study of framing effects is the study of what Levin et al. (1998) deem attribute framing. These studies show that people are, for instance, more likely to evaluate gambles favourably when these are described in terms of winning rather than in terms of losing. Similarly, people are more likely to rate policies favourably when described in terms of its success rate than in terms of its failure rate. Likewise, they are more prone to rate goods favourably when the positive rather than the negative side of the same attribute is highlighted. The explanation that is given for this phenomenon is that when either the positive or negative outcomes are made salient, selective attention is promoted to only the positive or negative outcomes. This, in turn, leads people to evoke favourable or unfavourable associations (Levin et al., 1998).

In line with the general idea of framing behind such experimental studies, our idea is that the employment context which people focus on makes a difference for the decision to invest in training. Specifically, we propose that whether attention is focused on the insecurity (or volatile) aspects of the job or on the security aspects of the job makes a difference for the willingness to train. Take, for instance, lay-offs in the firm where a worker works. Attention can be focused on the percentage of workers that have left the firm during a certain period, but attention can also be focused on the (complementary) percentage of workers that are still in their jobs. When attention is focused on the former we expect this to make training investments seem more urgent, and when attention is focused on the latter we expect this

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1 A similar perspective is taken by Vishwanath (2009), in a study on the effects of framing on the adoption of new technologies. In that study, for some participants it was, for example, highlighted that a majority of persons who tested the technology found it to be invaluable and that the technology worked well most of the time (positive frame). For other participants, it was highlighted that a minority found it to be worthless and that it failed some of the time (negative frame).
to make training investments seem less urgent. Why is this? When emphasis is laid on the percentage of employees that have stayed with the firm – the security frame –, it is in fact the positive outcomes of the labour market situation that are highlighted. We therefore expect that this will promote the selective attention of workers to such positive outcomes and lead them to judge the situation more favourably. When the situation is judged more favourably in terms of labour market prospects, training investments (as a means to deal with insecurity on the labour market) will seem less urgent. Conversely, when emphasis is laid on the percentage of employees that have left the firm – the insecurity frame –, it is in fact the negative outcomes of the labour market situation that are highlighted. We therefore expect that this will promote the selective attention of workers to these negative outcomes and lead them to judge the situation less favourably. Training investments will, correspondingly, seem more urgent. A similar line of reasoning applies to, for instance, the percentage of workers leaving the firm that found a new job promptly versus the percentage of workers that did not. When workers focus on the latter, we expect them to judge the situation less favourably, making training investments seem more urgent. This reasoning is in line with the explanation Levin et al. (1998) offer for framing effects in the evaluation of objects, when the same attribute is positively or negatively formulated.

Following this reasoning, and in accordance with Sanders et al. (2011) and Lebert and Antal (2016), we state our main hypothesis:

\[ H1: \text{The willingness of workers to invest in training is higher when the context is framed as insecure rather than secure.} \]

2.2 The Moderating Role of Training Contract Terms

When it comes to the decision to invest in training, it is the distribution of costs and risks that employer and worker need to agree about. The specific configuration of these costs and risks can be said to constitute the terms of the training contract. Based on existing literature, we have selected those provisions of a training contract we believe are the most important:

1. Who will carry the financial costs of the training. In the case of work-related training the employer may carry all financial costs associated to the training, or the costs may be differently shared by the two. Examples of such costs are programme fees, books and other study materials and travelling costs. A study by Künn-Nelen et al. (2018) suggests the importance of this factor.

2. In whose time training will take place. Work related training may be carried out in work time, or it may be spread over both the employer’s and worker’s time. Findings by Künn-Nelen et al. (2018) and by Tuor Sartore and Backes-Gellner (2014) suggest the importance of this factor.
Job (In)Security and Training Decisions

3. If and how high a wage increase will take place after training. Since the productivity of the worker due to the training might increase, it is possible that he receives a wage increase afterwards. In an overview of studies into the returns of training for workers given by Groot and Maassen van den Brink (1998), wage increases between 4 and 16 percent are cited, with a large variation within this range.

4. If a **payback clause** is included. When training concerns transferable skills, there is a risk that, after completion of the training, a worker will leave the firm to work for another firm. In such a case, the firm is unable to recoup its investment. The firm may therefore wish to implement a so-called payback arrangement. Such a payback arrangement stipulates that a worker must refund the employer with a percentage (usually decreasing over time) of the training costs incurred, if the worker prematurely leaves the firm. In the Netherlands, the arrangement is usually limited to a certain period, for example two years after completion of the training, after which it no longer applies (Arbeidsrechter, 2018). Künn-Nelen et al. (2018) found this to be a factor affecting the willingness of employers to invest in worker training. It seems plausible, however, that this will also be important for the worker’s willingness to train.

The influence of these contract terms on a worker’s willingness to accept a training offer is obvious and the corresponding predictions are, accordingly, somewhat trivial. Nevertheless, they can be seen as controls for the validity of our data (to exclude, for example, that questions were misunderstood, or answered in an unserious and random way). The control hypothesis thus reads:

\[ H(\text{Control}) : \text{The willingness of workers to invest in training is greater (a) the larger the share of the financial costs of training taken up by the employer; (b) the more the time spent on training is in the employer’s time; (c) the higher the offered post-training wage increase; and (d) when a payback clause is not included in the training contract.} \]

However, these training contract terms become particularly interesting when we look at how they can influence the effect of the perceived insecurity of the labour market on the willingness to train. An increase in the perceived urgency of training is expected to stimulate the willingness to train but, under this insecurity frame, there is also a perceived increased risk of getting fired. If one is fired before one is able to recoup one’s investment with the current employer, there will always be some risk that one will not find a new suitable job where the remainder of the investment can be recouped. Moreover, if one is fired before the training is concluded, one would not be able to recoup one’s investment at all. Now, when the worker has to pay only a small amount of the financial costs, this will most likely not be an issue. In that case we expect an uninhibited stimulating effect of the perceived insecurity on the
willingness to train. However, if the worker has to pay a substantial amount of the costs, we expect this to make the stimulating effect of the insecurity frame smaller. A similar reasoning applies to the amount of time spent on training that is done in the worker's own time. In addition, under the insecurity frame, the perceived insecurity inside the current firm makes it attractive to leave one's current job for a more secure job if one comes along. Without a payback clause in the training contract, leaving is not a problem, and in such case we expect an uninhibited stimulating effect of the perceived insecurity on the willingness to train. With a payback clause, however, leaving voluntarily might be especially burdensome, and we expect this to make the stimulating effect of the insecurity frame smaller.

Regarding the size of the post-training wage increase, it is less clear-cut if this moderates the stimulating effect of the insecurity frame. An essential difference with the other three contract terms is that a wage increase will at its worst be zero, and this does not entail a financial investment that needs to be recouped. From this viewpoint, therefore, there is no reason to assume that the stimulating effect of the insecurity frame will be any smaller under lower wage increases than under higher wage increases.

In addition, our assumption is that the overall effect of the perceived labour market insecurity on the likelihood of training will be positive. This is because we expect that, even with unfavourable training contract terms, the effect of an increase in the perceived urgency of training on the willingness to train will still be positive (albeit smaller, as explained). This seems reasonable, since, in a context marked by general job insecurity (in- and outside the current firm), training in transferable skills, if concluded, increases one's job-chances. In fact, the choice facing a worker is that between a chance of no job at all when one opts not to train, and an increased chance of a job when one does, with some risk that the investment was in vain or brings with it a residual payback obligation. In such a situation, training would seem to be the preferable option. Moreover, as pointed out before, people are especially willing to take risks to avoid losses (Levin et al., 1998). In this consideration, training will thus still, more often than under a security frame, be seen as the most rational strategy to pursue.

This reasoning can be summarised in our second hypothesis, comprising an interaction effect:

H2: The increase in the willingness to invest in training under the insecurity frame is larger with favourable training contract terms than with unfavourable training contract terms.

As stated, we believe this interaction to hold for three of the four contract terms we included in the research.
3 Method

3.1 Research Design

The willingness to invest in training has been the subject of numerous empirical studies, both with regard to the motivations and behaviours of the workers and/or their employers. In recent years, the method of vignettes has been introduced into this field of research (Fleischmann & Koster, 2017; Karpinska et al., 2015; Lazazzara et al., 2013). A vignette-study (also: factorial survey or conjoint analysis) is a quasi–experimental approach in which respondents are presented different situations (the vignettes). Each of these is a randomly generated combination of characteristics which they are asked to judge. In our case, each of those situations corresponded to a specific configuration of contract terms. Our study elaborates on this approach by adding the manipulation of frames to the experimental design.

In this study, respondents were 196 senior (third and fourth year) students from two universities in The Netherlands. Respondents were given a questionnaire in which they were asked to imagine themselves working for a fictitious firm. The security/insecurity frames were elicited by randomly stressing either the positive or negative side of a series of events related to the labour market position of people working in this fictitious firm. Each respondent was then asked to respond to five vignettes, each of these a randomly generated combination of training contract terms. For each vignette, respondents were asked to state whether or not they would be willing to go along with the specified training program under the conditions outlined in that vignette. The data are analysed using multilevel logistic regression.

Asking respondents to make choices in a fictitious situation represents an important reason to opt for students rather than actual workers. Recall that we are not interested in the effect of objectively different labour market situations, but rather, in the effect of framing a given same situation as insecure versus secure. To study the effect of the insecurity/security frames these conditions have to be manipulated experimentally. An important advantage of using students is that the situation defining the frames can be presented as real, which may be important for a successful manipulation. This would be impossible for actual workers with some knowledge of their sector (about, for example, actual figures of workers that were laid off from the firm or that could not find a job soon after leaving the firm). In such case, presenting the situation as explicitly fictitious would demand from workers that they abstract from their actual situation, which might be an impossible request. Therefore, students are a good alternative, especially since most of them already have work-experience. In the Netherlands, the vast majority of students have part-time jobs next to their studies, typically in jobs requiring little educational qualifications (e.g sales-assistant, cleaning, cashier) (van der Meer & Wielers, 2001). Moreover, part of all the studies our respondents followed is a work place-

2 So, not in the type of job portrayed in the questionnaire (see 3.2).
ment (internship) of six months or more. By picking just senior students who are about to graduate and enter the labour market, we are confident that they will have sufficient affinity with the worker role. Of course, doubts may be raised as to how representative this group is for workers in general. We cannot answer these doubts, but our theoretical predictions, if correct, should also hold for this particular group. This is in line with the view that theory-testing implies deduction from theory to experiment, rather than induction from sample to population (Willer & Walker 2007, pp. 131–132). In the following sections, we will explain each of the aspects of our approach in more detail.

3.2 Independent Variables

Frames

Respondents were given a questionnaire in which they were asked to imagine themselves working for a fictitious firm. The security/insecurity frames were elicited by randomly stressing either the positive or negative side of a series of events related to the labour market position of people working in this fictitious firm. Specifically, respondents were either presented with the percentage of workers who had fared well over the last five years (security frame), or the complementary percentage of workers who had fared less well (insecurity frame). In studies on attribute framing effects, such effects seem to be less likely when dealing with extreme outcomes (e.g. extreme chances of losing or winning in a gamble) (Levin et al., 1998). Also, according to Festinger (1971), it is difficult to produce variables in an experimental setting that are strong enough to induce a measurable effect. Therefore, in order to maximise the strength of the frame variable, we opted for a construction where the percentages are approximately in a 50-50 relation to each other. To increase realism and to maximise the chance that respondents indeed adopt the frames, the frames were presented in the form of a short newspaper article about the firm, that had supposedly appeared in a national paper. The firm type was also carefully chosen to reflect the type of work that the respondents might do in the future, given their educational background. Specifically, the firm was a consultancy firm that advised organisations in the social sector on how to optimise the provision of their services (see also 3.4). Great care was taken to assure that each newspaper article described exactly the same situation, and that they only differed in the way the information was presented. The events chosen to define the frames were:

- Percentage of workers that have stayed with versus left the firm over a 5 year period
- Percentage of workers that have left voluntarily versus were laid off

3 The original newspaper article in Dutch and an English translation are available upon request from the authors.
– Percentage of workers leaving the firm that did find versus did not find a job within six months

– Percentage of workers leaving the firm that did find versus did not find a job similar in content

– Percentage of workers leaving the firm that now earn similar or higher incomes versus lower incomes.

The resulting variable INSECURITY is a dichotomous variable measuring whether the respondent was presented the security or insecurity frame.

**Vignette and training contract terms**

After the newspaper article a text followed in which the respondent was told that he is working at the firm on a permanent contract and earning net monthly wages of 2000 Euros. At a certain moment he is offered to follow a training program leading to a recognised certificate, and of which the total cost (enrolment, books and other study material and travelling costs) is 2000 Euros and the required total time investment is 120 hours. Each respondent was then asked to respond to five vignettes, each of these a randomly generated combination of training contract terms. For each vignette respondents were asked to state whether or not they would be willing to go along with the specified training program under the conditions outlined in that vignette. The number of vignettes was kept low to maximise the chance that the relevant frame perspective remained active throughout the entire questionnaire. The following training contract terms were varied in the vignette:

– Share of costs (enrolment, books and other study material and travelling costs) taken up by the employer (COST): 25% (€500), 50% (€1000), 75% (€1500);

– Share of training done in employer’s time (TIME): 25% (30 hours), 50% (60 hours), 75% (90 hours);

– How large a wage increase will take place after training ends (WAGE): 0%, 2%, 4%, 6%;

– Whether or not a payback clause was included (NOPAYBACK). If it was, it stipulated that 100% of the cost incurred by the employer is owed back if the worker decides to leave the firm within 2 years after completion of the training.

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4 An English translation of the text and of a vignette is available upon request from the authors.
We can now look at how each of these contract terms is associated to the willingness to accept the training offer and how it interacts with the frame variable. Naturally, there is no guarantee that a conveyed willingness also corresponds to actual behaviour in a real-life setting, although a number of studies have shown that responses to vignettes do resemble responses to actual situations (Taylor, 2006). A major advantage of this method is, however, that we can study very specific aspects of the decision-making situation that are difficult to grasp in a retrospective survey. In the latter case, measuring instances of training decisions and of associated training contract terms, especially when training did not take place, would open the door to all kinds of memory biases and rationalisations. The vignette approach may be less prone to bias due to social desirability and also gets around the problem of collinearity between variables that comes with conventional surveys (Taylor, 2006).

Another argument in favour of the vignette approach is the fact that, in real-world labour markets, training contract terms may already be (partially) defined by collective labour agreements. This is certainly very common in the Netherlands. Collective labour agreements may, for example, contain clauses dictating how the costs and time of training should be shared between employer and worker under different circumstances, causing a ‘restriction of range’ of major variables. A vignette study thus allows us to study the effect of a variety of training contract terms that are perhaps not usually found in real-life settings, but that are of theoretical interest nonetheless.

3.3 Dependent Variable

To measure the willingness to train (TRAIN), the respondent was asked, for each vignette, whether or not he would be willing to follow training under the stated conditions. Respondents in the study stated that they were willing to follow training in 39 percent of the cases (380 out of 971 vignettes).

3.4 Pilot, Sample and Procedure

Respondents were senior (third and fourth year) students from two universities in The Netherlands, that were about to graduate and enter the labour market. Prior to the actual study, a pilot was carried out amongst 11 senior students (that did not follow any lectures anymore). Because there was a chance that these students would interact with the students in the actual study, and reveal the purpose of the experiment, only one frame was used. Time filling out the questionnaire was clocked and afterwards an in-depth interview with the participant was carried out. The pilot revealed a few minor ambiguities in the instructions and
formulations of the questions, which were corrected⁵. For the most, instructions and formulations seemed clear and participants seemed to have no problem making the decision-task.

In the actual study, respondents were 196 senior students from two universities in The Netherlands, that were about to graduate and enter the labour market. Respondents were obtained by asking several lecturers if we could come by at one of their lectures, and ask students to fill out a questionnaire. Geographical proximity of the universities and existing contacts of the research group played an important role in this. The respondents in this convenience sample were from 15 different classes, from six different schools. Schools were chosen so that the firm and type of work portrayed in the newspaper article (see 3.2) matched the type of work the respondents might do after their study (e.g. social work, legal studies, management). For a successful frame-manipulation it is vital that respondents, when filling out the questionnaire, are not aware of the purpose. To minimise the possibility of contamination due to contact between respondents, efforts were made to administer questionnaires on the same day or at least adjacent days. Classes from the same school were always administered the questionnaire on the same day, where possible at the same time. Due to unforeseen circumstances, not all schools could be approached at the same time. To check for possible contamination due to communication between respondents, we looked at whether our results differed when only looking at those trials where contamination due to communication could be ruled out. These were the first two trials that were run parallel to each other, one trial 3 months later that was the first on that day, and three trials 5 months later that were also the first on that day and also ran parallel to each other. We found no evidence for contamination; the 'uncontaminated' trials give the same results as the 15 trials in total.

Respondents were told that the questionnaire was part of a study into training investment choices of (future) workers. The frame was communicated in a text that preceded the questionnaire. Textual, rather than oral, communication was necessary to allow random assignment to each frame, but also enabled us to avoid problems of inattention of respondents and of experimenter bias (Plutchik, 1974; Willer & Walker, 2007). The frame text and the questionnaire were presented in two separate envelopes. Respondents were instructed to carefully read the contents of the first envelope (frame text) first and then put it back. Only then could they proceed with the second envelope (questionnaire). This was to minimise the chance that they would (partially) skip reading the frame text and go to the questionnaire straight away. It was also to avoid that neighbouring students got a good look at each other’s frame texts, which might then have revealed the purpose of the experiment. As a preventive measure, both newspaper articles were in any case constructed in such a way (in terms of headings and layout) that seeing the difference between them would require quite an effort.

⁵ For example, for some students in the pilot it was not clear that a payback clause only applied if they themselves decided to leave. For the final questionnaire, therefore, the formulation “if you decide to leave” was changed to “if you yourself decide to leave.”
Respondents were not de-briefed afterwards. However, the experiment did not involve sensitive matters that could in any way provoke harm. Very importantly, explicit de-briefing could have led to a greater chance of contamination due to contact between respondents. Explicit de-briefing would mean that respondents would hear what the exact purpose of the experiment was (i.e. frame them into either a security or insecurity frame), making this the object of their explicit attention. This could make it more likely that they talk about the purpose of the experiment to others, and that this information would reach people that had still to participate in the experiment.

With 196 respondents and 5 vignettes per respondent, in total 971 observations were made. All students that were approached filled out the questionnaire, but 9 vignettes were left unanswered (all spread over different respondents). In an additional 6 cases (30 vignettes) some of the control variables (section 3.6) were left unanswered. The non-response is quite small, so that it seems highly unlikely that this might have compromised the random assignment of experimental conditions (training contract terms and frames). Moreover, as expected, for the remaining 941 observations, there is essentially no correlation between the different training contract terms, between training contract terms and frames, and between these and measured background characteristics.

Regarding the adequacy of the obtained sample size, it should be noted that our design is a multilevel design, with vignettes nested within individuals (see 3.5 ahead for a more detailed explanation). In such a design, the accuracy of estimates and sufficient power to detect effects are dependent on both level 2 sample size (number of individuals) and level 1 sample size (number of vignettes per individual). Existent simulation studies suggest that our level 2 sample size is large enough, but that our level 1 sample size is on the low side (e.g. Austin, 2010; Schoeneberger, 2016). As stated before, the number of vignettes per individual was kept low on purpose, in order to maximise the chance that the frame perspective remained active throughout the entire questionnaire. However, this may have affected the accuracy of estimates and the power to detect effects, especially cross-level interaction effects (Schoeneberger, 2016).

3.5 Analytical Strategy

Since the vignettes might be seen as nested in individuals, there may be dependence between observations from the same individual. Ignoring this multilevel nature of the data, by carrying out conventional regression analysis, may lead to incorrect standard errors of the regression coefficients. An appropriate technique to analyse the data is therefore multilevel logistic regression (Clarke, 2008; Snijders & Bosker, 1999). In this approach, the dependence between the answers to vignettes belonging to the same individual is explicitly taken into account. This is done by treating vignettes as so-called level 1 units, which are nested
individuals (the so-called level 2 units). Furthermore, the logistic variant, rather than linear regression, was called for because of the dichotomous nature of the dependent variable. Analyses were carried out in MLwin, a statistical program for analysing multilevel data. The data were analysed using the second-order penalized quasi-likelihood (PQL-2) estimation procedure. Of the standard estimation procedures available in MLwin, this procedure seems to produce the least biased estimates (Rodriguez, 2008). Since respondents are from different schools, there may also be dependence between individuals from the same school. Therefore, we also included dummy variables for the schools in the analysis.6

3.6 Control Variables

Due to the random assignment of vignettes and frames to respondents, effects of the training contract terms and frames should be unconfounded by other variables. However, we measured a limited number of other variables that can be thought to influence the training investment decision, since including these in the analysis might enhance the power of the statistical tests for the variables of interest (Rossi & Anderson, 1982). The control variables are gender (a dummy variable indicating whether the respondent is FEMALE), year of birth (YEARBIRTH), and the extent to which one finds the kind of job described in the frame text attractive on a 4-point scale ranging from "not nice at all" to "very nice" (JOBATTRACT). The role of gender and age when it comes to following work-related training is often studied and well-known (e.g. Bassanini et al., 2005; Evertsson, 2004; Grönlund, 2012). The variable JOBATTRACT is important because liking a job might be a pre-condition for even considering investing in training. Our respondents scored the described job on average 1.35 on a scale from zero to three. As could be expected from our framing effort, they liked the job better when its security rather than its insecurity was emphasised (r = -0.15, p = 0.00).

4 Results

Table 1 contains the second-order penalized quasi-likelihood (PQL-2) estimates for the multilevel logistic regression. The contract term variables COST and TIME and WAGE have been centered, and the NOPAYBACK and INSECURITY variables have been contrast coded. This is to assure interpretability of main effects in the presence of interaction effects and to minimize non-essential collinearity between the predictors and associated interaction terms (Cohen et al., 2003).

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6 Dependence at the level of the 15 classes is not very likely. In the third and fourth year, students follow mostly elective subjects and short specialisations, meaning that, in contrast to schools, classes in this stage are relatively short-lasting arrangements. An analysis with classes as level 3 units confirms this, yielding level 3 variance estimated at almost zero.

7 In the sample, 55% of respondents were female, and 45% were male. Gender was not significantly associated to the willingness to invest in training, nor did it enhance the statistical significance of the tests (see section 4 ahead).
In the column under model 1 we see, firstly, that all contract term variables COST, TIME, WAGE and NOPAYBACK behave as expected and the associated coefficients are highly significant: the worker’s willingness to train increases the more the employer takes up the cost of training \( (b = 1.23, p < 0.01) \), the more the time spent on training is in the employer’s time \( (b = 0.75, p < 0.01) \), the higher the post-training wage increase \( (b = 1.00, p < 0.01) \), and when there is no payback clause included in the training contract \( (b = 1.52, p < 0.01) \). All this is as should be expected, and validates our control hypothesis.

However, and in contrast to our main hypothesis, the willingness to invest in training is not generally greater when the context is framed as insecure. The coefficient of the variable INSECURITY is very close to zero and far from significant \( (b = 0.04) \).

Under model 2 we look into how the coefficient of INSECURITY differs for different values of the variables COST, TIME, WAGE and NOPAYBACK. We add random slopes for WAGE and NOPAYBACK (random slopes for COST and TIME are excluded, because the random slope variances for these were estimated at zero), and interaction terms of INSECURITY with each of the contract variables.\(^8\) We find a statistically significant positive coefficient for the INSECURITY by NOPAYBACK interaction \( (b = 0.94, p < 0.05) \), and for the INSECURITY by TIME interaction, though the latter is only significant at the 10 percent level \( (b = 0.41, p < 0.10) \). We do not find indications of an INSECURITY by COST interaction, however, nor of an INSECURITY by WAGE interaction (but, as explained before, this latter interaction was theoretically also not expected). Both the INSECURITY by COST and the INSECURITY by WAGE interactions are very close to zero and not statistically significant \( (b = -0.05 \text{ and } b = 0.05, \text{ respectively}) \).

In model 3 we add school dummies to control for possible dependence between observations at the school level. The results remain essentially the same. Enhancing the model by adding control variables FEMALE, YEARBIRTH and JOBATTRACT did not improve on the statistical significance of the tests, so, for reasons of parsimony, these are left out.\(^9\)

Closer inspection of the interaction coefficients in model 3 reveals that when the training must be done mostly in one’s own time, the coefficient of INSECURITY is negative with -0.44, but when it must be done mostly in the employer’s time, it is positive with 0.34. Similarly, when a payback clause is included the coefficient of INSECURITY is -0.48, but when this is not the case, it is 0.38. Apparently, INSECURITY has opposing coefficients for different values of both TIME and NOPAYBACK, resulting in a close to zero overall coefficient. Carrying out separate analyses for observations with and without a payback clause, we find mildly statistically significant coefficients for INSECURITY of -0.46 \( (p = 0.10, N = 189, Nn = 8) \) in the absence of a payback clause, and 0.38 \( (p = 0.05, N = 189, Nn = 8) \) when a payback clause is included.

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\(^8\) Random slope variances of zero actually mean that they could not be estimated accurately, and it seems reasonable to assume that in this data-set they are, therefore, small enough to be left out (Twisk, 2006, p. 26). The rationale for still including all interaction terms, even though we did not find significant random slope variances for COST and TIME, is that power to detect the latter may be low (Snijders & Bosker, 1999, p. 96).

\(^9\) Only the (positive) coefficient of JOBATTRACT was statistically significant.
484) and 0.43 (p = 0.09, N = 186 Nn = 487), respectively (PQL-2 estimates for model 1 from table 1).

Table 1: Results Multilevel Logistic Regression for Dependent Variable TRAIN (PQL-2 Estimates)

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Δ probability at mean y</th>
</tr>
</thead>
<tbody>
<tr>
<td>COST</td>
<td>1.23**</td>
<td>1.36**</td>
<td>1.39**</td>
<td>0.33</td>
</tr>
<tr>
<td>TIME</td>
<td>0.75**</td>
<td>0.78**</td>
<td>0.80**</td>
<td>0.20</td>
</tr>
<tr>
<td>WAGE</td>
<td>1.00**</td>
<td>1.12**</td>
<td>1.13**</td>
<td>0.27</td>
</tr>
<tr>
<td>NOPAYBACK</td>
<td>1.52**</td>
<td>1.70**</td>
<td>1.74**</td>
<td>0.39</td>
</tr>
<tr>
<td>INSECURITY</td>
<td>0.04</td>
<td>-0.07</td>
<td>-0.05</td>
<td></td>
</tr>
<tr>
<td>INSECURITY*COST</td>
<td>-0.05</td>
<td>-0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSECURITY*TIME</td>
<td>0.41†</td>
<td>0.39†</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>INSECURITY*WAGE</td>
<td>0.05</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSECURITY*NOPAYBACK</td>
<td>0.94*</td>
<td>0.85*</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>School (reference = Management)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal</td>
<td>-1.01*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>-0.85*</td>
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<td></td>
<td></td>
</tr>
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<td>Facility Management</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>-0.51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>-1.14*</td>
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<td></td>
<td></td>
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<tr>
<td>Random intercept variance</td>
<td>1.21</td>
<td>1.37</td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td>Random slope variance WAGE</td>
<td>0.43</td>
<td>0.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Random slope variance PAYBACK</td>
<td>2.00</td>
<td>2.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unstandardised regression coefficients; N = 196, Nn = 971.
†P < 0.10; *P < 0.05; **P < 0.01 (one-tailed, except P for school = two-tailed).

The coefficients in table 1 represent the linear relations between the independent variables and the logged odds of the probability of accepting a training offer. To make the coefficients somewhat more interpretable, in the last column we present the change in the probability of accepting a training offer associated to a 1 unit change in each of the statistically significant independent variables, at the mean of TRAIN (0.39) (Pampel, 2000). With regard to the interactions, the largest change in probability is associated with the interaction between INSECURITY and NOPAYBACK: when no payback clause is included, the increase in probability under the insecurity frame is 0.21 higher than when a payback clause is included. Again, these changes in the probability of accepting a training offer are at the mean of TRAIN, and,

Note that by splitting up the analysis, the average number of observations per respondent drops from 5 to 2.5. Since a lower level 1 sample size may negatively affect power in multilevel logistic regression (Schoeneberger, 2012), we might be slightly underpowered for detecting these associations.
due to the non-linear relation of the independent variables to the willingness to train, they will be larger or smaller at other points.

We did some further analyses to find out whether these results could be caused by some other hidden interactions in the data. A possible candidate for this lies in the finding that INSECURITY and JOBATTRACT (the extent to which one liked the job described) are negatively correlated. People who don’t like the kind of work to begin with might not care much about training, regardless of whether it seems less or more urgent. Since such dislike seems to be stimulated by the insecurity frame, this might result in a zero effect of the frame variable. We ran PQL-2 analyses to check for an INSECURITY by JOBATTRACT interaction on the willingness to train, but found no such confounding effect.

5 Conclusion

5.1 Interpretation of the Results

In this study we investigated whether framing the labour market as insecure increases the willingness of workers to invest in training, and whether this effect is larger when training contract terms are favourable. We find that when the labour market context is framed as insecure, the willingness to invest in training is greater when training contract terms are favourable (e.g. when no payback clause is included), but is smaller when training contract terms are unfavourable. Since the positive and negative effects are approximately equal in size, in a balanced design such as ours they cancel each other out, resulting in a close to zero overall effect for the frame variable.

Clearly, our main hypothesis has to be rejected. Strictly speaking, the second hypothesis is no longer relevant now, since it entails a moderation of the main effect. This conclusion might be premature, however, considering the intriguing pattern the data revealed.

Apparently, we have encountered a qualitative interaction effect instead of the more common quantitative interaction (moderation) that we had expected. In the literature, a qualitative interaction refers to the situation where the sign of the effect changes with different values of the moderator variable (in contrast to a situation where the sign remains the same) (e.g. Bayman et al., 2010). If the positive and negative effects are approximately equal in size, and the observations are evenly spread over the categories of the moderator variable, a qualitative interaction will lead to a close to zero overall effect of the main variable. In our experiment, these conditions clearly apply.

Substantively, this suggests that perceived labour market insecurity is not irrelevant for the worker’s willingness to engage in training. Its relevance is embedded, however, in the kind of reasoning that has led to our second hypothesis. The perceived insecurity stimula-
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tes the worker’s willingness to invest in training when the risk to him is small, but actually deters him when that risk is large. This explains why the insecurity frame was associated to a greater willingness to train for favourable contract terms, and to a smaller willingness to train for unfavourable contract terms. We found this interaction for two of the three contract terms where this reasoning applies. As expected, it was not found for the fourth contract term (‘wage increase’) where the reasoning did not make sense. All in all, we believe human capital theory’s standard investment logic can account fairly well for these results, provided the risk distribution is added to the cost-benefit calculus. If a worker thinks that he might lose his job (the insecurity frame), then a training investment becomes more attractive when the employer carries the costs. However, it becomes less attractive when the worker himself has to carry the costs, because in a situation of insecurity he runs a greater risk of losing his investment (cf. Greenhalgh & Mavrotas, 1994).

Recent literature suggests yet another explanation, founded in organisational psychology, that can be seen as complementary to the economic case. This explanation is based on social exchange theory. Within firms, an exchange takes place between the commitment of workers to the organisation and the organisational support offered to them by the employer. This makes it possible for a relationship based on reciprocity to emerge, in which the positive gesture of one party is answered with a positive action from the other. In the literature on training, this theory is used to explain why employers actually invest in general training of workers, despite the risk that the latter will (threaten to) leave for another employer after completion of the training. Employers invest in such general training if they expect reciprocity from the workers (Fleischmann & Koster, 2017; Kampkötter & Marggraf, 2015; Leuven et al., 2005). Conversely, workers will be more inclined to commit to training if they perceive that the employer supports them in this (Kyndt & Baert, 2013; Sanders et al., 2011; Sutha et al., 2016). This organisational support plays a central part in Sutha et al.’s (2016) ‘integrated theoretical model’ aimed at explaining the willingness of workers to participate in non-mandatory training: “The considerate and positive treatment received from the company creates feelings of gratitude in the employee’s minds; this is likely to instill in them an attitude of loyalty and a sense of obligation . . . that will encourage them to put in greater effort into gaining new knowledge from both mandatory as well as non-mandatory training programs” (2016, p. 142). Needless to say, this is a precarious relationship, especially if the workers already experience their position as insecure (as is the case in our experiment). They will, thus, be extra alert to signals conveying whether a reciprocal relationship exists or is being proposed. In this regard, contract terms stand out as a very clear and unambiguous signal. An employer offering favourable training contract terms in a situation of insecurity will elicit feelings of loyalty and obligation; an employer offering unfavourable training contract terms will, on the other hand, emit a clearly negative relational signal.
5.2 The Framing Approach

The failure of our main hypothesis led us to consider some probable causes. The most likely cause would be that the manipulation we tried to accomplish with the frames was simply not effective; that is, respondents given the security frame text did not interpret the situation depicted any differently than respondents given the insecurity frame text. This cannot explain, however, why we did find the interactions as reported. It can neither explain the correlation with the job attractiveness we mentioned (section 3.6). Apparently, the manipulation did seem to work, because respondents under the (randomly assigned) insecurity frame found the type of work on average less attractive than those under the security frame. This is in line with our theory, which states that, under the insecurity frame, the negative aspects of the labour market situation are highlighted, promoting the selective attention of workers to these negative aspects. This, in turn, leads them to judge the situation less favourably. Clearly, this is what they did with regard to the attractiveness of the job.

In sum, although our main hypothesis was not confirmed, we conclude that our manipulation of frames seems to have been quite successful. We find support for the idea that security and insecurity trigger distinct response patterns and that the details of the training contract play an interesting and important role herein. Of course, our results might have been different if we had opted for confronting the respondents with straightforwardly different conditions (instead of different perceptions of the same conditions, i.e. frames). An example would be one situation where the fictitious firm could still make a profit, while in the other situation it might be in deep trouble. Perhaps, with such blatant insecurity, workers would be prepared to take more risks in order to enhance their employability. However, such a finding would be less interesting. That people wake up in times of emergency is fine, but from the viewpoint of labour market policy it would be preferable if they did so before it were (almost) too late. Therefore, our framing approach is more representative for the ordinary policies of trying to make workers more aware of the uncertainties of their employment.

5.3 Limitations

One important limitation of this study lies in the fact that respondents were senior university students. As argued, the choice for students had the advantage of making it possible to present the frames as real, which may be important for successful frame manipulation. This would not be possible for workers with some knowledge of the labour market situation in their sector. Moreover, respondents were not far from entering the labour market and very likely to already have work experience. However, the results are not necessarily representative of the behaviour of actual workers. A challenge for future research focusing on actual workers is, therefore, to get workers to abstract from their actual situation, and achieve a
successful manipulation into fictitious frames. Correspondingly, our conclusion, to which we now turn, should, at least for the time being, be seen as a tentative one.

5.4 Conclusion

As we already pointed out in the Introduction, the scarce research into the role of job insecurity has yielded contradictory results. For example, Sanders et al. (2011) were unable to confirm that a higher level of job insecurity is associated to a higher motivation to train. Similarly, Lebert and Antal (2016) could not confirm that a higher perceived employment insecurity was associated to a greater likelihood of training, even finding a slight association in the other direction. On the other hand, van Hootegem et al. (2018) did find that job insecure individuals were more likely to follow training, but this was contrary to their own theoretical expectations.

Now, our own results provide an explanation for this. The effect of insecurity is empirically unstable, because it interacts strongly with circumstances; in our case, the terms of the training contract.

The existing literature even gives us reasons to expect such an interaction. Van Hootegem et al. (2018) discuss, in the context of the Conservation of Resources theory, two tenets that lead to contradictory predictions for the effect of job insecurity. Based on the ‘resource acquisition tenet’, investing in training would actually be an instrumental activity for workers in a situation of insecurity. The ‘resource conservation tenet’, on the other hand, predicts that workers in an insecure situation become less active, because they need to employ all their mental capacity to survive in such a situation. The authors were more inclined to the latter prediction (which was then not supported in their study). Given the stated ambiguity, however, such a prediction was not a very convincing one. According to an influential conceptual framework in evaluation research (Pawson & Tilley, 1997), especially in a situation where two forces operate against each other, it is usually a third contextual factor that is decisive.

Continuing in this line of thought, this brings us to a conclusion regarding the point of departure of our own study. Will workers be more willing to follow training if they are aware of the insecurity in their situation? The answer to this must be a qualified negative: No, in itself that is insufficient. Our findings suggest that workers can be made more willing to follow training if they are made more aware of the insecurity in their situation and if training contract terms are favourable to them. So, in the end, the motivation for training appears to depend on a classical industrial relations variable: the division of risks between employer and worker.
References


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