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Vocational Students' Agency in Identity Formation as Industrial Workers

Lisa Ferm

LINKÖPING UNIVERSITY

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Till Mia som jag träffade genom sociologin

No matter what is said, taught, prescribed, recommended, or tested, newcomers are no fools: once they have actual access to the practice, they soon find out what counts.
(Wenger, 2010b, p. 135)

The data that were collected for this study were also part of a wider research project about vocational identity formation through workplace-based learning, which was financed by FORTE.

CONTENTS

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Lisa Ferm, Linköping, March 2021

ABSTRACT

The overall aim of this thesis is to contribute knowledge about vocational identity formation among students within the industrial programme in Swedish upper secondary education, with a particular focus on their workplace-based learning. To break down the aim, three research questions have been formulated and each is addressed in one or two specific articles. These questions are: (1) What learning strategies do vocational students use to become part of a work community, and how do these strategies relate to the formation of a vocational identity at the workplace? (2) How do vocational students experience their identity formation in relation to a vocation within the industrial sector? (3) How do vocational students handle the division between theoretical and practical knowledge as they learn to become skilled industrial workers?

The thesis builds on 53 semi-structured qualitative interviews with Swedish upper secondary vocational students enrolled on the industrial programme. The interviews revolve around the students' vocational identity formation, with a focus on their workplace-based learning. The students are between 18 and 20 years old and the majority are boys. The findings are analysed through the theoretical lens of situated learning, where identity formation is viewed as a social learning process that takes place through participation in communities of practice. In addition, the concepts of habitus, gender and social categorisation are used as analytical tools to provide a deeper understanding of issues concerning status, power and exclusion in relation to vocational identity formation.

The findings reveal that the students' vocational identity formation is closely connected to the social aspects of

participating in workplace communities. Knowledge about the jargon and social norms of the workplace seem to be of more importance for vocational identity formation than knowledge about the concrete working tasks. The study follows the students' vocational identity formation throughout their vocational learning trajectories, which reveal that vocational identities are formed in heterogenic ways.

The students may adopt a committed, flexible or ambivalent approach towards industrial work. Aspects concerning agency and status seem to be crucial for the vocational identification process. The forming of a vocational identity also implies positioning oneself in the hierarchy and division between theoretical and practical knowledge, as well as between masculinity and femininity. The students appear as knowledgeable actors who are aware of the generally low status of industrial work, while simultaneously expressing a great deal of pride in relation to their intended vocations.

In the discussion, a model of the students' vocational identity formation is proposed to capture the interplay between collective and structural dimensions (e.g. social background, class and status hierarchies at school) and students' agency and strategies in becoming industrial workers.

From the findings of this thesis, three main conclusions are drawn: (1) The students form vocational identities through using vocational agency in actively developing strategies for becoming accepted in the workplace community; (2) Workplace-based learning is central for the students' vocational identity formation, in spite of the relatively short time that the students spend there, compared to the time spent at school; (3) The students' vocational image awareness, expressed through awareness of, and reactions to, other people's images of their vocation, constitutes an important part of their vocational identity formation.

LIST OF ARTICLES

Article 1:
Ferm, L., Persson Thunqvist, D., Svensson L & Gustavsson, M. (2018). Students' strategies for learning identities as industrial workers in a Swedish upper secondary school VET programme, *Journal of Vocational Education & Training*, *70*(1), 66-84. https://doi.org/10.1080/13636820.2017.1394357

Article 2:
Ferm, L., Persson Thunqvist, D., Svensson, L., & Gustavsson, M. (2019). Vocational students' identity formation in relation to vocations in the Swedish industrial sector. *Nordic Journal of Vocational Education and Training*, *9*(2), 91-111. doi: 10.3384/njvet.2242-458X.199291

Article 3:
Ferm, L. (2021). Vocational students' ways of handling the academic/vocational divide. *International Journal for Research in Vocational Education and Training*, *8*(1), 1-20. https://doi.org/10.13152/IJRVET.8.1.1

Article 4:
Ferm, L & Gustavsson, M. Gendered vocational identities – Female students' strategies and identity formation during workplace-based learning in male-dominated work. (Submitted to *International Journal for Research in Vocational Education and Training*, 1 February 2021).

1. INTRODUCTION

Student: The first time I did it (welded), I fell in love.

Researcher: What is it about welding that's so special and made you fall in love?

Student: Well, it's so much … the chemical processes, the technology, seeing how it happens, how the material melts … seeing the results. Seeing how I improve and develop … Welding is so tremendously, well it's such a big part of society, you don't realise that. I remember after that semester, the second semester in first grade, I kind of walked around the city looking for welding jobs to inspect.

This thesis is about vocational identity formation among students within the industrial programme in Swedish upper secondary education, with a particular focus on their workplace-based learning. Vocational identity formation refers to a strong interest and engagement in a particular vocation (Chan 2014; 2019), and "reflects a determination on the employee's part to commit to the values of the work group" (Armishaw, 2007, p. 1). A vocational identity is "the form of work identity that develops as individuals establish attachments to the work they do, to their employer, or to their workplace" (Armishaw, 2007, p. 3). The formation of such an identity for vocational students can be seen as a complex social process of participation and learning (Lave & Wenger, 1991) that is integrated into workplace-based learning as part of their vocational education. Hence, workplace-based learning in

vocational education is important for students' vocational identity formation.

Despite the number of studies confirming that workplace learning is crucial for identity formation (e.g. Billett, 2001; Hegna, 2019; Lave & Wenger, 1991; Lave, 2019; Rausch, 2013; Wyszynska Johansson, 2018), research exclusively on vocational students' identity formation through workplace-based learning is still relatively sparse, although there are some examples (e.g. Juul & Helms Jørgensen, 2011 & Reegård, 2015). The limited number of studies that have paid attention to vocational students' identity formation during workplace-based learning show that students who participate in workplace communities are socialised into the norms and ideals of a vocation (Juul & Helms Jørgensen, 2011). Adaption to vocational norms and ideals, as well as to informal rules in the workplace community (Chan 2014; Juul & Helms Jørgensen, 2011), are linked to issues of socialisation such as inclusion and exclusion in relation to power and status hierarchies (Bourdieu, 1977; Willis, 1977). Social background, such as class and gender, also matter for vocational identity formation (e.g. Colley, Diment & Tedder, 2003; Sawchuk, 2003).

Furthermore, agency plays an important role in vocational identity formation. By exercising agency through being offered and accepting individual responsibility at their workplace-based learning, vocational students form vocational identities (Reegård, 2015). Vocational identity formation is a process that can entail feelings of pride and self-confidence for vocational students as they begin to perceive themselves as skilled workers (see e.g. Hegna, 2019). Nevertheless, as Akkerman and Bakker (2012) note, vocational students are still peripheral participants during their workplace-based

learning, and their opportunities to participate in work tasks depend on whether they gain access to the workplace community.

At the centre of this thesis are vocational students enrolled on the industrial programme. This programme, like other Swedish vocational programmes, suffers from being relatively unpopular compared to programmes preparatory for higher education (Helms Jørgensen, Olsen & Persson Thunqvist, 2018; Panican & Paul, 2019). In 2018 and 2019, the industrial programme was in the lowest third of all Swedish vocational programmes in terms of students' average merit value. Although the popularity of the industrial programme increased slightly in 2020, it still has difficulties attracting young people, especially girls. The industrial programme is a heavily male-dominated programme (National Agency for Education, 2020), and the strong gender segregation in the programme reflects the gender segregation of working life – a pattern that is also present in other forms of vocational education (Ledman, Nylund, Rönnlund & Rosvall, 2020).

Thus, the industrial programme educates students for a male-dominated sector that offers many opportunities for employment and is in great need of a skilled labour force. The shortage of labour may have consequences for society, as it risks jeopardising the industry's supply of competence and future growth. This makes it particularly relevant for industries to develop appealing work environments in order to attract a large and qualified labour force (The Economic Council of Swedish Industry, 2017). The combination of factors – the high need for an educated workforce together with the unpopularity of the programme and the uneven gender distribution – makes students' vocational identity formation in the industrial programme especially worthwhile to study.

Overall aim and sub-aims

The overall aim of this thesis is to contribute knowledge about vocational identity formation among students within the industrial programme in Swedish upper secondary education, with a particular focus on their workplace-based learning. Three sub-aims, each connected to one or two of the articles (1-4), together provide knowledge of the overall aim of the thesis.

1. What learning strategies do vocational students use to become part of a work community, and how do these strategies relate to the formation of a vocational identity at the workplace? (Articles 1 and 4)

2. How do vocational students experience their identity formation in relation to a vocation within the industrial sector? (Article 2)

3. How do vocational students handle the division between theoretical and practical knowledge as they learn to become skilled industrial workers? (Article 3)

The first sub-aim is addressed by articles 1 and 4. Article 1 provides a general image of the learning strategies of both male and female students, while article 4 focuses explicitly on the strategies of female students. The second sub-aim is addressed in article 2, which examines students' vocational identity formation, while the third sub-aim, which is the focus of article 3, illuminates the students' ways of handling theoretical and practical knowledge. All these sub-aims together address different aspects of industrial students' vocational identity formation in Swedish upper secondary education, with a particular focus on their workplace-based learning

Outline of the thesis

This compilation thesis revolves around four articles that relate in different ways to vocational identity formation among students within the industrial programme. Chapter 2 presents previous research that is useful for this thesis within the research fields of vocational education and vocational identity. Chapter 3 presents the conceptual framework, which builds on situated learning together with the concepts of habitus, social categorisation and gender. Chapter 4 briefly describes the development of Swedish vocational education at upper secondary schools together with a short background of workplace-based learning and the Swedish industrial programme. Chapter 5 describes the methodological approach, data collection method and procedure, data analysis and ethical considerations. Chapter 6 summaries the four articles. In Chapter 7, the findings are discussed and a model of vocational students' vocational identity formation is proposed to understand the complex vocational identity formation process that students go through during vocational education, with a focus on workplace-based learning. Chapter 8 discusses the strengths and weaknesses of this study. The conclusions and practical implications of this thesis are presented in Chapter 9, and in Chapter 10 the thesis concludes with a few suggestions for further research.

2. PREVIOUS RESEARCH

Previous research on vocational education is a multifaceted field with different theoretical and empirical orientations. There are historical and comparative studies on vocational education (e.g. Helms Jørgensen et al., 2018; Persson Thunqvist, Hagen Tønder & Reegård, 2019; Thelen, 2004), studies of school-to-work transitions (e.g. Akkerman & Bakker, 2012; Helms Jørgensen, 2013; Tanggaard, 2007), studies of school-based learning and the school subjects of importance for students' vocational learning (e.g. Lindberg, 2003; Muhrman, 2016; Rosvall, Hjelmér & Lappalainen, 2017) and studies that consider vocational teachers' perspectives (e.g. Fejes & Köpsén, 2014; Köpsén, 2014; Vähäsantanen, 2013), to mention a few.

This chapter presents selected previous research about vocational students' formation of a vocational identity that is relevant for framing this thesis. The selected previous research is connected either to aspects of forming a vocational identity or to conditions and contexts related to vocational education and vocational students' experiences of vocational education. The chapter begins by presenting research on how vocational identities are formed between the contexts of school and work, and what characterises these two contexts. Thereafter, the chapter focuses on the academic/vocational divide and its impact on students' vocational identity formation. The following section of the chapter presents research concerning gender in vocational education and its influence on vocational identity formation. Finally, agency and adaptation to expectations as important aspects of vocational identity formation are illuminated.

Vocational identity formation between school and workplaces

An argument that has been discussed in previous studies is that vocational students must navigate between school and the workplace in their vocational education (e.g. Schaap, Baartman & de Bruijn, 2012; Virtanen, Tynjälä & Eteläpelto, 2014). Therefore, the assumption is that both the school and the workplace are important contexts for students' vocational identity formation. Another assumption is that school-based learning and workplace-based learning differ from each other as they provide students with different types of knowledge. Many scholars have been interested in the relationship between these contexts and students' navigation between school and the workplace.

Akkerman and Bakker (2012, p. 155) explain that: "When problems in school-work transitions are conceived as boundaries, establishing a productive relation between school and work practices can be conceived as a matter of boundary crossing". Sometimes, vocational students perceive a clear gap between school and the workplace, where school provides abstract and distanced knowledge while work is considered to provide more practical and hands-on knowledge (Tanggaard, 2007). When studying boundary crossing in the Swedish industrial programme, Berner (2010) found that school was viewed by vocational teachers as a safer environment for students than workplaces. At school, students were taken care of, fostered and allowed to make mistakes in a way that they were not permitted to do in workplaces. The vocational teachers with experience of industrial work helped the students to find connections and cross the boundaries between the world of school and the world of work (Berner, 2010).

Similarly to boundary crossing, the concept of transfer has been used to describe connections between school and workplaces, which is an important part of vocational students' identity formation. Kilbrink, Bjurulf, Baartman and de Bruijn (2018) found three types of transfer when they investigated how Swedish industrial students handled the challenge of learning in both school and work contexts. First, the students learned new things by using experience gained from previous mistakes to resolve problems that arose in new situations, but also learned new things such as welding by reading about them, listening to instructions and making them practical. Second, the students emphasised the importance of variation, in terms of both participating in different workplaces and being exposed to a variety of tasks, along with using experiences from their spare time in their vocational learning. Third, the students integrated theory and practice by using knowledge gained at school to address workplace problems and used theory to develop a deeper understanding of the work. Further, Kilbrink et al. (2018) noted that the transfer went in both directions between the contexts of school and work, comprising social and cultural learning as well as learning work-related knowledge. In another study of Swedish vocational students on the industrial programme, Gustavsson and Persson Thunqvist (2018) found that the knowledge that these students gained from school constituted a springboard for continual vocational learning at the workplaces. These students acted as agents as they shifted between learning at school and in workplaces and tried to use their knowledge in new contexts.

Other studies point to students lacking support in connecting the context of school with the context of work, resulting in significant individual responsibility being required

of them (Baartman, Kilbrink & de Brujin, 2018; Helms Jørgensen, 2013). De Bruijn and Leeman (2011) found that both students and teachers wished for the subject-oriented theory and skills related to practical work to be better integrated. However, the teachers complained that because they were required to prioritise examinations and tests rather than practical tasks, they found it difficult to support students in connecting theory and practice.

Previous research has pointed to how vocational students' learning in the school-based part of their education contributes in various ways to their vocational learning. Juul and Helms Jørgensen (2011) noted that vocational students developed confidence in the school-based part of their education, while Aarkrog (2005) showed that some school-based knowledge was crucial for the vocational students' entry into the workplace and for the vocation. In line with this, de Bruijn and Leeman (2011) suggested that vocational students themselves often wished to gain theoretical knowledge about their vocation before beginning workplace-based learning, in order to make better use of the time spent in the workplace. Similar findings were obtained by Kilbrink, Bjurulf, Olin-Scheller and Tengberg (2014), who found that also vocational teachers and supervisors on the industry and energy programmes thought that students needed to learn basic vocational knowledge from school before entering a workplace. Moreover, a literature review of vocational students' learning showed that school-based knowledge for which students could find a concrete use in their work was perceived as valuable (Schaap et al., 2012). When studying vocational students on the industrial programme, Berner (2010) found that they had an instrumental approach to their education and did not see the meaning of knowledge that was not directly connected to the

hands-on skills required in the workplace. However, a contrasting image of industrial students was presented in a more contemporary study, which instead suggests that industrial students wished for deep and reflecting knowledge and not only hands-on skills for performing specific tasks (Kilbrink et al., 2018). When the industrial students themselves discovered what they needed to learn to participate in a workplace community, their motivation increased and the theoretical knowledge helped them to understand their work as a whole (Kilbrink et al., 2014).

When switching the focus to workplace-based learning, vocational students often describe advantages of learning in workplaces compared to learning at school (Hegna, 2019; Juul & Helms Jørgensen, 2011; Lehmann, 2005; Tanggaard, 2007; Willis, 1977). As several studies have shown, vocational students and apprentices are usually attracted to the identity of a worker (Hegna, 2019; Lehmann, 2005; Tanggaard, 2007) and entering the world of work can be viewed as a sign of success and adultness (Lehmann, 2005). Workplace-based learning often represents an adult practice (Juul & Helms Jørgensen, 2011) that can offer an environment of inclusion and acceptance that is desired by vocational students (Hegna, 2019).

Other advantages of participating in workplaces found in previous research (Hegna, 2019) include students expanding their vocational learning in workplaces as they became part of a team, developing engagement for the vocation and feeling like skilled workers. The practical experience gained from workplaces can deepen students' understanding of the reality of work and the culture of the workplace (Renganathan, Ambri Bin Abdul Karim & Su Li, 2012). In workplaces, students are subjected to cultural and social norms and ideals which may

differ from the ones at school (Juul & Helms Jørgensen, 2011). It has been suggested that it is crucial for vocational students to present an active and engaged attitude at work, as their behaviour in the workplace may mean more for their assessment than their actual performance of work (Kilbrink et al., 2014). The importance of exhibiting the right attitude has also been noted in working life. For example, a study conducted in the automotive industry showed that within production, workers' motivation and attitudes are valued more highly than their concrete skills (Jürgens & Krzywdzinski, 2015).

Another aspect of becoming part of the workplace community is to take part in the humour and jargon that develops in workplaces, for example acceptable ways of talking to each other and which topics and questions are socially allowed (Holmes & Woodhams, 2013). Humour has been found to function as a stress release, and it can also have positive effects on vocational relationships (Ogunlana, Niwawate, Quang & Thang, 2006). "The lads" in Willis' (1977) classic study viewed humour and laughter as an important way of participating in the workplace community and as a sign of increased participation. In a later study, Kontio (2016) identified that teasing in humorous ways was an important part of the vocational identity formation for students on the vehicle programme. Another study of the vehicle programme found that the banter was characterised by jokes that belittled traditional femininity, and that students who were sensitive to jokes did not fit in on the programme (Kärnebro, 2013). Similar findings are presented in a study of construction workers who had to learn the "right" kind of humorous banter and small talk in a way that suited the discourse in the

workplace in order to achieve full membership of the workplace community (Holmes & Woodhams, 2013).

This section has provided descriptions of how students need to navigate between school and the workplace, and how these contexts influence students' vocational identity formation. In the next section, the different knowledge associated with school and work, as presented in the academic/vocational divide, will be focused on within the context of vocational education.

The academic/vocational divide and its impact on vocational identity formation

The academic/vocational divide is a prominent theme in research on vocational education and has been the subject of several studies (e.g. Brockman & Laurie, 2016; Niemi & Rosvall, 2013; Nylund, Rosvall & Ledman, 2017). The notion of the academic/vocational divide aims to capture the "knowledge hierarchy" in which academic knowledge in general is valued higher than vocational knowledge. It is also an historical expression of the divisions between the brain and the hand, the mental and the manual, the intellectual and the practical (Rose, 2008). What, then, does this historical and institutionalised division between academic and vocational knowledge mean for vocational students' formation of a vocational identity?

The academic/vocational divide is manifested in the Swedish upper secondary school system, as the programmes are divided into academic and vocational education (Nylund et al., 2017). Programmes preparatory for higher education are

often considered to be permeated by theoretical knowledge, while vocational programmes are associated with practical knowledge. In vocational programmes in Swedish upper secondary education, practical subjects are often regarded as synonymous with vocational subjects while theoretical subjects are equated with general subjects (Panican & Paul, 2019). This division between theoretical and practical knowledge has been criticised for not being compatible with the complex reality, in which the boundaries between theoretical and practical knowledge are often blurred (e.g. Hyland, 2002; Rose, 2008).

Even if this division is strong within the education system, it is quite difficult to distinguish between academic and vocational education or between theoretical and practical knowledge (Hyland, 2002). As Niemi and Rosvall (2013, p. 597) argue, "The division is fallacious because one cannot do (advanced) practical work without simultaneously doing intellectual work". A consequence of the academic/vocational divide is that it reveals presumptions about the intellectual abilities of different people, where low intelligence is attributed to people who "do the work". This can have consequences for how young people define themselves; for example, bright vocational students may identify themselves as stupid due to their lack of academic abilities (Rose, 2008).

Another side of the higher status generally ascribed to academic rather than vocational knowledge is that academic knowledge is often suggested to be too abstract to be relevant in real life (Hodkinson, 1989). Despite this criticism, academic knowledge is still used to strengthen vocational education, while vocational knowledge is rarely used to infuse academic programmes[1] (Rose, 2008). Overall, the different "sides" of the

[1] In this thesis, academic programmes are referred to as programmes preparatory for higher education.

academic/vocational divide rarely seem to recognise the value of each other (Hager & Hyland, 2003). Even though there is a political wish to achieve parity of esteem between vocational and programmes preparatory for higher education, they are still viewed as completely different (Brockman & Laurie, 2016).

The division between academic and vocational knowledge influences not only educational institutions (Nylund et al., 2017) but also the general view of vocational education, as this is intended to be a suitable choice for young people who have difficulties with theoretical courses; this in turn lowers the status of vocational education (Billett 2011; 2014). Low expectations of vocational students have been found among parents, educators and students on programmes preparatory for higher education (Nylund et al., 2017). Furthermore, Brockman and Laurie (2016) found that the low expectations from teachers soon were turned into a self-fulfilling prophesy for vocational students. In a Swedish context, teachers in general subjects have been found to ascribe a low value to vocational knowledge (Nylund et al., 2017). Another example of how the academic/vocational divide is expressed through a belittling of vocational knowledge is that "people who are mainly familiar with academic education continue to devalue apprenticeship programmes in general" (Duemmler, Caprani & Felder, 2020, p. 384).

Thus, a consequence of the academic/vocational divide is that it can create a blindness to the skills required for vocations (Duemmler et al., 2020). Billett (2014) argues that this belittling and generalising of today's vocational knowledge (at least in a Western context) goes back to the historical low standing of manual vocations that has been expressed since Hellenic Greece. Billett (2011) states that vocational education

is still affected today by general societal views of "the lack of complexity and demands for occupations that are not seen as prestigious and also assumptions about the capacities of those who perform such work" (p. 40). Furthermore, Billett (2014) points out that the undeserved disparaging of vocational education is currently, as well as historically, governed by powerful elites that have no experience of or insight into the kinds of vocations they belittle. Hence, the outsider rather than insider perspective has been leading and controlling the general view of vocational education, historically as well as currently (Billett, 2014).

In addition, societal class and gender distinctions contribute to the lower esteem of vocational education in the dominant perception of status, since young people from non-academic traditions commonly prefer a faster route to working life than the academic route (Bourdieu & Passerson, 1970). However, research on vocational education has challenged dominant and one-dimensional conceptions of prestige, demonstrating how the respect and value of vocational education vary among different groups of young people who are in the midst of developing their vocational identities (e.g. Brockmann, 2013; Hegna, 2019; Kontio, 2016).

Gender in vocational education

Gender in vocational education has lately come to constitute an important issue in research on vocational education, particularly on gender-segregated vocational programmes (e.g. Kontio, 2016; Korp, 2011; Ledman et al., 2020). Studies of gender-segregated vocational programmes have had a primary focus on boys rather than girls (Ledman et al., 2020) and studies of female students' vocational identity formation

in male-dominated vocational programmes are, to the best of my knowledge, lacking. Vocational programmes reflect the overall gender order found in the labour market. Therefore, it is important to consider gender issues in general, because the vocation itself can be gendered. Girls or women in male-dominated work and education have been found to be subjected to different barriers due to their gender (e.g. Colley, 2006; Gustavsson & Fogelberg Eriksson, 2010; Paola Sevilla, Sepúlveda & José Valdebenito, 2019).

Previous research has shown that different gender-related barriers have been visible in girls' choice of education from an early stage. For example, Silverman and Pritchard (1996) discovered how gender stereotypes were expressed among middle school pupils on technological courses. The girls who participated in these courses expressed joy and pride at working with their hands, while at the same time being discouraged from such work as it was viewed as unsuitable for women. The guidance that pupils at compulsory schools receive before applying for upper secondary school has also been shown to reinforce and reproduce gender segregation and gender traditional choices (Lappalainen, Mietola & Lahelma, 2013). In addition, Struthers and Strachan (2019) found that girls sometimes worried that male-dominated work would be impossible to integrate with a feminine identity. Studies have found that the girls who, despite various barriers, apply for male-dominated vocational education often desire to distance themselves from traditionally feminine vocations and wish to try something different (Lappalainen et al., 2013; Paola Sevilla et al., 2019). However, Paola Sevilla et al. (2019) discovered that girls in male-dominated vocational education expected to face a lot more barriers in their working life than their male co-students.

When girls have entered male-dominated vocational education, they can be faced with invisible barriers reflected in the discourse of downplaying gender (Paola Sevilla et al., 2019). This discourse has been found among both vocational teachers and students, and tends to conceal the problems that women in male-dominated businesses may face (Lappalainen, Lahelma, Pehkonen & Isopahkala-Bouret, 2012; Paola Sevilla et al., 2019). When the effects of gender structures are downplayed, women often end up blaming themselves for being faced with prejudices and discrimination (Colley, 2006; Korvajärvi, 2002). The phenomenon of downplaying gender has connections with the concept of genderless gender, which can be defined as "created when mute or hidden gendering converges with the gender-neutral rhetoric of the individual self: gendered structures, processes, cultures and subjectivities are taken for granted and people are treated as persons in their own right, *without* gender" (Lappalainen et al., 2012, p. 298). Viewing gender as totally irrelevant in working life has sometimes even been found to constitute an aspect of a vocational culture or code (Korvajärvi, 2002; Lappalainen et al., 2012; Risberg, 2004).

Other studies have shown that female students in male-dominated vocational programmes are expected to master the traditionally masculine humour and banter (Kontio, 2016; Korp, 2011). Korp (2011) found that this jargon often included belittling jokes about femininity. In order to fit in on the programme, the female students and teachers spoke of having to turn themselves into men. Behaviours that were interpreted as feminine, book-smart or gay were excluded from the community on this programme. Thus, structures and hierarchies related to both gender and class were reproduced within the education (Korp, 2011).

One barrier that, at first glance, can be mistaken for an opportunity is the overprotection and praise of female students regarding what is perceived as their special feminine qualities as workers, like being careful and thorough. Even though this may be done with good intentions, it could lead to discrimination in the form of benevolent sexism, which can result in fewer opportunities for female students to participate in a workplace community (Paola Sevilla et al., 2019). Gender stereotypes as barriers have not only been explored among students, but have also been found among managers in a male-dominated industrial company (Gustavsson & Fogelberg Eriksson, 2010).

As Lappalainen et al. (2013) suggest, there can be some advantages to being a female student in male-dominated vocational education. First, they argue that girls who make traditionally masculine education choices are met with more respect than boys who choose what are labelled as female programmes. Second, girls could benefit from advantages in application procedures when applying for traditionally male vocations, as they stand out from the other applicants. Third, an advantage for some girls when participating in a male-dominated vocational education is that they feel more familiar and relaxed in the company of boys than in the company of other girls. In accordance with this, Kärnebro (2013) found that girls on the vehicle programme much preferred to participate in the masculine and humorous jargon of the male vehicle students than to adapt to the language of middle-class femininity (Kärnebro, 2013). Thus, female students in male-dominated vocations have described both barriers and advantages in relation to their gender.

After presenting the influence of gender on students' vocational identity formation on vocational programmes, the

focus will now turn to how vocational identities are described in previous research as formed through agency and adaptation.

Agency and adaptation to expectations

Individuals' agency has been shown to be closely intertwined with the process of vocational identity formation (Klotz, Billett & Winther, 2014; Tynjälä, 2013). The quotation below presents a way to describe what this connection looks like.

> … how individuals exercise their agency modifies their identity. Similarly, how individuals perceive their professional identity reflects how they exercise agency. At work, employees not only use their skills and knowledge, but they also identify themselves with the work they do (Tynjäla, 2013, p. 20).

Expressions of agency among vocational students have been identified by Klotz et al. (2014), who found that students who trained to become industrial clerks showed agency in their free choice of participation and their interest in the specific vocation. Alongside interest, engagement in the work has been emphasised as a crucial aspect of forming a vocational identity among apprentices (Chan, 2014; 2019) who, just like vocational students, are novices in their vocation. However, individual engagement and interest are not sufficient. As several studies have shown, it is important to let newcomers (such as vocational students and apprentices) take part in productive and collective work processes, rather than leaving them merely to observe others or to work by themselves (e.g. Klotz et al., 2014; Lave & Wenger, 1991).

Other studies have identified adaptation in accordance with the ideals of the vocation and the workplace community as a crucial aspect of apprentices' and students' vocational identity formation (Chan, 2014; Wyszynska Johansson, 2018). Behaving in line with the ideals of a vocation can sometimes go beyond merely acting in accordance with the norms of the vocation, and can stretch out to involve aligning even one's thoughts and feelings with the vocation and the workplace community, as noted by Chan (2014). Wyszynska Johansson's (2018) investigation of vocational students on the child and recreation programme showed that students adjusted their ways of acting to meet the needs and expectations of others. These students therefore had to interpret and understand the expectations in order to adapt to the vocation, but they also needed to recognise their own vocational knowledge as specialised (Wyszynska Johansson, 2018).

This relates to the students' ability to reflect on which types of competences a vocation requires and on one's own strengths and weaknesses, which in turn can improve the vocational identification process (Chan, 2019). It has also been found that students become more knowledgeable and competent within their vocation if their vocational identity formation is supported by instructors who give them trust and responsibility but are also perceptive to when support and guidance are not needed (Mikkonen, Pylväs, Rintala, Nokelainen & Postareff, 2017). Overall, acknowledgement from others within vocational education, such as instructors (Wyszynska Johansson, 2018) or the workplace community (Chan, 2019), seems to further facilitate the students' vocational identity formation.

However, not all students who are educated for a specific vocation identify and align with it. This is, for example, visible

within a strand of research that focuses on vocational identity formation among vocational students in a Nordic context. A Norwegian study found that some vocational students were oriented to a career in their intended vocation, while other students were ambivalent and unsure about whether it was a future vocation for them (Reegård, 2016). According to a Danish study, a vocational identity does not have to be locked to a specific type of work, but can rather be understood as flexible and open to different opportunities in working life (Helms Jørgensen, 2013).

Another important aspect of vocational identity formation is that it has been found to connect to the ways that vocational students handle different types of boundaries, for example as they relate to different sorts of feedback (Wyzsynka Johansson, 2018) and expectations (Korp, 2011) from school and work. Korp (2011) found that students on the vehicle programme, as a consequence of different expectations, were torn between the expectations of being a careless, tough and masculine vehicle student on the one hand and of being a trustworthy worker on the other.

3. CONCEPTUAL FRAMEWORK

This chapter presents the theoretical framework that originates from a situated learning perspective on vocational identity formation, which implies that identities are formed through participation in communities of practice (Lave & Wenger, 1991). In this perspective, concepts such as communities of practice, trajectories and recontextualisation are useful for analysing vocational identity formation. These concepts are further complemented by the concepts of habitus, social categorisation and gender as analytical tools with which to understand processes of power and status in the process of vocational identity formation.

Forming a vocational identity through participation in communities of practice

A community of practice is a "joint enterprise as understood and continually renegotiated by its members". It functions through "the relationships of mutual engagement that bind members together into a social entity" and it produces "the shared repertoire of communal resources (routines, sensibilities, artifacts, vocabulary, styles, etc.) that members have developed over time". (Wenger, 1998, p. 2)

Vocational identity formation among vocational students is analysed in this thesis from a situated learning perspective, in which vocational identity formation is seen as a social learning process that takes place through participation in communities

of practice (Lave & Wenger, 1991). Thus, social relationships are at the core of forming a vocational identity, and the possibilities for gaining new knowledge lie in being granted access to participation in a community of practice (Lave & Wenger, 1991). Participating in a community of practice is about finding out what matters there, learning which types of knowledge are important and how social relationships are formed (Wenger, 2010a). Another important aspect of participation involves engagement. As people participate in activities and collaborate with each other, they find out and learn how their knowledge and their own identity relate to the community of practice. Using their imagination, they can picture other individuals within their vocation (for example industrial work), and they can position themselves as one of them. This type of reflection can be central in the process of vocational identity formation (Wenger, 2010a). Thus, by being an active part of a community of practice, individuals learn not only the specific chores and skills of the trade, but also how to become new people, for example "a welder", "a carpenter" or "a teacher" (Lave & Wenger, 1991). This implies that participation in a community of practice is not merely about sharing concrete or technical skills, but also about social dimensions that relate to the forming of an identity (Wenger, 2010a).

Individuals must make meaning while participating in a community of practice in order to form an identity. However, individuals have different needs in terms of belonging to various communities of practice; belonging to one community of practice can be crucial for an individual's identity formation, while other communities of practice can be more peripheral and quite insignificant (Wenger, 2010a). Depending on how individuals wish to belong to a certain community of practice,

they need to align their actions within the community of practice in order to be able to participate in it successfully. It is however important to note that alignment is not about blindly and passively adapting to the norms of the community of practice. It is rather an active process of negotiation (Wenger, 2010a). In addition, the individual may be included and treated well in some communities but rejected and questioned in others.

Of course, a community of practice does not exist in a societal vacuum; it is related in various ways to other communities of practice and to broader social structures (Wenger, 2010a). One criticism of the theory of communities of practice is that power relationships have not been explicitly addressed (Fuller, 2007). Although power is not central to the theory, Wenger (2010a) implies that a community of practice can be filled with micropolitical processes of negotiation, conflicts and power hierarchies among its members. Power and learning are thus integrated and impossible to separate. However, it is individuals who negotiate the meanings of participation through their agency, and it is their participation that produces the practice (Wenger, 2010a).

Recontextualisation of knowledge

Recontextualisation refers to the way knowledge is moved, changed and used between various contexts (Evans, Guile, Harris & Allan, 2010) or, in Wenger's (2010a) terminology, communities of practice. Evans et al. (2010) claim that recontextualisation applies to both hands-on and theoretical knowledge, both of which are context dependent, and to the way knowledge is changed to be put into work in a specific context. A context, in Evans et al.'s (2010, p. 3) words,

"extend[s] to 'the schools of thought', the traditions and norms of practice, the life experiences in which knowledge of different kinds is created". This implies that knowledge is not only moved but also has the power to change people and the social practices in which they participate (Evans et al., 2010). How then is the concept of recontextualisation useful in understanding the reality of vocational students? As Gustavsson and Persson Thunqvist (2018) argue, it helps us to notice the different ways in which knowledge is used and moved back and forth between the school and the workplace. In developing a vocational identity, students have to find ways to put different forms of knowledge to use in their current vocations, and this applies to theoretical knowledge from school as well as to hands-on skills (Gustavsson & Persson Thunqvist, 2018).

Nonetheless, Gustavsson and Persson Thunqvist (2018) found that the knowledge from school and the workplace could sometimes lead students in the same direction. For example, the learning that took place at school could function as a starting point for continuing to develop vocational skills in the workplace. This knowledge could be recontextualised between different contexts, for example the classroom, the workshop at school, the workplace for the workplace-based learning and the students' hobbies. As described, recontextualisation is not merely about the students bringing what is perceived as abstract and theoretical knowledge from school to apply it in the form of hands-on, "real" skills in the workplace. Instead, knowledge changes as it is put to work in different contexts, both at school and in the workplace. In order for knowledge to be put to work in contexts other than the one it originally came from, it needs to be recontextualised through changing and engaging with the new context (Evans et al., 2010).

In the students' workplace-based learning, the knowledge gained from school can be tested to solve different problems that arise. However, there is a greater chance that this will happen if workplaces offer supportive learning environments that engage students to observe work, and allow them to ask questions and be active. As the learner (in this thesis, the vocational student) forms strategies in order to integrate the knowledge from work with the knowledge from school, recontextualisation takes place. Through the strategies that the students use, new ways of acting and knowing may be formed (Evans et al., 2010). These strategies may come to constitute an important part of the vocational students' trajectories, which are described in the next section.

Using trajectories to follow identity formation

The concept of trajectory refers to the path of a vocational identity that is formed within and across communities of practice (Wenger, 2010b). Vocational identities form different trajectories that never reach a permanent or final destination, but are temporary and changeable over time, incorporating the past, the present and the future (Wenger, 2010b).

> A sense of trajectory gives us ways of sorting out what matters and what does not, what contributes to our identity and what remains marginal (Wenger, 2010b, p. 134).

Trajectories are not straight and predictable; on the contrary, they can take different turns and influence people's lives in many diverse ways (Wenger, 2010b). Individuals' experiences

of one community of practice may change their preconditions for participation in another community of practice; they can transform their frame of reference and affect their ways of acting and interacting. If someone aims to have a long-term career in their current vocation, their trajectory will take a different turn than if they only see their current work as a short-term way of paying their bills (Wenger, 2010b).

The notion of the learning trajectory of legitimate peripheral participation (LPP) that was introduced in the work of Lave and Wenger (1991) refers to how newcomers' learning and the development of identities are formed in the process of becoming a full member of a community of practice. LPP implies that a newcomer in a community of practice is introduced in time to new and more complex ways of participating. It involves providing the newcomer with access to a greater extent of participation, which gradually grants the novice the role of an equal and full participant. This means that, ideally, the trajectory of peripheral legitimate participation eventually leads to full participation (Lave & Wenger, 1991).

Through such a trajectory, new workers (in this thesis, vocational students) contribute through smaller or less qualified chores on the periphery of the community of practice. Since the vocational students are not yet knowledgeable and experienced professionals, they have a legitimate reason for not participating fully in the work (Lave & Wenger, 1991). Newcomers can discover and identify different trajectories represented by the more experienced workers, who can be viewed as living models of what different forms of participation may lead to. Newcomers must still find their own identity and ways to participate, but they are nonetheless influenced by the trajectories embodied by the other

participants in the community of practice (Wenger, 2010b). However, trajectories do not always lead to inclusion and increased participation, as Wenger (2010b, p. 134) points out by giving examples of a number of possible trajectories that lead to different forms of participation in a community of practice.

- *Inbound trajectories* – an individual may be on a trajectory with the prospect of becoming a full participant in the community of practice.

- *Peripheral trajectories* – a trajectory that, for various reasons, never leads to full participation in a community of practice. The individual never becomes a full participant, and can remain on the periphery.

- *Outbound trajectories* – a trajectory that leads away from a community of practice. The individual's intention is to leave it to develop new relationships in other communities of practice.

These trajectories show that participation in a community of practice can lead to both inclusion and exclusion. The question that arises is what is required to be included and who is granted access to participate in a community of practice. For various reasons, an individual may be rejected and excluded if his or her competence is not suitable for the community of practice. If the person has not formed a deep attachment to the community of practice and does not assign it meaning for identity formation, it is not a big deal to leave the community of practice. If, on the contrary, someone is rejected from a community of practice that he or she strongly identifies with and really attempts to belong to, exclusion from it can be a

distressing experience of marginalisation (Farnsworth, Kleanthous & Wenger-Trayner, 2016). Gaining access to a greater degree of participation is an empowering experience, while lack of access is disempowering. Being a novice in a community of practice is a position that relates to processes of power in different ways, as it implies both power and powerlessness. However, an inexperienced newcomer does not necessarily always have to be at the bottom of the hierarchy. For example, Fuller and Unwin (2003) argue that apprentices can take a teacher's position of power, based on their previous experiences, to help others with more experience to learn in workplaces.

Social background and social categorisations

The perspective of situated learning provides valuable insights for analysing vocational identity formation as a social process of inclusion and participation in communities of practice. However, other processes that take place in identity formations are sparsely covered from this perspective. Social background, such as class and gender, is relevant in processes of identity formation to analyse who is invited to participate and who has difficulty accessing different workplace communities (e.g. Colley et al., 2003; Hodkinson, Biesta & James, 2007; Sawchuk, 2003). As Sawchuk (2003) points out, people are "hardly free to participate in any way they choose" (Sawchuk, 2003, p. 6). Individuals' opportunities to be included in different communities are related to their social background, which is expressed through their habitus (Bourdieu, 1977). Habitus influences the ways in which individuals act and relate to the social world. Individuals' habitus forms during their

upbringing, through the habits developed in their families and through their school background. Habitus can be understood as embodied capital that is expressed in individuals' often unconscious ways of acting (Broady, 1998), their personal interests, their relationships and their ways of talking, walking and dressing (Bourdieu, 1977).

When it comes to participation in different educational communities, habitus is often used to explain working-class students' difficulties when entering university. However, the importance of having a habitus that is appropriate for participating in different types of vocational education is rarely emphasised (Lehmann & Taylor, 2015). A habitus that includes familiarity with manual work and tools has proven to be a great advantage in vocational education and for apprentices (Lehmann & Taylor, 2015). The importance of habitus shines through in the narrative of the transition into a new job below.

> Interviewer: Do you remember your first day on the job?
>
> Bryan: It was just a normal day. I've been working on cars with my dad since I was four or five. It's just another day.
>
> (Lehmann & Taylor, 2015, p. 615)

As exemplified in the quotation above from the study by Lehmann and Taylor (2015), the young apprentices had been involved in manual work since their childhood, for example fixing things in the garage, often guided by their parents. In addition, the majority of the young apprentices in Lehmann's (2005) study had experienced that manual work was seen as more important than intellectual abilities during their childhood. As one of the apprentices puts it: "They (my

parents) said it doesn't matter if you're stupid, as long as you work." (Lehmann, 2005, p. 336). Previous experiences and familiarity with manual work can result in a naturalness for this kind of work which reflects the apprentices' habitus (Lehmann & Taylor, 2015).

In order to more fully grasp habitus in connection with vocational identity, Colley et al.'s (2003, p. 488) notion of a "vocational habitus" is used in this thesis. This term refers to "a process of orientation to a particular identity, a sense of what makes 'the right person for the job'". This process includes incorporating aspects of vocational behaviours, attitudes and values, as well as looking and feeling in accordance with the intended vocation (Colley et al., 2003). To pursue a certain vocational identity, it must be within someone's horizon of possibilities, which is influenced by social background such as gender, family, interests and previous experiences that orient the individual towards a specific vocational habitus and make him or her believe that they are right for that vocation.

It has now briefly been explained how individuals' social background and habitus influence their vocational identity. Sawchuk (2003) argues that the communities of practice in which people participate also influence their habitus. Or, as Lave and Wenger (1991) put it, we learn how to become new people in different communities of practice. However, becoming a new person results not only in who somebody is, but also in who they are not. Comparing oneself with others constitutes a crucial part of an identification process. Just as objects can be categorised into different groups, people can be categorised in relation to each other in terms of similarities and differences (Jenkins, 2000). Categorisation is a constantly ongoing social process in which people label both themselves

and others as belonging to different categories of people. It is a matter of both external and internal forms of identification, which means that individuals identify with others, while others in turn identify with them. These processes are mutually integrated and affect each other (Jenkins, 2000).

According to Jenkins (2000), internal identification refers to self-identification or group identification that is internally oriented and revolves around the way that people understand themselves and the groups in which they participate, while external identification is about the way individuals categorise other people. Individuals' thoughts about who they are matter as much as other people's opinions about who they are. When people label other individuals using different categories, they can react with either internalisation or resistance. So, it becomes clear that the way individuals view themselves is not just an individual phenomenon; social categorisations are about social relations. Self-image is not only about how people define themselves but also about how they want to be seen by others. A public image is rather about the way others categorise a person or a group. If the self-image and the public image are similar, they reinforce each other in an identity (Jenkins, 2000).

Gender in and as communities of practice

The way that individuals categorise each other, as described above, can also be related to expectations of gender (Francis & Paechter, 2015). The concept of doing gender implies that gender is recurrently accomplished through everyday routines in communities of practice (West & Zimmerman, 1987). Thus, gender is done in different ways depending on the situation

(Paechter, 2003). All our interactions and activities in everyday life are interpreted in light of our gender, as masculine or feminine. Even when someone acts in a non-traditional way in relation to their gender, they are still doing gender because doing gender means always being at the risk of gender assessment. Individuals can take on many different social roles in life, such as a student, a worker, a parent and a spouse. These types of roles can come and go in life, yet individuals are always interpreted as representatives of their gender (West & Zimmerman, 1987).

The idea of masculinity and femininity as communities of practice as developed by Paechter (2003; 2006a) can be understood as local communities of practice in which gender is done in different ways. Identities are formed, in the local communities of practice of masculinity and femininity, through adaptations to different norms and expectations (Paechter, 2003; Tanggaard, 2006) which are not firm and stable over time, but are continually negotiated (Paechter, 2006b).

In local communities of practice, such as masculinity and femininity, power is embedded and closely related to knowledge; some knowledge is coded as masculine while other knowledge is traditionally understood as feminine, and this in turn influences the power relations between men and women (Paechter, 2003). The power relations of the local gendered communities of practice contribute and relate to power relations in wider and more general communities of practice (Paechter, 2003).

Just as in all other communities of practice, the participants learn more about the practice (which is constantly changed and negotiated) while approaching full participation in a certain type of masculinity or femininity. If a participant does not understand what expectations come with being a woman

or a man in a community of practice, they will not be able to go beyond peripheral participation (Paechter, 2003). Learning what it means to be a woman or a man in a particular workplace is an important aspect of vocational identity formation. What individuals learn about these issues has the potential to influence their future hopes and aspirations for working life (Tanggaard, 2006), which in turn shape their learning and vocational trajectories (Wenger 2010b).

Theoretical framing – a perspective on vocational identity formation

The theoretical starting point for this thesis originates from a situated learning perspective on vocational identity formation in communities of practice. Through participating in a community of practice in a workplace, individuals learn how to act in alignment with the social norms and ideals of the workplace. Social and relational aspects are therefore at the core of vocational identity formation. The individual needs to be granted access to different aspects of the community of practice, such as activities, interactions and knowledge. Further, developing a vocational identity is about finding ways to put various forms of knowledge to use in one's vocation, which implies recontextualising knowledge between different communities of practice.

How vocational identities are formed in and between communities of practice shapes individuals' learning trajectories (Wenger, 2010b). Several possible learning trajectories lead to different forms of participation in a community of practice, and this process of vocational identity formation can be followed over time. The concept of social categorisation provides a deeper understanding of how

vocational identities are formed in terms of how individuals identify with others, while others in turn identify with them (Jenkins, 2000). The concept of social categorisation boils down to how individuals' understanding of who they are is inseparable from other people's opinions and perspectives of them. Other people's ways of labelling a group or an individual can be met by either internalisation or resistance, which is closely connected to the process of vocational identity formation (Jenkins, 2000).

In order to deepen the understanding of how social background affects individuals' opportunities to participate in different communities of practice, the theoretical concept of habitus (Bourdieu, 1977) is used, and vocational habitus (Colley et al., 2003) in particular is applied to understand how individuals align with the social norms of their intended vocations. To "become someone" is possible only in interaction with other individuals, a process that is influenced by social power relations. Through these power relations, issues concerning gender can be actualised. Paechter's (2003) way of understanding masculinities and femininities as different communities of practice provides a useful perspective for better understanding how vocational identities are formed in the local gendered community of practice of industrial work.

4. RESEARCH SETTING

In this chapter a brief description of vocational education in Sweden, in particular upper secondary vocational education, is provided. Then follows a more detailed presentation of the industrial programme, which is the particular focus of this thesis.

Vocational education in the Swedish context

Swedish initial vocational education was constructed in 1918 as a state governed system (Hedman, 2001; Nilsson, 1981), although on a small scale. Up until then vocations were learned through apprenticeships conducted within the different trades and not as a part of a governmental education system (Andersson, Wärvik & Thång, 2015).

When vocational learning became a state issue, the apprenticeship was supplemented by school-based education. Historically, however, vocational education in Sweden has changed more than once and the labour market partners' influence on vocational education has altered over time. For instance, during and after the Second World War (1940-1955), the main labour market parties (the union LO and the employer organisation SAF) were actively involved in negotiating a system for qualified workplace training regulated by collective agreements as a complement to initial school-based vocational education (Olofsson, 2005). For a number of reasons, these ambitions were never implemented in a fully developed apprenticeship system, like in countries with a dual

system for vocational education (e.g. Denmark and Germany) (Helms Jørgensen et al., 2018).

Vocational schools expanded significantly during the 1950s in connection with rapid industrial development. However, the governance, organisation and practices of these schools were quite diverse, and in the late 1960s the government took initiatives to integrate them into a comprehensive upper secondary school system (Helms Jørgensen et al., 2018). Since the late 1960s, and up until today, initial vocational education has been part of state-governed upper secondary school. A ground-breaking 1971 reform established a unified upper secondary school, called *gymnasium*, which included vocational education. The curricula for the new two-year vocational gymnasium programmes were more general than the former vocational schools and had a broad preparatory character. The specific vocational qualifications were to be acquired through work-based training after completion of the programmes (Helms Jørgensen et al., 2018).

Since the 1971 reform, vocational education at upper secondary school has been reformed twice. A reform in 1991 extended the duration of vocational programmes from two to three years and offered eligibility to higher education in all programmes. This was a step to further develop the integration (and reduce the divide) between the general and vocational gymnasium programmes (Helms Jørgensen et al., 2018). A reform in 2011 represented a break with the long-term direction of integration between general and vocational education in Sweden. This reform emphasised the difference between the two types of programmes. The vocational content was strengthened, and a new apprenticeship programme was introduced (Persson Thunqvist, 2015). One of the aspirations of introducing the apprenticeship programme was to facilitate

the vocational students' transitions between school and employment. However, in the academic year of 2018/2019, only twelve per cent of vocational students were enrolled on the apprenticeship model (National Agency for Education, 2019). Another consequence of the 2011 reform is that eligibility for higher education is no longer automatically granted within vocational programmes (Andersson et al., 2015).

Today, the Swedish upper secondary school system consists of 18 different education programmes, six of which are preparatory for higher education and the remaining twelve are vocational programmes (National Agency for Education, 2020). All these programmes last for three years, and the vocational programmes include mandatory periods of workplace-based learning. Every vocational programme is provided as either a school-based programme or an upper secondary school apprenticeship programme. In an upper secondary school apprenticeship, at least fifty per cent of the three-year programme consists of workplace-based learning, while the corresponding figure for the school-based programme is a minimum of fifteen weeks (National Agency for Education, 2018). This is the only aspect that separates the two alternatives; the courses and education goals are equal (National Agency for Education, 2021).

The purpose of workplace-based learning is that students should acquire vocational knowledge (through participation in one or more workplaces) and develop a vocational identity along with a sense of understanding of the vocational culture and community (National Agency for Education, 2018). It is the responsibility of the school that each vocational student is provided with high-quality workplace-based learning where he or she is treated well and can acquire valuable vocational

knowledge. Each student is to be provided with a supervisor at the workplace who has relevant knowledge and experience, to take care of the student (National Agency for Education, 2018).

The fifteen weeks of workplace-based learning that vocational students in the school-based model are supposed to be guaranteed as a minimum can sometimes prove to be shorter, as schools often lack sufficient resources to provide these weeks. The consequences of this are often a shift in responsibility from the school to the students when it comes to obtaining a workplace-based learning place (Lindahl, 2011). Workplace-based learning brings important advantages of creating bonds between the students, the school and the workplaces. According to international evidence, increasing the workplace-based learning in vocational education could be a way to successfully address the issue of youth unemployment (Lindahl, 2011).

The industrial programme

The industrial programme is one of twelve vocational education programmes in Swedish upper secondary education. The industrial programme prepares students for various type of industrial work, such as welding, machine operation and maintenance work. In addition to vocational courses, the programme includes a certain number of theoretical school subjects such as mathematics, Swedish and English. The students are also offered the option of studying more of these subjects in order to gain basic eligibility for higher education (National Agency for Education, 2021).

The industrial programme has four different specialisations: operations and maintenance, process engineering, production

and machine technologies, and welding technology. The most popular specialisation is production and machine technologies, followed by welding technologies (National Agency for Education, 2020). The industrial sector for which the industrial students are educated is affected by accelerating technical and digital development, and the demand for an educated labour force will most likely continue to be high (National Agency for Education, 2020).

In the academic year 2019/2020, about 355 000 Swedish youths were enrolled in upper secondary school, with 102 000 of them studying vocational programmes. The industrial programme was among the three least popular programmes, with 4554 students enrolled and only 533 of them studying the apprenticeship model. 70 per cent of the students who began their education in the industrial programme in 2016 graduated three years later from the same programme. About a third of the students who started the programme in 2016 left upper secondary school with basic eligibility for higher education (National Agency for Education, 2020). The industrial programme is male dominated, and in 2019/2020 just over 89 percent of the students were boys. About 45 per cent of the industrial students have parents with post-secondary education (National Agency for Education, 2020). In general, vocational programmes tend to have a higher percentage of working-class students than the programmes preparatory for higher education, which enrol mostly middle-class students (Persson Thunqvist & Hallqvist, 2014).

5. METHOD

This chapter provides a description of the research approach, the selection procedure for schools and vocational students, data collection and data analysis. Thereafter, reflections on the researcher role are provided along with discussions of ethical considerations of the research conducted in this thesis.

Qualitative research approach

This thesis, which comprises four articles, uses a qualitative research approach based on qualitative semi-structured interviews with students enrolled on the industrial programme in Swedish upper secondary education. By using a qualitative research approach, the study was able to focus on understanding the subjective perspectives and experiences of the students (Flick, von Kardoff & Steinke, 2004). Capturing the students' perspectives was important in order to understand how they experienced their participation in workplace communities and what their own thoughts were about their intended vocation and whether or not they identified with it. By using semi-structured interviews, the students could share their experiences of participation in workplaces freely, and they spoke openly about what was important to their vocational identity formation.

Selection of schools and participants

The selection of schools and participants was carried out on two occasions for two sets of data, which were used in the four articles in this compilation thesis. In the first round of data

collection, seven schools were strategically selected. The criteria for choosing schools were that they were located in both medium-sized cities and rural areas within an industrially dense region. In addition, all schools had to offer the industrial programme. Six of the seven schools agreed to participate in the study. The six schools that agreed to participate were contacted about the research project, and the person responsible for the industrial programme (often a principal or a teacher) was given written information about the aim of the study and what participation involved. Due to their locations, the schools had different types of relationships and collaborations with local industrial companies of different sizes, from large multinational companies to small and medium-sized enterprises, including both manufacturing and process industries. Some schools collaborated closely with a specific local industrial company on students' workplace-based learning placements, while other schools in the region instead placed their students in a larger number of companies, often small and medium-sized enterprises.

After the schools had been selected, the vocational students were selected from the six schools that had given their consent to participate in the study. The person responsible for the industrial programme informed all the industrial students about the study. All students were invited to voluntarily participate in the interviews. However, a criterion for selecting the students was that they had experience of participating in workplace-based learning. All industrial students available at the schools that agreed to participate in the interviews were selected. In this first round of data collection, 44 interviews (11 girls and 33 boys) were conducted.

In the second round of data collection, additional data were selected for article 4 (approximately three and a half years

after the first round had been completed). The same criteria and procedure for selecting schools and students were applied as in the first round of data collection, with the only difference being that female students were selected exclusively. In this second round of data collection, nine female students were added to the eleven female students who had been interviewed in the first round of data collection. The girls interviewed for the second round were enrolled on the industrial programme at the five of the six schools that had been selected in the first round, except for one of the girls who studied at a school in a separate region that was not represented in the first round. The participating students in the different articles are presented in Table 1. In the second round of data collection, the interview guide used in the first round of data collection was expanded with additional questions about gender. For example, these questions regarded experiences of being a female student in a male-dominated workplace and in male-dominated vocational education.

In total, 53 industrial students (33 males and 20 females) from seven schools were interviewed. The students were between 18 and 20 years old and the majority (39 students) were in their final year of the three-year industrial programme, while the remaining students (14) were in their second year. The students were enrolled on both the school-based industrial programme (39 students) and the upper secondary school apprenticeship programme (14 students). The students were not separated on the basis of which version of the industrial programme they studied, as there were no apparent differences between the two models except for the amount of time spent at the workplaces, which varied considerably across the school-based programmes (between seven weeks and one year).

Data collection

The collection of data for the four articles took place within a research project in collaboration with two other researchers. Data were collected through semi-structured interviews with 53 vocational students. In the first round of data collection, an interview guide (Appendix 1) was used with the following themes: Background issues, the company and the workplace, the work, students' experiences of learning at work and its' conditions, the significance of the workplace-based learning and future vocation/working life. In the second round of data collection, the interview guide used in the first round of data collection was expanded with additional questions about experiences of the importance of gender. For example, the added questions addressed experiences of being a female student in a male-dominated workplace and in male-dominated vocational education.

The flexible nature of the interview guides allowed for openness about what the students thought it was relevant to talk about, and to address the issues that were most important to them (Fylan, 2005). All interviews with the students were conducted at the schools and lasted for between approximately 30 and 90 minutes. In five cases the students felt more comfortable conducting the interviews in pairs together with a friend than alone, and in those cases the students' wishes were met. The collected data used for each of the articles (1–4) are summarised in Table 1.

Table 1 – Collected data used in each of the articles 1–4.

	Article 1	Article 2	Article 3	Article 4
Participating students	44	28	44	20
Males	33	22	33	0
Females	11	6	11	20
Year 3	36	19	36	15
Year 2	8	9	8	5
School-based model	35	19	35	15
Apprenticeship model	9	9	9	5

The data used in each of the articles are described in more detail below.

Articles 1 and 3

In articles 1 and 3, all 44 interviews from the first round of data collection were used in the analysis. Article 1 focused on the students' learning strategies for becoming part of a work community, and how they connected to the formation of a vocational identity. The focus of article 3 was on the vocational students' ways of handling the division between theoretical and practical knowledge and how it connects to their vocational identity formation. All 44 interviews from the first round were relevant for both articles 1 and 3, as they contained data about how the students interacted in their workplace-based learning and how they perceived different kinds of knowledge.

Article 2

In the second article, a reduced amount of the collected interview data were used. Since the focus of this article was on the students' learning trajectories, the analyses required a deeper analysis of each interview and individual trajectory separately. Therefore, a proportion of the students were left out of this study, namely students from two schools: the one with the most interviewed students and the one with the fewest. After removing these 16 students from the analysis, 28 interviews remained (the remaining nine interviews with female students, as presented above, had not yet been conducted at this stage), with students from different schools of various sizes, with both the school-based model and the apprenticeship model represented.

Article 4

As mentioned, the interviews for article 4 were collected in two different rounds. In the first round, eleven girls were interviewed. In this round, which included a total of 44 interviews, gender was not a specific interest. The girls were therefore interviewed using the same interview guide as the boys, which contained no questions about the gender distribution in the programme and the workplaces or how they were perceived. However, the girls in this first round often brought up these issues at their own initiative. Against this background, I became interested in interviewing more girls to further investigate the female students' experiences in relation to issues of gender in the industrial programme, with a focus on the workplace-based learning. A selection of girls enrolled on the industrial programme with experience of workplace-based learning was initiated and resulted in interviews with nine additional female students in a second round of data collection.

Reflections on my role as a researcher

In the interview situation, my earlier experiences of counselling and guiding young people in upper secondary school and supporting youths in employment projects were an important asset. The experiences and familiarity of talking to upper secondary students helped me to create a relaxed environment of trust in the interview situation, so that the students felt comfortable enough to open up and share their experiences.

The students explained things to me as they would to a total novice with no previous knowledge of the kind of work they were educated for. I lacked previous knowledge and experience of industrial work, but I had some knowledge about the industrial programme from my years as an upper secondary school guidance counsellor. It would therefore be reasonable to assume that this shone through a little when conducting the interviews. However, it was the students' experiences of the work and their formation of a vocational identity that was the main interest, and not the school-based part of the vocational education.

Data analysis

Before the analysis, all interviews for the four articles were transcribed verbatim. In all articles, a qualitative thematic analysis was used (Table 2) inspired by Braun and Clarke (2006).

> Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data. (Braun & Clarke 2006, p. 79)

Through the qualitative thematic analysis, recurring patterns were identified and structured under different themes. Each theme related to the research questions of the conducted study. The themes intended to provide analytical descriptions that reflect the richness and complexity of a dataset (Braun & Clarke, 2006).

The same analysis procedure was applied in all four articles. In the first step of the analysis, the transcribed interviews were read repeatedly, and notes were taken that contained analytical observations such as possible categories and themes to sort the material into. In this early stage of the analysis, the empirical material was read and analysed in a relatively impartial and open way.

In the second step, compilations of all 44 interviews in the first round were made to provide an overview of the students' answers. (The analyses of the nine interviews conducted in the second round are described below under "Article 4".) The empirical material from each school was summarised using the same template and structured under themes such as "Why the industrial programme?", "Workplace-related conditions for learning" and "Images of the vocation (for example status)".

In the third step, the summaries were scanned and analysed for patterns. When patterns were identified in the data, they were thematised which resulted in the presentation of a few themes that could represent the patterns in the empirical material. The analysis process was driven by data, theoretical concepts and theories, and this process is described in greater detail under each article.

The process of selecting concepts and theoretical perspectives as analytical tools took place in a later stage in the analysis, and did not guide the initial readings and analysis. However, as a researcher it is of course impossible to disconnect oneself from one's theoretical preconceptions and understandings (Braun & Clarke, 2006).

As the interviews were all conducted in Swedish, the students' quotations were translated into English and sometimes slightly modified, in order to make the content more understandable. However, this was done very carefully in order not to risk changing the meaning of what was said. Examples of these modifications could be that small words were removed, such as "kind of" (*liksom*) or sounds like "Eh" and "Mm" which did not add any new information.

Table 2 below provides an overview of the types of analysis and key concepts used in the analysis in each article.

Table 2 – Data analysis in the articles.

	Article 1	Article 2	Article 3	Article 4
Type of analysis	Qualitative thematic analysis	Qualitative thematic analysis	Qualitative thematic analysis	Qualitative thematic analysis
Key concepts in the analysis	Community of practice, Learning strategies, Vocational habitus	Learning trajectories (inbound, peripheral, outbound), Social categorisations	Academic/ vocational divide, Recontextualisation	Masculinities and Femininities as local communities of practice

Below, a more detailed description of the analysis for each article is provided.

Article 1

In article 1, the first step of the analysis involved scanning the material, focusing on descriptions of ways in which the students learned their new identity as an industrial worker. In the second step, the material was sorted into categories such as "Being a resource or a burden" and "A lot of responsibility on the students" that were related to the students' descriptions. In the third step, after further analysis of the categories, the categories could be reconstructed into five main themes. These themes all revolved around the students' active ways of participating in workplaces, and were therefore presented as learning strategies (Evans et al., 2010) for vocational learning and vocational identity formation (Billett, 2011). These strategies were: "Taking individual responsibility", "Asking questions", "Searching for acceptance and role models in the work community", "Positioning oneself as a resource" and "Understanding and using jargon". All these learning strategies aimed to gain access to a community of practice at the workplace. Colley et al.'s (2003) concept of vocational habitus was used to analyse and understand how the students aligned their ways of acting and interacting with the ideals of the vocation.

Article 2

In article 2, the focus was on the vocational students' learning trajectories and how they connected to a vocational identity within industrial work. First, each interview was studied individually, focusing on the students' backgrounds, their experiences of workplace-based learning and their plans for a vocational future. All of these aspects were interpreted through the theoretical lens of trajectories, viewing them as being shaped by the past, the present and the future (Wenger,

2010b). In a second step, the students' trajectories were compiled to identify similarities and differences between the trajectories, which corresponded to three different student groups' learning trajectories represented by the committed students, the flexible students and the ambivalent students. These groups of students were connected to Wenger's (2010b) concepts of inbound, peripheral and outbound trajectories. I used the theoretical concept of learning trajectories to follow the students' vocational identity formation.

Certainly, the analysis was not as linear a process as it might appear to be; in reality, I went back and forth between the dataset, the categories and the themes, trying to find meaning in them (Braun & Clarke, 2006). There were many descriptions in the interviews of issues relating to status and other people's labelling of the industrial students, as well as the industrial students' labelling of students on programmes preparatory for higher education. Therefore, Jenkins' (2000) concept of social categorisations was used as an analytical tool for understanding these aspects of the interviews.

Article 3

Article 3 focused on the academic/vocational divide and its implications for the students' vocational identity formation. In the first step, the parts of the interviews where the students spoke about theoretical knowledge (both general and vocational subjects) and practical knowledge were selected for analysis and collected in a separate document. In the second step, the material was scanned for common patterns in the ways that the students spoke about what they labelled as theoretical and practical knowledge. Different parts of the material were categorised, for example the students' views on the relevance or irrelevance of theoretical and practical

knowledge and their views on how theoretical and practical knowledge were connected. In the third step of the analysis, three different themes were identified through the process of analysing and coding, each of which represented a way that the students handled the division between theoretical and practical knowledge. The students valued, separated and selected both theoretical and practical types of knowledge in various ways. They generally placed higher value on practical knowledge than on theoretical knowledge, reinforced the separation between school and work, and selected theoretical subjects as tools for the future. In the analysis, the term "recontextualisation" (Evans et al., 2010) was used to understand and explain how the students made sense of knowledge, moved it between different contexts and transformed the knowledge in order to make it useful, for example between school and work.

Article 4

Article 4 focused on the strategies that female vocational students used for being accepted into a work community. These strategies were further examined in relation to the formation of gendered vocational identities within a male-dominated sector of industrial work. First, all subtracts where the girls mentioned gender issues were collected and placed in a separate document. In these subtracts, the subject of gender could have been addressed either by the student or by the researcher. In the interviews from the first round the subject of gender was indicated by the students themselves, while in the interviews in the second round the researcher initiated the subject (even though the girls sometimes brought it up themselves). Second, the subtracts were sorted into different categories, for example the disadvantages of being a girl, the

advantages of being a girl, the girls' descriptions of their own attitudes and their views of the future. Third, the categories were further elaborated on, compared to each other and searched for common patterns. This resulted in three different themes being identified that represented the identified patterns. Each theme presented a strategy which the girls used in order to be accepted into their workplace communities. These strategies revolved around acting in three different ways: acting like gender does not matter, acting like boys – not like drama queens, and acting tough and joking around. In this analysis, a modified version of Lave and Wenger's (1991) theory of communities of practice was used, which presents the possibility of viewing masculinity and femininity as local communities of practice (Paechter, 2003; 2006a). This perspective was used to analyse the ways in which the girls were subjected to expectations of accepted ways of being a woman in their specific workplaces.

Ethical considerations

The research project was approved by the Regional Ethics Board in Linköping (ref. 2014/438-31) with the decision that the project was not covered by the Act (2003: 460) on ethical review of research involving humans. Only an advisory opinion was given by the Ethics Board. Before the interviews were conducted, informed consent from the students interviewed was collected and documented digitally (Swedish Research Council, 2017). The students' personal data in the interview transcripts were deidentified. A code list was established in which each interview was given a code number for anonymisation. This list was stored separately from the interview transcripts (Swedish Research Council , 2017).

All the students interviewed were at least 18 years old and the interviews did not contain any obviously sensitive topics. However, it is important to consider the ethical risk of the interviews touching upon subjects that may be perceived by the students as sensitive, private or upsetting. In two of the interviews the students briefly mentioned difficulties that they had experienced in their private lives that I perceived to be sensitive issues to them. In these situations, it was important for me to ethically consider the risk that the interview would have the character of some form of counselling. I tried guiding the students back to the subject of the interviews in a cautious and perceptive way, in order not to give them the impression that they had said something wrong.

6. SUMMARIES OF ARTICLES

This thesis consists of four different articles that each focus on different aspects connected to vocational students' vocational identity formation. They all depart from a perspective of learning as situated, and in each study different theoretical concepts are added and used as analytical tools to deepen the understanding of students' vocational identity formation. Brief summaries of the articles, with a focus on the findings, are presented below.

Article 1: Students' strategies for learning identities as industrial workers in a Swedish upper secondary school VET programme

Ferm, L., Persson Thunqvist, D., Svensson, L., & Gustavsson, M. (2018). Students' strategies for learning identities as industrial workers in a Swedish upper secondary school VET programme. *Journal of Vocational Education & Training*, *70*(1), 66-84.

This first article aimed to investigate the learning strategies vocational students use to become part of a work community, and how these strategies are related to the formation of a vocational identity at the workplace. The focus in the interviews was the students' experiences of workplace-based

learning, becoming a member of the work group and forming an identity as an industrial worker.

The interviews were analysed using the theory of situated learning, with a particular focus on identities and their relationship to participation in communities of practice (Lave & Wenger, 1991; Wenger, 1998). In addition, the notion of vocational habitus was added as an analytical tool, in order to deepen the understanding of how the students aligned their behaviour and actions according to the norms and ideals of the industrial vocations.

The findings showed that the students used five strategies for becoming part of a work community. These were: taking individual responsibility, asking questions, searching for acceptance and role models in the work community, positioning oneself as a resource, and understanding and participating in the jargon. The first strategy of taking individual responsibility was expressed in the ways that the students accepted personal responsibility for everything from the learning opportunities they were presented with at the workplaces, to their chances of future employment. The students often thought that it was up to themselves to gain access to participation at the workplaces. As a consequence of the students' sense of responsibility towards the workplaces, they were afraid to perform work tasks that could entail economic costs for the companies if they were to fail. The students' high degree of taking individual responsibility implied a shift in responsibility from the responsible personnel at school to the vocational students themselves. The students rarely put pressure on supervisors or teachers for their situation at the workplace, whether or not it was inclusive and pedagogical. Instead, the students put pressure on themselves

to make efforts that would gain them acceptance in the workplace community.

The second strategy used by the students involved asking questions. Asking questions was a way for the students to increase both their knowledge and their understanding of the prospective vocation. The students asked questions in order to gain deep knowledge of the work and to understand why they were doing different things at the workplace, not just how they were done. Through asking questions, they attempted to grasp their work as an entity. Another reason that the students gave for asking questions was that it was part of presenting an attitude of an interested, motivated and engaged worker. This was an attitude that the students had noted would be appreciated by the other workers at their workplace-based learning. However, the students also recognised that a balance was required of them that revolved around asking a lot of questions but not the wrong kind. The wrong kind of questions could reveal their incompetence within their intended vocations. Hence, they wanted to show their engagement for the work by asking questions but were afraid that they would ask questions that would reveal their lack of knowledge and thus disappoint the workers.

The third strategy used by the students involved searching for acceptance and role models in the work community. When they were accepted and trusted by their co-workers, they gained access to more work tasks and learning opportunities. Most students perceived it as easy to become accepted into the workplace community, as the other workers were friendly and welcoming. The students interacted with the more experienced workers and when their appointed supervisor at the workplace was absent, they took responsibility for finding an informal role model among the other employees. The students

appreciated co-workers who were skilled within their vocation and could explain the work to the students in a pedagogical way. The students also learned from their role models and other workers how to act and interact at the workplaces in an accepted way. Praise and positive attention from experienced workers strengthened the students' pride and confidence in relation to their vocation.

The fourth strategy was about the students positioning themselves as resources by behaving well, for example by being on time, staying alert, showing interest and not playing with their phones. In addition, it was important for the students to show their skills and not be perceived as a burden on the workplace, which was a risk they were aware of. Through this strategy, the students aligned their ways of acting and interacting with the norms and ideals of the work community. The students saw the strategy of positioning themselves as resources as crucial for their vocational learning and identity formation, as well as for their future employment.

The fifth and last strategy related to the students' ways of understanding and using jargon. They emphasised the importance of showing that they could handle being joked with and making jokes themselves. The humorous and relaxed jargon of the industrial workplaces was often appreciated by the students, and was something they actively strived to participate in. Even when the students described the jokes as being insensitive or unpleasant, and sometimes even racist or sexist, they did not perceive any ill will behind them. Being included in relaxed and humorous banter was often interpreted as a sign of inclusion for the students. They described the importance of acting relaxed and tough in order to be accepted into the work community; an overly sensitive person would not be a good fit.

In the first article, it was concluded that the students actively formed strategies that revolved in various ways around fulfilling the expectations of the workplaces, by learning what was valued there and aligning themselves in agreement with that. When learning to take part in the workplace banter, a habitus of familiarity with such jargon seemed to facilitate the students' participation. In turn, these strategies facilitated the students' acceptance into the work community through influencing their vocational habitus, and thus affected their vocational identity formation. By aligning with the demands and culture of the workplace, the students actively engaged in an identity as a skilled worker and disengaged from a student identity.

Article 2: Vocational students' identity formation in relation to vocations in the Swedish industrial sector

Ferm, L., Persson Thunqvist, D., Svensson, L., & Gustavsson, M. (2019). Vocational students' identity formation in relation to vocations in the Swedish industrial sector. *Nordic Journal of Vocational Education and Training*, *9*(2), 91-111.

The purpose of the second article was to investigate vocational students' perceptions of their identity formation in relation to a vocation within the industrial sector. 28 interviews with industrial students were analysed in depth, focusing specifically on the students' background, their present experiences of workplace-based learning and their plans for

their future in work life. Wenger's (2010b) notion of learning trajectories as a way to understand identities was applied very directly in the analysis, as three different learning trajectories were found to be represented among the students. As status and labelling seemed to constitute important parts of the learning trajectories and hence the students' vocational identification, the sociological concept of social categorisation (Jenkins, 2000) was applied to illuminate and analyse these aspects.

The findings of article 2 revealed three different learning trajectories among the students. First, there were the committed students, who had an inbound learning trajectory and wished for a long-term career within the industrial sector. The committed students often had family members within industrial vocations and expressed a desire to work practically rather than sitting at a desk, as they put it. They were drawn to the good job opportunities within industrial work, and they saw the workplace-based learning as a way to increase their access to these opportunities. Industrial vocations were seen by these students as demanding, advanced and challenging, but they were also aware of the low status of industrial work. The committed students' reflections on the low status of industrial work, along with their reaction to it by emphasising the industry's important role in society, were, in this article, interpreted as a sign of their identification as industrial workers. They generally expressed great interest in industrial vocations and often pictured themselves as future managers or specialists; thus, they were dedicated to a career within industrial work.

Second, a group of flexible students with peripheral trajectories was identified. They had peripheral trajectories leading to temporary participation in industrial work. The

flexible students often had previous experience of industrial work through family members' vocations. They chose the industrial programme due to the high chance of becoming employed or because it was something new or offered an alternative to their original choice of education. Like the committed students, they saw industrial vocations as challenging and complex, but they also often mentioned that industrial work had an open nature and offered many learning opportunities. The flexible students reflected on the low status of the industrial programmes compared to programmes preparatory for further education, which illuminated their identification as industrial students which is more temporary than the committed students' identification as industrial workers. They highlighted the differences between students on vocational programmes and students on programmes preparatory for higher education, which they categorised as snobbish people who belittled vocational students. The flexible students often appreciated industrial work but did not plan for a long-term future within it. Rather, they spoke of working with industrial vocations for a few years, before later changing careers, often to become police officers or firefighters. They expressed a temporary identification within industrial work, and they felt free to change paths after the industrial programme and did not feel trapped within a certain kind of work.

Lastly, the ambivalent students were characterised by their outbound learning trajectories, as they only envisioned themselves as having a very short-term future within industrial work. Some were familiar with industrial work due to family members, while others were complete novices. Just like the other student groups, they wished to work practically and were attracted by the good chances for employment within

industrial work, but the choice of the industrial programme often did not appear to be as well thought through. They had an ambivalent view of industrial vocations and could express both positive and negative images of them. They viewed industrial work as both demanding and difficult to master, and as dirty work which only required hands-on skills. They often had an ambiguous and contradictory view of industrial vocations and did not seem to engage in them in the same way that the other students did. Nor did the ambivalent students reflect on the status of industrial work and education, unlike the committed and the flexible students. They were generally uncertain about their future and did not seem to make any real plans for themselves.

The trajectories represented among the industrial students were very diverse, from ambivalent students who sometimes strongly disidentified with industrial vocations to committed students who were passionate about their intended vocation. Thus, strong vocational identities are still formed within industrial work, and workplace-based learning plays a central role in this as this is where students experience what daily work in industrial companies is like. Another conclusion of the second article was that social categorisations – together with reflections on the future and the vocation – constitute important aspects of understanding the learning trajectories, and thus the vocational identity formation, of the students.

Article 3: Vocational students' ways of handling the academic/vocational divide

Ferm, L. (2021). Vocational students' ways of handling the academic/vocational divide. *International Journal for Research in Vocational Education and Training*, *8*(1), 1-20.

The purpose of the third study was to investigate how vocational students handled the division between theoretical and practical knowledge as they learned to become skilled industrial workers. This study departs from the hierarchical division between theoretical and practical knowledge, known in research as the academic/vocational divide. In the dichotomy assumed in this divide, theoretical knowledge is ascribed a higher status and value than practical knowledge. Generally, practical knowledge is associated with the world of work while theoretical knowledge is assumed to relate to the school context.

44 industrial students were interviewed for this study, and they were all subjected to both practical and theoretical knowledge in their vocational education as they shifted between learning at school and at workplaces. The theoretical notion of recontextualisation (Evans et al., 2010) was used in order to analyse how the students handled the different types of knowledge. This concept refers to a more complex process than transfer since it is about using and changing knowledge in different ways between different contexts.

In this study, theoretical knowledge is defined as general school subjects as well as theoretical vocational subjects, while practical knowledge refers to knowledge practised in the workshop or in workplace-based learning.

Three different themes are presented in this article, each describing a way that the vocational students handled the division between theoretical and practical knowledge.

The first theme is that the students placed higher value on practical knowledge than on theoretical knowledge. This was expressed through the ways that the students talked about themselves as preferring practical knowledge and workplace-based learning over theoretical knowledge and school. Theoretical knowledge could sometimes even constitute a barrier to learning their vocation. In addition, some of them spoke about how the practical knowledge was more essential than the theoretical for learning the vocation. Furthermore, they also often perceived continuing studies as a plan B for their future (plan A was to work) as they simultaneously prioritised and valued their time at workplaces higher than their time at school. The way that the students prioritised and valued the types of knowledge associated with workplace-based learning rather than knowledge associated with the classroom is interpreted as an active alignment with the identity of a skilled industrial worker rather than that of a student.

The second theme revolved around how the students reinforced the separation between school and work, which they perceived as totally different from each other. School was associated with theoretical and abstract knowledge presented in what was largely experienced as pointless subjects, while work was perceived as "doing something for real" and connoted practical knowledge. Thus, activities in school and workplace-based learning were constructed as totally separate. This separation was also expressed in the industrial students' views of vocational programmes and programmes preparatory for higher education as being totally disconnected, presenting

theoretical students and workers as belonging to different parts of the school. The different worlds that the students viewed school and work to represent were rarely integrated and rarely seemed to meet each other.

The third and final theme revealed how, in spite of this separation, the students selected certain types of theoretical knowledge that they found to be valuable for their work, for example mathematics and English. They selected knowledge that they discovered a concrete use for during their workplace-based learning, for example through counting measurements or understanding product descriptions in English. The knowledge that the industrial students gained through vocational subjects was sometimes needed in order not to appear incompetent at the workplaces. Apart from subjects that the students saw a direct need for in the industrial workplaces, some students also appreciated knowing more about the history of industrial work and industry's role in society. Some subjects were also used as tools in order for the students to receive their vocational certificate, which required a pass grade in selected subjects. Another way that theoretical knowledge was ascribed value by the students was as tools that would open doors to further studies in the future. Further studies and the opportunities they offered when it came to dealing with possible career changes in the future were appreciated and acknowledged by the students.

In conclusion, recontextualisation was expressed in the ways that the students made sense of the academic/vocational divide as they ascribed practical knowledge a higher value than theoretical knowledge. They did not view their education as an integrated whole as they reinforced the separation between school and theoretical knowledge and work and practical knowledge. However, some theoretical knowledge was

recontextualised as meaningful for their work. Overall, the students prioritised aligning with the norms and ideals of work and forming a vocational identity, rather than conforming to the norms of school and a student identity. The students appear here as actors who are knowledgeable about the status difference between theoretical and practical knowledge, and who actively align with the norms of work in forming their vocational identities.

Article 4: Gendered vocational identities – female students' strategies and identity formation during workplace-based learning in male-dominated work

Ferm, L & Gustavsson, M. Gendered Vocational Identities – Female students' strategies and identity formation during workplace-based learning in male-dominated work. (Submitted to International Journal for Research in Vocational Education and Training, 1 February 2021)

The fourth study focuses on the female students enrolled on the industrial programme. The purpose of the article is to investigate female vocational students' strategies for becoming part of a workplace community, what these strategies are and how they are tied to the formation of gendered vocational identities within male-dominated industrial work. Interviews with 20 female industrial students were analysed for this article.

The theoretical framework is inspired by Paechter's (2003; 2006a) development of the concept of community of practice (Lave & Wenger, 1991; Wenger, 1998). She argues that femininity and masculinity can be understood as local communities of practice, and we view the female students' participation in male-dominated work as connected to such communities.

The female students actively form strategies for becoming a part of the workplace and forming a vocational identity as an industrial worker. The strategies found in this study are "acting like gender does not matter", "acting like boys – not like drama queens" and "acting tough and joking around".

The first strategy is about the female students' expressions of how gender is not a relevant aspect when understanding their work life. They talked about how they rarely reflected on gender, as it was not relevant for learning their vocation. They often spoke about how gender did not matter to them and that the gender divisions in the industrial programme and workplaces were not an important issue to them or something they had reflected on. Downplaying gender issues was a way for the girls to align with the workplace culture and a part of doing gender in an accepted way in the masculine community of practice at their workplaces. In contrast to the strategy of downplaying gender, the girls often mentioned experiences of being treated in a specific way due to their gender.

The second strategy, "acting like boys – not like drama queens", was expressed by the female students distancing themselves from other girls and identifying with boys. The female students spoke of typical girls as being prone to drama and oversensitivity. They instead identified themselves as relaxed people, shunning away from social drama and sensitivity. The girls often talked about preferring and being

more comfortable in the company of boys than of other girls. The fact that the industrial programme is coded as masculine was something that had generally attracted the girls to it. They often appreciated doing something that was uncommon among girls in general.

The third strategy was about how the female students acted tough and joked around. This was a way for the girls to align themselves with the social banter of the industrial workplaces and to present themselves as workers who were able to handle it. This implied, among other things, not being sensitive about being joked with, but rather joking back with the employees in a way that fitted into the culture of the workplace. This strategy was used as a response to the prejudices the girls could face in the workplace. Through presenting themselves as not caring about other people's opinions and not being bothered by the masculine jargon, the girls presented themselves as members of the work community.

This article concludes that by using these strategies, the girls actively formed vocational identities which they perceived as attractive within the masculine community of practice in industrial work. The girls' vocational identity formation was somewhat contradictory, as they expressed that gender did not matter in their vocation while simultaneously choosing to "act like boys" and distancing themselves from what they perceived as traditional femininity. As the female students formed vocational identities, they formed gendered identities in parallel within a community of practice that presented an alternative gendered identity as a female industrial worker – an identity that the girls actively engaged in.

7. Discussion

The overall aim of this thesis is to contribute knowledge about vocational identity formation among students within the industrial programme in Swedish upper secondary education, with a particular focus on their workplace-based learning. Together, the articles provide a picture of vocational students' identity formation as a dynamic and complex process shaped by participation and trajectories formed in different communities of practice. The students' strategies for being accepted into the workplace community are discussed along with the significance of habitus, status, pride, social categorisation and gender for the students' vocational identity formation.

The chapter begins by discussing the main findings of this thesis, leading to a synthesis of the findings presented in a model which illustrates the students' complex vocational identity formation in vocational education, in particular in the industrial programme. In relation to the model, the concepts of *vocational agency* and *vocational image awareness* are proposed to develop the understanding of students' vocational identity formation. Together, these new concepts provide a way of understanding the students as knowledgeable actors in their vocational identity formation.

Vocational identities are formed through students' strategies in workplaces

As the students formed vocational identities through movements back and forth between the school and the workplaces, which they perceived as very different contexts (see also Schaap et al., 2012; Virtanen et al., 2014), they tended to prioritise workplace-based learning and practical knowledge. Even though the students valued work higher than school, school was still present in their vocational identity formation, as the students navigated between school and work and used knowledge from school as a backdrop against which to perform tasks in the workplace. Both theoretical knowledge and the students' identities proposed at school thus constituted a background for the students' participation in workplace-based learning (article 3).

When the students participated in workplace-based learning, they developed strategies for learning to become part of a workplace community (articles 1 and 4) and forming trajectories leading to a vocational identity as a skilled industrial worker. Nevertheless, as the findings of this thesis demonstrate in articles 1 and 4, the vocational students had to adapt their strategies of learning in order to align with the workplace requirements and transform their identities to become a "worker" by being accepted as a part of the community of practice in the workplace. The students developed several strategies for becoming a recognised member of the workplace community, which made it possible for them to move their position away from the periphery as a "student" and towards inclusion in the workplace (Lave & Wenger, 1991).

The students' strategies revolved around taking individual responsibility, asking questions, searching for role models, positioning themselves as a resource and using jargon (article 1). The responsibility for being included in the workplace and for gaining access to participation through their strategies largely rested on themselves (articles 1 and 4). This implied that the students did not place any responsibility on the school or the workplace for their own opportunities to be included and participate in the workplace-based learning. Nor did the female students connect their opportunities to be included in the male-dominated community of practice within industrial work with gender barriers (e.g., Colley, 2006; Gustavsson & Fogelberg Eriksson, 2010; Paola Sevilla et al., 2019). Nevertheless, the influence of such structures was sometimes implied in the students' descriptions of the workplaces, as the strategies indicate that there were subtle gender barriers that were part of the girls' vocational identity formation (article 4).

The female students' strategies were acting like gender does not matter, acting like boys – not like drama queens, and acting tough and joking around (article 4). The female students devoted a lot of energy to gaining the acceptance of the male workers through these strategies.

All of the students' strategies had a social focus in common and were more about contributing and fitting into the workplace community than mastering concrete vocational skills (articles 1 and 4). The value of expressing an interested and motivated attitude has been illuminated in both industrial education (Kilbrink et al., 2014) and industrial work (Jürgens & Krzywdzinski, 2015), but as the findings of this thesis indicate, it is also an important strategy used by students to develop a vocational identity. The students showed a great capacity for transforming their own vocational identities as

they developed and used strategies for becoming accepted in the workplace community.

Some of the strategies that the students used to gain acceptance in the workplace community were specifically about participating in the social jargon of the workplaces (articles 1 and 4). Like other studies (e.g. Holmes & Woodhams, 2013; Willis, 1977), the findings of this thesis show that participating in the workplace humour and banter were appreciated aspects of the workplace culture. The findings of this thesis further indicate that handling and using humour helped the students to gain acceptance as a "worker" and form a vocational identity.

The fact that all of the strategies were used to gain acceptance in the workplace community implies that they were also used to counteract exclusion. This was especially prominent in article 4, where the girls had to show – by participating in and accepting the masculine banter – that they were "one of the boys", in order not to be excluded from the workplace community.

Alongside participating in the masculine banter (see also Kontio, 2016; Korp, 2011), the female students also needed to present themselves as someone who could handle a joke. This implied not being oversensitive and dramatic (traits which the female students associated with typically feminine girls). This attitude, together with downplaying gender (Korvajärvi, 2002; Lappalainen et al., 2012; Paula Sevilla et al., 2012; Risberg, 2004) helped the girls to gain access to the localised and gendered community of practice (Paechter, 2003) within industrial work (article 4).

Unlike other studies (e.g. Ely, 1995; Korp, 2011) that focus on girls or women in male-dominated vocational education and work, this thesis illuminates how the female students often

enjoyed the transformation of identities, as it brought them closer to participation in a workplace community they felt relaxed in. Being invited to participate in male-dominated communities of practice in industrial work became important for the female students, because in those communities they often felt free from the expectations of behaving like a "typical feminine girl" (article 4). However, the strategies used to gain access to participation and inclusion required extensive agentic actions and individual responsibility from the girls. The female students needed to handle the contradictions between the strategies of "acting like gender does not matter" and "acting like boys – not like drama queens". Last but not least, the girls actively took part in forming accepted ways of doing gender (West & Zimmerman, 1987) and being a girl in the localised and masculine communities of practice (Paechter, 2006a) within industrial work. Hence, they adapted to the masculine norms of the industrial workplaces, but they simultaneously seemed to find this adaptation easier than adapting to norms of traditional femininity.

For both female and male vocational students, the strategies implied that they positioned themselves towards an identity as a worker and away from an identity as a student. Such a positioning upgrades the value and status of practical knowledge and work, at the expense of theoretical knowledge and school. This is closely related to the way that the students handled the hierarchy between theoretical and practical knowledge through their agentic actions of challenging the low status of practical knowledge compared to theoretical knowledge (articles 2 and 3). Their reactions to the low status of practical work and vocational education also constituted an important part of the students' trajectories, as they tied into vocational identification by defending industrial education and

work and reacting against its low status (article 2). Hence, the distancing from school and the prioritising of work can be interpreted as a strategy through which the students exercised agency in their vocational identity formation.

The significance of a habitus preparing the students for industrial vocations

An overall finding of this thesis is that the vocational students' habitus (Bourdieu, 1977; Colley et al., 2003) operates in two different ways: (1) it constitutes a precondition preparing the students for entering the workplace community, and (2) a vocational habitus is further developed during the students' workplace-based training. First, the students' habitus was grounded in their experiential understanding of the vocation and industrial work. Prior knowledge and familiarity with manual work through family members characterised the habitus of the students in the industrial programme. Coming from a social milieu where manual labour was constructed as a positive and natural part of everyday life seemed to ease the transition into industrial vocational education and gave the students access to an increased degree of participation in the community of practice in the workplace. This in turn helped the students to advance from their initial position of legitimate peripheral participants (Lave & Wenger, 1991) to a higher degree of participation.

Second, the students' habitus was further developed with more experienced workers during the workplace-based learning as the students oriented towards a vocational habitus (Colley et al., 2003). A vocational habitus positioned towards

the norms and ideals of industrial work will lead the vocational students away from the periphery of the workplace community and into increased participation. As the students form a vocational habitus suited for industrial work, they expand their possibilities of being included and accepted as a participant in the workplace and reduce the risk of being excluded from the community of practice.

However, inclusion in a community of practice was not just connected to the free choices of the students; issues of power, status, and class and gender structures are also at play here, and pervade the habitus of the students (e.g. Colley et al., 2003; Hodkinson et al., 2007; Sawchuk, 2003). If the students possessed the right kind of habitus for industrial work, this could also help them as they enter vocational education and industrial workplaces.

Vocational trajectories of students – characterised by work pride, status and social categorisation

Vocational students' identity formation could be reflected in the students' different vocational trajectories (Wenger, 2010b). The vocational trajectories were characterised more or less by feelings of work pride, status and social categorisation to approach a desired future. The status of the industrial programme and industrial vocations seems, as mentioned previously, to be of crucial importance in the students' formation of trajectories. The findings of article 2 showed that students' trajectories were extremely diverse; some students were deeply committed to their intended industrial vocation, while others viewed it as a nightmare and had trajectories

clearly leading away from industrial work. These kinds of diversity among young people's images of the future have been acknowledged elsewhere (Ball, Macrae & Maguire 1999), but this thesis focuses more specifically on diversity in connection with vocational identities.

Although the trajectories of the vocational students were diverse, the findings of article 2 suggested that inbound and peripheral trajectories (Wenger, 2010b) were most dominant amongst the vocational students, even though some doubtlessly had outbound trajectories (Wenger, 2010b). These findings agree with Helms Jørgensen (2013), who found that most of the former vocational students he studied had developed vocational identities and vocational pride during their education. This study, however, elaborates on how factors such as agency, habitus, status and social categorisations contribute to students' vocational identity formation in order to find out which aspects characterise the trajectories leading towards a vocational identity.

The students with trajectories leading towards industrial work tend to socially categorise themselves and their own group, as well as other groups (Jenkins, 2000), based on the divide between what they perceive as practical and theoretical education and vocations. The vocational students who had inbound or peripheral trajectories in relation to a vocational identity as an industrial worker were generally more aware of, and reflected more on, issues concerning the status of industrial work and education than the students with outbound trajectories, leading away from industrial work (article 2). This study contributes knowledge about the importance of awareness and reflection on the status of the industrial vocation in connection with students' vocational identity formation. Hence, vocational identity formation

connects to a high degree with reflections on the status and images ascribed to the vocation and not only reflections on the complexity of the work, as previously shown (Chan, 2019). The students with inbound and peripheral trajectories also expressed agency in making plans and creating ambitions for their future work life within a vocation they enjoyed.

The students with inbound or peripheral trajectories also reacted strongly to what they perceived to be other people's categorisations and images of industrial work and the low status that it is ascribed generally in society. One way to counter these images is to express pride in industrial work and demonstrate agency and capacity in forming vocational identities as industrial workers, an identity that they perceived as desirable. The vocational students proudly labelled themselves as practically oriented people who carried out real work (see also Lehmann, 2005) within industrial vocations that they perceived as important, advanced and interesting. This thesis complements and deepens the understanding of the meaning of work pride, as illuminated by Lehmann (2005), by suggesting that it is an important part of vocational students' trajectories, leading to a vocational identity as a skilled worker.

Simultaneously, the students distanced themselves from more theoretically oriented people, vocations and education (articles 2 and 3). This way of distancing oneself from school and theoretical knowledge, together with rebelling against the low status of industrial work, seems to be crucial in the students' vocational trajectories. The third article revealed that the students reinforced the divide between practical and theoretical knowledge, and this can be viewed as a strategy to align with the ideals of the workplace and an identity as a skilled worker. For the students to be able to strongly position themselves in the division and hierarchy between practical and

theoretical knowledge, the division needs to be clear to begin with.

One aspect of why most students' trajectories led to identification as workers rather than students could be related to more positive experiences of work than school (see also Hegna, 2019; Lehmann, 2005). The students' prioritising of the workplace-based learning implied that they formed their own hierarchy of knowledge in relation to the academic/vocational divide. The aversion for theory and the positioning towards practical work as more real and meaningful seemed to be an important aspect of the students' vocational identity formation (article 3). The students responded to the belittling of their types of trades by stating that they carried out real work and laid the foundations for society. As Lehmann (2005) noted, these types of reactions from the students could be a way of questioning the general view of society that values theoretical knowledge above manual work. This thesis further emphasises that such reactions to the low status of one's vocation can be understood as an important part of a trajectory towards a vocational identity.

Even though the industrial students had a generally negative image of theoretical knowledge compared to practical knowledge, they viewed theoretical knowledge which they perceived as useful in their workplace-based learning as valuable for their future within the vocation. They were able to select this type of theoretical knowledge and recontextualise it (Evans et al., 2010) as a tool to be used in their workplace-based learning. Hence, recontextualisation became relevant for the students' trajectories towards a vocational identity as skilled industrial workers. Aligning with the needs of the workplaces and prioritising the type of knowledge valued there

can be understood as a way of attempting to increase their participation in the community of practice within the workplace. Thus, prioritising the knowledge valued in the workplaces can be understood as a way to adapt socially to the norms and ideals represented there.

The students who disengaged from their intended vocations and had trajectories leading away from them did not express their awareness of or reactions to the low status of industrial work and education. Nor did the students with outbound trajectories demonstrate agency in their vocational choice or their vocational identity formation in the ways that the other students did.

Surprisingly, almost none of the female students had trajectories clearly leading away from industrial work, despite of all the barriers girls may face within male-dominated vocations and education (e.g. Colley, 2006; Gustavsson & Fogelberg Eriksson, 2010; Paola Sevilla et al., 2019). One way to understand the female students' commitment to industrial vocations is to view it as a consequence of the strong agency they expressed in their choice of education. The female industrial students did not simply choose the same programme as their friends or follow the mainstream; instead, they broke gender norms with their choice of education. Further, they continued to show agency and capacity in their vocational identity formation in the workplaces, handling expectations regarding both their gender and their industrial vocations.

To conclude, the students' trajectories all led towards different degrees of participation in communities of practice within industrial work. Most students had previous experience of manual work, but this did not mean that they would all orient themselves towards a vocational identity as industrial workers. Awareness of and reflection on status and future

ambitions were important here, along with agency in their choice of vocation and during their workplace-based learning. The students with trajectories leading towards a vocational identity as an industrial worker defended the esteem of industrial work, citing its complex and advanced nature together with the important role industrial work plays in society (article 2). They also wished for deep and expanded vocational knowledge in order to fully grasp the complexity of their vocation.

A model of students' vocational identity formation

The main findings of these studies can now be brought together to increase the understanding of the vocational students' vocational identity formation. The model presented in Figure 1 below provides a synthesis and a review of the complexity of vocational identity formation among students within the industrial programme in Swedish upper secondary education, with a particular focus on their workplace-based learning.

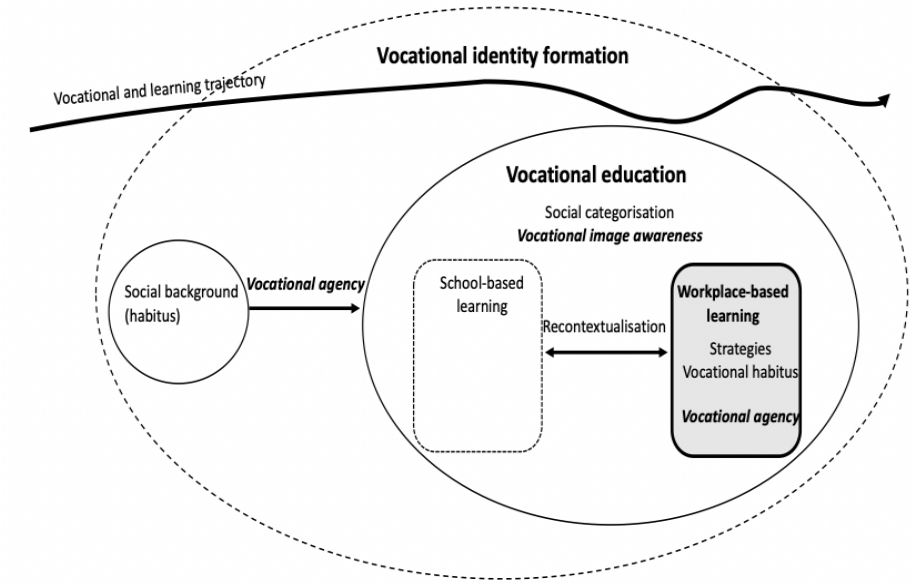

Figure 1 – A model showing important aspects of the vocational students' vocational identity formation.

In the model presented in Figure 1, the dashed, enclosing circle symbolises the entire process of *vocational identity formation* for vocational students, which can take the form of various non-linear *trajectories* (the long arrow). The large, lined circle within the model represents the research setting, i.e. vocational education conducted at upper secondary school, alternating between *school-based learning* and *workplace-based learning*. The square referring to workplace-based learning is the main focus of this thesis. During their workplace-based learning, the students used *strategies* to learn their vocation and become accepted into the workplace community. Through these strategies, which revolved around aligning with the norms and ideals of the vocation, the students oriented themselves towards a *vocational habitus* appropriate for industrial work. In the students' navigation back and forth

between school-based and workplace-based learning, they used and changed the knowledge learned through *recontextualisation*. In the context of vocational education as an entity, the students identified and labelled themselves and others through *social categorisations* which constituted an important part of their vocational identity formation.

In the model, the smaller circle to the left (*Social background (habitus)*) illustrates that the students' social background, such as gender and previous experiences before entering vocational education, was important for their vocational identity formation. The students' social background was expressed in their habitus, which constituted conditions for entering the vocational education. Many of the students came from backgrounds that had provided them with a habitus influenced by previous experiences of manual work, which facilitated their transition into vocational education and the formation of a vocational identity.

The model further suggests two new concepts, ***vocational agency*** and ***vocational image awareness***, which have been identified in this thesis as important aspects that can provide a deeper understanding of the students' vocational identity formation. First, the concept of vocational agency is suggested. This refers to students' agency in choosing a vocation, and their capacity to form their own vocational identities by actively making efforts to gain access to participation in the workplace. When applying for vocational education, the students could express agency by making a conscious and informed choice to enter the vocational programme. This was perhaps most clearly exemplified by the female vocational students, whose choice of vocational education was somewhat norm breaking. Another major way in which the students' vocational agency was visible was the learning strategies they used to become a

part of the workplace community and their high degree of responsibility for their own vocational learning.

Vocational agency is also exemplified clearly in article 2, where the committed students expressed agency in their vocational identity through their choice of vocational education and their plans for the future, while the ambivalent students seemed to view their vocation as something they simply happened to end up within, without really wishing for it or making conscious choices in that direction. The students who did not express vocational agency did not identify with the vocation and seemed to view themselves as passive bystanders regarding their vocational identity formation. They wanted to wait and see what would happen in their future, and did not speak about the possibilities to influence it themselves. They sometimes viewed their choice of vocation more or less as an act of unawareness rather than a conscious and well-informed decision.

Second, the concept of *vocational image awareness* is suggested, which refers to reflection on and awareness of other people's images of one's vocation and reacting to these images by presenting a positive view of the vocation. This is an aspect that has been shown in this thesis to be important for the vocational identity formation of the industrial students. The students who identified with their intended vocation reflected on how other people or society in general viewed their vocation, in terms of for example status (article 2). Furthermore, these reflections could consider other people's perspectives of industrial workers and what industrial work contributes to society.

Vocational image awareness was expressed by the committed students in the second article about vocational identities and trajectories. The ambivalent students on the

other hand, who did not identify with their vocation, generally had not reflected on other people's views of it. Nor did they present their own positive views of the vocation in response to other people's views.

Vocational image awareness was also expressed in the way that the students handled the academic/vocational divide (article 3), as they ascribed high value to industrial vocations, manual knowledge and vocational skills.

The concept of vocational image awareness is partly related to Jenkins' (2000) notion of social categorisations, which implies reacting to other people's labelling of oneself. However, vocational image awareness is connected specifically to a person's vocation, and not only labelling but also broad reflections on and awareness of other people's images of the vocation and different ways of responding to those images. This also implies that a lack of such awareness and reflection could be a sign that an individual does not identify with their vocation, as with the industrial students who had outbound learning trajectories (article 2).

Together, the concepts of *vocational agency* and *vocational image awareness* depict the vocational students as knowledgeable actors who take a high degree of responsibility in their own vocational identity formation. This is how they have often appeared in the findings of this thesis. Nevertheless, their agency can never be separated from the workplace communities in which the students participated. The contextual and structural conditions of the communities of practice form how the students learn the vocation, as well as the relationships and social cultures they are influenced by. Different students enter into different communities of practice during their workplace-based learning; they are offered different types of participation and form various kinds of

relationships which affect them in different ways. For some students, belonging to a community of practice within industrial work becomes an important and desirable part of their vocational identity formation, while other students are not as interested in participation. This in turn influences the students' vocational identity formation, what knowledge they use, and how they view themselves and other industrial workers.

8. STRENGTHS AND WEAKNESSES OF THE STUDY

This section presents the main strengths and weaknesses of this study. One of the main strengths of the study is the rich rigour (Tracy, 2010) achieved in various ways. First, this thesis is based on extensive and rich data material comprising 53 interviews with vocational students. These interviews lasted for approximately one hour each, and the vocational students generously shared their views and perspectives during the interviews, providing a richness in the students' descriptions. In the presentation of the findings, the reader has been given rich and full descriptions and a wide sample of quotations reflecting the students' voices. By providing rich quotations from the students, credibility can be increased as it gives the reader a chance to decide whether or not the analytical conclusions seem credible (Tracy, 2010).

In the method section, a detailed description of the procedure and analysis has been provided in order to be as transparent as possible to the reader (Larsson, 2005). I have openly described my role as a researcher and my previous experience as a counsellor to upper secondary students, and how this may have affected the interviews with the students. However, it is impossible to know all the things that might have influenced the way this study was conducted (Larsson, 2005).

Previous research and the theoretical framework originating from situated learning, which is consistently used as an analytical lens throughout all the articles, are considered to be of relevance as tools with which to interpret the

presented findings, which is a crucial aspect of the internal logic of this study (Larsson, 2005). Together, the four articles provide knowledge regarding different aspects that are all closely tied to vocational students' vocational identity formation in the industrial sector. An overview of previous research on vocational education, based on a systematic literature search in Google Scholar and in databases (such as ERIC, PsycINFO, Scopus and Web of Science) serves as the background to this thesis. The most frequently used search terms were "vocational identity" and "vocational education". However, there is of course always a risk of missing studies that might have been relevant.

The students interviewed for this thesis were all enrolled on the second or third year of the industrial programme, which implied that they had made a choice to stay within their vocational education, and had not dropped out or switched programmes. This means that the students who were selected were perhaps not the students who were the most negative towards the industrial programme. Instead, the students selected often wished to form vocational identities aligned with industrial work. This is perhaps most significant for article 4, which focused on the strategies female vocational students used to become a part of the workplace community. The female students represented in this study generally identified with industrial work. It is reasonable to assume that most of the girls who, for various reasons, did not identify and align with the male-dominated community of industrial work had dropped out of the industrial programme before reaching the second or third year of the vocational education.

Thus, one limitation is that vocational students who had dropped out from the industrial programme were not included in this study. At a national level, nine per cent of the students

who started the industrial programme in 2017 had dropped out before completing the second year (National Agency for Education, 2020). If this group of students had been included, it is likely that they would have other experiences of the industrial programme that would probably have contributed a wider understanding of what made students disengage and disidentify with industrial vocations.

Nevertheless, there was variation among the interviewed students, as they came from different schools, were enrolled on different vocational education models of the industrial programme and were of both sexes. The female vocational students constituted quite a substantial proportion of all the students interviewed. Since this study shows that habitus is important for vocational students' vocational identity formation, it would have been valuable to know more about their background and previous experience. In this thesis, class and gender have been considered in relation to vocational identity formation, but other background factors such as ethnicity could also have contributed important knowledge for understanding students' vocational identity formation. As reported by the National Agency for Education (2020), approximately 20 per cent of the students in the industrial programme have a foreign background. It is possible that dimensions connected to ethnicity, just like aspects connected to gender and class, could be of importance when forming a vocational identity within industrial work.

9. CONCLUSIONS AND PRACTICAL IMPLICATIONS

Vocational identity formation appears to be a dynamic and complex process, as exemplified in the students' learning trajectories. Three main conclusions are drawn.

The first conclusion is that the students form vocational identities through vocational agency by actively using strategies for being accepted into the workplace community during their workplace-based learning. The learning strategies used should not be understood as passive adaptions to workplace norms and ideals, but rather as active negotiations and interactions with experienced workers to become a skilled industrial worker. The students' habitus is vital for the development of these strategies and for the students' preparation to join a workplace community. During workplace-based learning, the students could also form a desired vocational habitus connected to industrial work. While the vocational students actively aligned their habitus with industrial work, they also distanced themselves from a student identity and connections with such an identity, such as theoretical knowledge and school-based learning; the students actively adapted to the vocational identity of an industrial worker. For the female students, this involved distancing themselves from both a student identity and a traditional female identity.

The first conclusion implies that students accept a huge amount of individual responsibility for their own learning. Even though this is a way in which students exercise agency in their vocational identity formation, it can have practical

implications because there is a shift in responsibility away from the principals, teachers and supervisors and towards the individual students. This shift in responsibility can lead to students not receiving the quality of education and workplace-based learning to which they are entitled. It is therefore important that vocational students are continuously reminded of their rights and the requirements that their education is obligated to live up to.

The second conclusion is about the value of workplace-based learning for students' vocational identity formation. Workplace-based learning is a crucial part of students' vocational identity formation, despite the relatively small part this type of learning plays in vocational education at Swedish upper secondary schools. The students viewed school-based and workplace-based learning as two completely different worlds, and generally prioritised the activities, relationships and knowledge associated with workplace-based learning over those related to school. The students appreciated carrying out real work and becoming a part of the social culture and jargon in the workplace. The traditionally male banter of the workplace was something that both female and male students needed to master in order to be included in the workplace community. For the female students, this could constitute a gender barrier, as they were not always expected to be able to handle such banter.

The practical implication of this conclusion is that it is central that the impacts of workplace-based learning are observed to a greater degree in vocational education and that the responsibility for following up on students' situations in workplaces becomes a high priority within vocational education. Therefore, workplace-based learning must be assigned the necessary resources to provide workplaces that

offer supportive learning conditions that attract both female and male vocational students to vocations in the industrial sector.

The third conclusion is that the students' vocational image awareness exhibits tensions between their awareness of other people's images of their vocational education and vocation, and the pride the students themselves expressed in their intended vocation, which they viewed as attractive, complex and advanced. In the context of upper secondary education, the vocational students were aware of the disparity of esteem between vocational programmes and programmes preparatory for higher education, and the low status of industrial work. The industrial students took pride in both their vocations and defining themselves as practically oriented people, identifying as workers rather than students. Therefore, a practical implication is that the low status of vocational programmes is not best addressed by comparing such programmes with programmes that are preparatory for higher education, but rather by increasing the awareness of and respect for vocational education in its own right.

10. SUGGESTIONS FOR FURTHER RESEARCH

This thesis has identified several areas that need to be examined further. The relevance and applicability of the concepts of vocational agency and vocational image awareness, as proposed in this thesis, could be examined in other studies of vocational identity formation within vocational education. This suggestion also applies to the model of vocational students' vocational identity formation, as presented in the discussion.

The focus on status hierarchy and reflection on different types of knowledge seemed to be an important part of vocational identity formation for the vocational students, as discussed earlier. It would therefore be relevant to examine whether reflection on status regarding different types of knowledge and work is also relevant for the identity formation of students in programmes preparatory for higher education.

The subject of gender has been examined in the fourth article of this thesis, and social class has been implied in my use of the concept of habitus. More valuable knowledge about this could be provided by looking deeper into how these aspects may be relevant for vocational identity formation. Aspects relating to ethnicity have not been addressed at all in this thesis, and I think it would be fruitful to see them examined in the context of vocational education and vocational identity formation. As mentioned previously, valuable knowledge about vocational identity formation could be provided by examining how the findings of this study relate to the students who, for various reasons, have dropped out of the industrial programme.

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APPENDIX 1 – THE INTERVIEW GUIDE (TRANSLATED)

Background issues
Can you describe why you chose the industrial programme?
My own interest
Possible influence/inspiration (from parents, friends, teachers, supervisors)
The industrial vocations for which the programme prepares students
My own vocational orientation within the programme

What is the status of the industrial programme at the upper secondary school you attend?

What do you call yourself out at the company? Apprentice? Trainee? Something else?

The company and the workplace
Can you describe the company/workplace where you are now (or have most recently been) an apprentice, or where you conducted your workplace-based learning?
How long have you been here?
Which department, work team/work group do you belong to?
How would you describe your work team/work group?
What does it mean to be an apprentice/to conduct workplace-based learning at the company?
Supervisor in the work team? At the company?

What experiences do you have of other workplaces/internships? How is this company different from previous jobs?

The work

Can you describe what you do on a normal working day?
What are your main tasks?
Which tasks are most interesting and stimulating?
Who do you work with?
How is the work divided between the members of the working group? How do you collaborate? Who does what?
What do you do and what do you not do as an apprentice/trainee (content)?

What requirements do you feel the others in the work team place on you as an apprentice/trainee at work?

How are you involved in the work? What role do you usually play? (If you are not directly involved in the work, why not?)

To what extent do you as an apprentice/trainee have the opportunity to decide for yourself a) what you are going to do, and b) how you are going to carry out the work?

Describe the support you receive for carrying out various tasks. Support from:
The supervisor from the school. (What role does the supervisor have, what support does the supervisor give, how often do meetings take place, etc.) Do you need more support from the supervisor?
Informal supervisors (resources in the work team)
Colleagues/the work team

Other people?

Do you usually discuss your tasks, e.g. in terms of experience gained, work procedures, etc., with:
The supervisor from the school
A supervisor at the workplace (if you have one)
Other colleagues
If “yes”, what do you discuss? If “no”, why not?

Which person(s) do you think is/are most important for your learning of the vocation?

Can you name someone (a person) or something (an event) at work that made a lasting impression on you?

Students’ experiences of learning at work and its conditions

What do you need to know to do this job well?
What knowledge and skills are important, e.g. practical touch, theoretical knowledge?
Which qualities are important, such as accuracy, independence, ability to work together? Other?

What are the characteristics of a good operator/assembler?
Notions of the professional role
Knowledge, skills, etc.

In what way do you learn the work/vocation?
Alone through practical work, together with other colleagues, etc.
What role does daily work play in your learning of the

work/the vocation?
Through the school-based courses. What role do the school-based courses play in your learning of the work/vocation?

How long do you think it will take you to learn (your) tasks/the vocation?

Give examples of occasions when you learn (are forced to learn) new things at work. What has been learned and how?

What facilitates or complicates your learning of the work/vocation in the workplace?

Experiences of the importance of gender (This theme was added to the second round of interviews and was used only in that data collection)

What is the distribution between girls and boys in the education?
What is the distribution between women and men in the workplace where you conduct your workplace-based learning?
How do you feel about being a student in a male-dominated workplace?
How do you feel about being a student in an education with such a large proportion of boys?
How do you experience that boys and girls are treated in the workplace where you conduct your workplace-based learning?
How do you feel that boys and girls are treated in the education in general?
Have you ever felt during your education that you were

treated differently (positively or negatively) because of your gender?
For example, this could be by:
Colleagues at your workplace-based learning
Other students
Supervisors
Teachers
What reasons can you see why so few girls apply for the industrial programme?
What do you think could contribute to more girls applying for the industrial programme?
How do you feel that issues related to gender distribution are being worked on within the education?
What do you think male and female employees respectively appreciate about working in the industry?
What do you think male and female students respectively appreciate about attending the industrial programme?

The significance of the workplace-based learning and future vocation/working life

What has the time at the company/workplace and the work meant to you personally?
What have you gained from your apprenticeship/workplace-based learning? Has the workplace-based learning meant anything positive/negative for you? Describe!
Have you learned anything new? Give examples!

Has your perception of the work/vocation changed during your apprenticeship/workplace-based learning at the company/workplace?
Your view of/attitude to industrial work/vocation?

How you perform different tasks?
Other?

What are your expectations for the continued apprenticeship/continuing workplace-based learning?
Hopes and fears
Is there anything you would like to change? What?
If not, why not?
What advice would you like to give to the teachers at the school, the supervisor and those at the workplace?

What have you gained from your apprenticeship that you think you will benefit from in your future vocation/working life? Describe.

What are your career plans for the next two, five (ten) years?

What are the best and worst things about working in the industry?

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