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Towards industrial careers in Sweden

A narrative study of students choosing the Industrial Technology program

Hamid Asghari

Department of Educational Studies, Karlstad University, Sweden

Contact: hamid.asghari@kau.se

Abstract

This article is about six students' descriptions of their choice of the Industrial Technology program. I have applied a narrative perspective and analysed the students' narratives thematically. The research question is about the prominent themes of students' descriptions of their choice of the program, and the answer is that four themes emerge from the descriptions. Two of the themes point to the advantages and disadvantages of industry jobs and industrial education. The third theme is about students' choice of industrial education as influenced by other people such as parents, teachers or study counsellors. The fourth theme is about the choice of the program as a way for newly arrived refugees to get industrial work and eventually a permanent residence permit. The conclusion is that students who choose industrial education do not necessarily have the ambition to work as industrial workers. This may affect the industrial skills supply in the future in Sweden as an industrial country. Newly arrived refugees in industrial education are included in this supply of skills, but these young people can also pursue other careers after completing their education. Although the choice of upper secondary education is free in Sweden, this freedom does not apply to these young people who make the choice based on the pressure on them to get a job after completing their education to be able to stay in Sweden.

Keywords: Students' educational choices, Newly arrived refugees, Vocational upper secondary school, the Industrial Technology program, Narrative research

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Introduction

In many places in Sweden the Industrial Technology program has been discontinued due to fewer students (SOU, 2020:33), but there is one exception. A survey from the Swedish National Agency for Education (2017) shows that vocational education is more attractive than study preparation programs to newly arrived immigrants in Sweden. Despite newly arrived immigrants' interest in vocational education (Swedish National Agency for Education, 2017), Swedish research shows that vocational education in Sweden generally has a low attractiveness (Panican, 2020). The fact that fewer students apply for the Industrial Technology program leads to the assumption that the program has become less popular among Swedish young people in recent years.

In the article, I use the term newly arrived for the group of immigrants who have arrived as asylum seekers from 2015 onwards. One reason why many newly arrived immigrants choose vocational education may be the Gymnasielagen Act [The new law on upper secondary level studies], which entered into force on 1 July 2018. Sweden was one of the European countries that received a large number of refugees in 2015 (Atanasoska & Proyer, 2018). Among these refugees were unaccompanied minors, and some of them have been allowed to stay in Sweden through the Gymnasielagen Act (Swedish Code of Statutes, 2017), which stipulates that unaccompanied minors who were not allowed to stay in Sweden could apply for a residence permit for upper secondary education[1]. In order for the refugee youths to have the opportunity to stay in Sweden, the new law requires them to find a job to support themselves within six months after completing upper secondary education.

Despite closures and relocations of companies to low-wage countries, Sweden is still an industrial country with many modern and High-Tech, national and international, large and small industrial companies that are in need of competent personnel. The Swedish state has implemented labour market policy measures in the form of further education of the unemployed in order to increase their chances of employment, but these initiatives primarily apply to adult education.

However, there are still students studying in the Industrial Technology program in Sweden. In view of the above picture of industry and industrial education, it is extremely important to get a picture of the young people who, after all, have chosen the Industrial Technology program. In that context, it also becomes important to study the choice of the program by newly arrived refugees. The purpose of this study is thus to contribute knowledge about students' choice of the Industrial Technology program. The research questions that I raise in this context are:

1) *What themes emerge from the students' narratives about their choice of the Industrial Technology program?*
2) *What more specific theme emerges solely from the newly arrived refugees' stories about their choice of the Industrial Technology program?*

This article is based on a narrative perspective and the narratives of six students, two of whom are newly arrived refugees, from five different vocational upper secondary schools in Sweden about their choice of the Industrial Technology program.

The upper secondary Industrial Technology program in Sweden

The Industrial Technology program is a three-year vocational program that leads to a vocational degree. The Swedish National Agency for Education (2011) describes the Industrial Technology program as a program that aims to create conditions for students to both gain basic knowledge required for work in industrial production and establish a foundation for continued learning in working life and for further studies. The students who participated in this study are studying Product and machine Technology and Welding Technology. Product and machine Technology includes handling tools, industrial equipment and CNC Technology. CNC Technology deals with production through computerised workshop machines. Welding Technology includes various welding techniques and sheet metal processing. In order to create a work-life balance for the young people, and to prepare them for professional practice (Andersson & Lindberg, 2022; Hanssen & Utvær, 2022), the Industrial Technology program is also offered as an apprenticeship. An apprenticeship provides the same knowledge and the same vocational degree, but half of the education takes place at one or more workplaces. It also gives vocational students opportunities to practice the vocational skills they learned at school in the workplace.

Previous research on students' choice of education

Previous research shows that in many countries vocational education has a lower status than college preparatory education (Aarkrog, 2020; Billett et al., 2020; Bolli et al., 2018; Sandell, 2007), but there have also been various initiatives by some European countries in recent years to raise the status of vocational education. Vocational education has a much higher status in countries such as Germany, Switzerland, Austria, and some Scandinavian countries than in some other countries such as England, the USA, and Australia (Billett, 2013). The combination of school-based learning and learning in the company in Switzerland (e.g. Borkowsky & Gonon, 1998) and the fact that vocational education provides young professionals with the necessary skills and competences, by combining different educational institutions, has raised the status of vocational education in Switzerland (Bolli et al., 2018; Borkowsky & Gonon, 1998). In addition, vocational education has a higher social status in the Swiss countryside (Bolli et al., 2018). In Germany, the status of vocational education has been raised through the apprenticeship model and the dual system (Salter et al., 2017). In the dual system, young people in vocational education alternate theoretical teaching in school with apprenticeship training in companies. Companies offer internships in both low- and high-skilled jobs (Salter et al., 2017). In Finland, work-related learning, vocational students' opportunities for further studies in higher education, the strengthening of links between educational institutions and working life, international exchange programs, and opportunities to participate in national and international competitions have improved the status of vocational education in the country (Stenström & Virolainen, 2016; Virolainen & Persson Thunqvist, 2017). Good job opportunities after completing vocational education in Sweden, Norway and Denmark have made some vocational education popular (though to varying degrees) for some students in these countries (Jørgensen, 2013, 2018; Nyen et al., 2013).

Vocational education is often segregated based on gender, ethnicity and class (Colding, 2006; Nylund et al., 2018). The lower status of vocational education compared with the higher status of college preparatory education may mean that young people with low grades from primary school, and with less motivation for education, often apply to vocational programs (Aarkrog, 2020). Young people's social and class backgrounds are common important factors for their educational choices (Bratsberg et al., 2017; Jørgensen, 2018; Nylund et al., 2018; Paulsen & Haug, 2020) and often they perform self-sorting based on class even before they choose their upper secondary education (Nylund et al., 2018; Sandell, 2007). Young people from the working class also often choose short educations that are expected to lead to work with a good income (Bratsberg et al., 2017).

The choice of a vocational program is not only a choice of an education but also a choice of social positions (Billett, 2014). Young people's sense of community and class affiliation can be important for their choice of education (Aarkrog, 2020; Birkelund et al., 2021; Jørgensen, 2018). In their choice of education, they consider what group and what social class would usually choose a certain program and whether or not they identify themselves as belonging to that group and class (Sandell, 2007). Class can play an important role in how students assess themselves and their educational choices. In other words, young people's backgrounds can set limits on the educational choices that they consider possible. Young people with less privileged socio-economic backgrounds often believe less in their own abilities, and if they have bad experiences of school and education, they rarely want to study further at university (Anders, 2017; Atkins & Flint, 2015; Meriläinen et al., 2019).

Both parents and teachers are often of great importance in motivating young people to choose education (Billett et al., 2020; Hegna & Smette, 2017). Choice of education may also be related to international political events (Pilz et al., 2018), such as, for example, students' opportunities for free movement among European countries and their opportunities for work and employment in those countries. Young people choose vocational education not only based on their interest in practical work (Paulsen & Haug, 2020), but also based on the job opportunities that the education provides (Atkins & Flint, 2015; Paulsen & Haug, 2020). Opportunities for continued competence development within the profession and to become specialised in a specific vocational area can also be crucial for their choice of vocational education (Paulsen & Haug, 2020). The choice of vocational education can also vary in relation to age, education levels and subject areas (Atkins & Flint, 2015).

Young people's choice of vocational education can also be related to their ethnicity. For example, young people with an immigrant background largely choose vocational education (Avis et al., 2017; Brunila et al., 2011; Colding, 2006). In England, for instance, black students and minority ethnic students are overrepresented in vocational education (Avis et al., 2017). However, research also shows that many young people with an immigrant background choose higher education, and girls from immigrant families are generally more successful in school than boys with similar backgrounds (Colding, 2006). The programs chosen by young people with an immigrant background are often related to employment opportunities and further studies (Kalalahti et al., 2017).

I would like to end this section by clarifying that previous research on young people's choices of education has contributed to knowledge about their educational choices, but when I started to take a closer look at the research area, I found that at least one piece of the puzzle was

missing. This piece of the puzzle is vocational students' narratives about their choice of the Industrial Technology program. Therefore this study contributes to making vocational students, their choice of the Industrial Technology program, and also upper secondary industrial Technology education in general more visible in ongoing debates about education in Sweden and in other Nordic countries.

Stories as methodological and theoretical approach

The vocational students in this study I have chosen to call Melvin, Isak, Ingemar, Frans, Farid and Mahdi. The interviews with the students in this study were conducted during the academic year 2020-2021. A statistical chart from the Swedish National Agency for Education (2021, p. 8) shows that a large majority of students in the Industrial Technology program during the academic year 2020-2021 were men. Statistics from SCB (2021) also show that 89.2 % of students who studied at the Industrial Technology program during the academic year 2021/2022 were men. This is perhaps one reason why all six students who wanted to participate in my research are men.

The methodological approach in the study is based on a narrative perspective (cf., Mishler, 1999), where what the vocational students told in the interviews is at the centre. The students were interviewed individually three times. The length of the first and second interviews was between 45 minutes and one hour, and the length of the third interview was about 30 minutes. Due to the Corona pandemic, they were interviewed via Zoom once in 2020 and twice in 2021. The interview questions were semi-structured (Kvale & Brinkmann, 2008) and focused on the main area of vocational students' path to the Industrial Technology program. The questions were about the the students' educational and professional background, their knowledge of the Industrial Technology program before choosing it, their relation to industry and industrial work, etc. After transcribing and analysing the first interviews, I saw that there were recurring descriptions/words in certain parts of the students' stories, or knowledge gaps in certain parts of the stories, that I wanted to know more about, therefore, I conducted second and third interviews with the students.

I brought together each student's interview data from the first, the second and the third interviews and structured the descriptions chronologically (Lieblich et al. 1998). In other words, I as researcher created stories from the students' stories (Lieblich et al. 1998). The interviews were conducted in Swedish and translated into English. The students' descriptions presented in this article are not transcribed verbatim, but I have assumed that there should be as few changes as possible in the descriptions and in the translation from Swedish to English so the students can recognize themselves in the descriptions when/if they read this article. All interviews were recorded, and transcribed immediately after the interview.

My research is based on narrative interviews with six students, which means I cannot draw any representative conclusions. In narrative research, the researcher starts from in-depth interviews with respondents rather than the number of respondents. An example of this is Mishler (1999) who in his research interviewed five artists in depth. In my study, I have interviewed six students, but the interviews have been done three times after each stage of the analysis. The vocational students' descriptions provide knowledge that increases understanding of their vocational education choices can represent a larger group of different students in industrial educations. In other words, the study contributes knowledge through a constructed

reality of six students' motives that can be generalizable through recognisability (cf. Asghari, 2014). Generalizable through recognisability means that the reader can absorb parts of the research and that the research should generally be interesting to many readers (cf. Delmar, 2010; Schofield, 2007). This means that people who are involved in various ways in the Industrial Technology program can absorb parts of the study and the results can generally be of interest to them (Asghari, 2014).

What the vocational students told me was an extensive interview material. Since I have to delineate what is relevant to this study, as part of the constructive perspective on narratives (Mishler, 1999), I started from Lieblich et al. (1998) and selected a number of *descriptions* that contained unique events that were highlighted by the students as significant in relation to their choice of the Industrial Technology program.

The theoretical approach is about understanding what the vocational students tell, that is, the notion that the vocational students create meaning, both for their own role as students and narrators and for their surroundings (cf., Mishler, 1999). In the interview situation, the students highlight what they consider relevant to me as an interviewer (researcher) and/or what they think I want to hear. While the students talk about their choice of the Industrial Technology program, they construct different kinds of identities, and they look back on their experiences of the path to choosing this particular education (cf., Bruner, 1986). In the narrative, they reflect on these experiences (cf., Freeman, 2010), and in collaboration with me as a researcher who interviews them, they construct their stories based on the interview situation they are in.

The students' descriptions can be seen as socially situated actions where, by telling about their path to the Industrial Technology program, they create meaning about themselves and about their world (cf., Goodson & Anstead, 2012; Pérez Prieto, 2000). Through language, they give form and meaning to their experiences, but in my role as a researcher I am with them, both as a conversation partner and as an audience, when they tell about and reflect on the experiences. What the vocational students tell, and how and why they tell it, is shaped by their experiences, but also by me as a researcher and by the questions I ask.

Analysis of life story interviews

The analysis is inspired by Riessman's (2008) description of thematic narrative analysis. In my thematic analysis, I am attempting to identify the core characteristics of the students' stories. By studying what they are telling, I am able to identify different themes in their stories. Based on Riessman's (2008) theory, a theme can be discovered by comparison of different stories, or through the comparison of different parts of the same story where certain descriptions are repeated. I am using a thematic narrative analysis approach by reading the informants' stories multiple times and by coding the repeated, recurring *descriptions* both in individual stories and in several vocational students' stories (cf., Riessman, 2008). One example of recurring descriptions that constitute the theme *The benefits of industrial education* is that the benefits reappear in several stories. In that case, the students talk about *a good work environment*, *high wages*, *good job opportunities* and *high status*, and so on, which could be reasons why the students chose the Industrial Technology program. The remaining themes, which will be presented in the section *Result*, were created in a similar way through analysis of the students' recurring descriptions about industry and the Industrial Technology program. As a researcher, I

alone am responsible for the analysis, but for the construction of the descriptions, I am clearly dependent on the students' stories, of which I am a co-creator.

Information about the schools in the study

Students from three types of vocational upper secondary schools were included in this study: municipal schools, friskolor [Independent schools], and industrial schools.

Municipal vocational upper secondary schools are the most common type of schools in Sweden. They are owned by municipalities and offer free vocational education to young people. Municipal vocational upper secondary schools educate the vocational students based on the criteria of the Swedish National Agency for Education.

Friskolor [Independent vocational upper secondary schools] are schools that are mainly financed by taxes, and are free for students who study there. Friskolor are not owned by the state or municipality. They can have different types of owners, such as foundations or profit-oriented private companies. Friskolor educate the vocational students based on the criteria of the Swedish National Agency for Education.

Industrial upper secondary schools are owned by industrial companies and receive a number of students annually to educate them for their own activities based on the criteria of the Swedish National Agency for Education. These schools, as well as municipal schools and friskolor [Independent schools], are free for students who study there.

Information about the students

To make it easier to remember what type of school each student attends, the names of students studying at **m**unicipal upper secondary schools begin with the letter **M**, the names of students studying at **i**ndustrial upper secondary schools begin with the letter **I**, and the names of students studying at **F**riskolor [Independent schools] begin with the letter **F**. These six students study at five different schools. Apart from **F**arid and **F**rans who are classmates with each other, no other students know each other.

At the first interview in 2020, **M**elvin, **I**sak, and **I**ngemar were 19 years old. **M**elvin studied at a **m**unicipal upper secondary school and **I**sak and **I**ngemar studied at two different **I**ndustrial upper secondary school.

At the first interview in 2020, **F**rans was 19 years old. Frans moved to Sweden at the age of 12 from an EU country with his parents. **F**rans studied at a **F**riskola.

At the first interview in 2020, both **F**arid and **M**ahdi were 22 years old and came to Sweden as unaccompanied refugees in 2015 when they were 17 years old. **F**arid studied at a **F**riskola and **M**ahdi studied at a **m**unicipal upper secondary school.

Ethical approach

I work as both a researcher and a vocational teacher educator at a university in Sweden. Among my vocational teacher students who studied on the short-track teacher education programme (for further information on short-track teacher education in Sweden, please see Asghari and Andersén, 2022) during the academic years 2019 – 2022, there were dozens of industrial teacher students. The teacher students worked as unauthorized industrial teachers at various vocational

upper secondary schools in various cities in Sweden. I told these industrial teachers about my study, and that I would like to interview some of their students. I gave the information letter about my study to the industrial teachers, and asked them to share the information letter with their students and also tell them about my study. From an ethical perspective, so that the vocational students would not feel forced, and so that they would have time to think about their participation in my research, I wanted the vocational students themselves to take the initiative and contact me if they wanted to participate in my research. After this, six vocational students from five vocational upper secondary schools returned to me via email and wrote that they wanted to be interviewed. I called those students to inform them about the purpose and the ethical principles of the study, based on the guidelines of the Swedish Research Council (2017). I explained that their participation in my study is voluntary, and that they at any time during the ongoing study have the right to cancel their participation. I also told them that I would treat the interview material confidentially, that is, names of places and people would be fictitious and the recorded interviews would be kept in a safe place.

Farid and Frans are aware of each other's participation. I told them that it would be highly likely that they would tell each other about the interview conversations with me, but that I as a researcher would not tell any of them what the other had said (cf., Sikes, 2010). I have also told the vocational students that the interview materials will be used in scientific publications, research conferences and teaching. All students have given written consent to participate in the study.

Results

In this section, I answer the research questions that deal with the themes that emerge from the students' stories about their choice of the Industrial Technology program as well as the themes that more specifically emerge only from the newly arrived refugees' stories about their choice of the Industrial Technology program.

The themes that emerge from the students' stories

In response to the first research question, the students' descriptions of their choice of the Industrial Technology program provide a varied picture where three themes become visible:

1) The benefits of industrial education
2) The disadvantages of industrial education
3) The choice of vocational education influenced by others

The benefits of industrial education

This theme emerges from the students' descriptions of the advantages of vocational schools, industrial companies, and industrial work. What the students say can be seen as a reason why they chose the Industrial Technology programme. For example, Frans says:

> A world-famous industry doesn't only exist in Sweden. It is also in my home country, it's all over Europe now, good work, good wages, and they have to stick to the laws, to the industrial union, and make sure that the workers in all their factories in Europe are treated well, they get salary

> when they get sick. So, it was obviously important for me to choose an education that could give me a job in the industry that takes responsibility for its employees.

Ingemar says the following about good work and good wages in the world-famous company that owns his school: « The workers here are very proud to work here. Wages are also high and good, and I know I can get a job here right after I finish my education. I'm very happy with my choice of education.» Below, Isak also tells me about what it is like to work at the world-famous company:

> Working in a world-famous Swedish industry has a very high status, but maybe not otherwise. It isn't popular among young people to work in small workshops that have old machines and aren't High-Tech. It's the same with my education. It is owned by a well-known company, and then it definitely has a high status. Actually, industrial work here is a good job, with good wages. It's great, very modern. Many people think that industry is dirty, a lot of oils, hard work, but working here isn't like that.

Ingemar also talks about the modern and High-Tech industry and the high status that such an industry enjoys:

> Our CNC machines in school aren't even available at many other companies. We do our tasks on such very modern and High-Tech machines, a lot of variety. Those who don't know what it is about, they think you are almost a rocket scientist. It's a very high status, and the high status that our school has, it provides a future job, many job opportunities, and those who don't get jobs here at the company get jobs at other companies.

Below, Farid makes a comparison between two work environments in two different countries and says:

> I sometimes did simple welding jobs in my home country. Workshop managers treated us like animals, we were their slaves. […] I was actually unsure about choosing the industrial education. I didn't want to be a slave and an animal again, but then [in Sweden] we went on a study visit and the boss there talked to us just as if we were people like him. It was weird. I wasn't an animal anymore. Then I chose industrial education. Now I do my APL [workplace learning] there and he respects me just like all other people.

From the students' descriptions, it appears that the good working environments of the industrial companies seem to have been important for the students' choice of the industrial education, for example that the industrial companies show responsibility towards their employees and respect for the industrial workers' rights. In addition, the status of industrial companies is important for students' choice. A high-status industrial company is clean, modern and high-tech, and/or world-famous in contrast to a low-status industrial company that is dirty and hard work. Aspects such as high wages, good future employment opportunities, and the type of industry tasks that are produced by advanced CNC-machines have also had an impact on students' choice. Schools belonging to a high-status industrial company, and industrial workers' pride in working for the company, also appear to have been important to some students' choices. In those schools, many of their students also get employment in the company itself after completing the vocational training, which makes industrial education popular among applicants.

The disadvantages of industrial education

This theme emerges from the students' descriptions of the disadvantages of vocational schools, industrial companies, and industrial work. What the students say can be seen as reasons why some other students do not choose the Industrial Technology program. Mehdi says:

> When I was going to choose education, I was on a study visit here [in the school], and I heard from some students that industrial education was boring, and it may be so, but not always. […] What I find boring is, you turn on a piece ten times, and when it's approved, you throw it in a scrap box, how pointless can it be?

Melvin also talks about his experiences of industrial education before choosing an upper secondary program:

> Before I chose the education, I had heard that it was just crappy tasks you did here and it's true, it's just crappy tasks we're doing here. If I drive a garbage truck, I have at least done something, with the same salary. It's also a fun job, I would really choose vehicle, but ah, it became as it became […] In year 2, I wanted to change to the vehicle program, but they said, no, your grades from primary school are too bad to get into the program.

Farid talks about the low admission criteria of the Industrial Technology program too:

> I think it is very easy to get into the education. Anyone can enter the education. No one is looking for that, and they take in anyone, and that's a shame, because they are still not eager to study, and they just give a bad reputation to the education. You are ashamed to say that you study industry, because of them.

Frans talks about the students' willingness to work with something that is heavy and dirty, and specifically, cleaning the workshop on Fridays.

> On Fridays when we have to clean [the school's] workshop, everyone disappears. Only our poor [vocational] teacher is left cleaning the whole workshop and putting the tools back, when he asks why did you disappear last Friday? [They answer:] We had no desire to clean. […] I think many students think, why should I choose industrial education that means so much cleaning all the time? I work with other things that don't involve much cleaning. It's the same with me, I want to work in industry, but as an engineer and not as an industrial worker. I will study mechanical engineering at university after completing the education.

Another aspect that may be important for students' choice of the Industrial Technology program is the precarious work situation in industry. For example, Isak says:

> I see nothing negative with industry other than the uncertainty that exists. You may have a job today, but will be unemployed tomorrow. That was what happened to my father, and it made me insecure when I was going to apply to the education. My father also worked here [at the international industrial company], but they moved the jobs to a low-wage country when I was little, and he became unemployed. They sold the house, and they had a hard time until my father got a new job at a grocery store.

From the students' descriptions, it is clear that the rumour about boring schoolwork, which the students had heard before choosing the education, made them hesitant about choosing the Industrial Technology program. These rumours turned out to be partially consistent with their experiences of the education. Other students who attend or have attended industrial education can also tell about boring schoolwork in industrial education for students who are faced with the choice of education. The low admission criteria for the Industrial Technology program, and the fact that students with low grades from elementary school can choose the program, give the program a low status, or as Farid says: "You are ashamed to say that you study industry". The low status may be a reason why some students opt-out of the Industrial Technology program. The education can also be perceived by some students as an education that leads to industrial work that is heavy and dirty. These students can also choose other educations instead of the

Industrial Technology programme. During their lives, some students have experienced the relocation of industrial companies to low-wage countries and dismissals of staff. These experiences may be a reason for the students not to choose industrial education.

The choice of vocational education influenced by others

The theme emerges from the students' descriptions of the advice they received from parents, family members, school staff and friends regarding the choice of education. What the students say can be seen as reasons why they chose the Industrial Technology program. For example, Frans says:

> Where my father works, it is fantastic, very modern and High-Tech, and since my dad works there, it was obvious that I would study industrial education. Dad always said to me: Choose industrial education, but study further at the university to become an engineer. Then you will have the best job in the world here at the company with me.

Another student whose father's work situation has been important for his choice of industry education is Isak. He says:

> I was actually hesitant to choose industry because when I was little my father and many others in our city became unemployed when they moved large parts of production to a low-wage country. […] I had no plans, nothing. What happened was that mom, and dad know a teacher who works here at school, and he said that I should come to the open house some evening. I was there and the teacher told me about the industrial education and job opportunities, then I chose the Industrial Technology program.

When it comes to doubts about the choice of the Industrial Technology program, Ingemar says:

> I was unsure if I should choose industrial education. We have a well-known industrial company here in our municipality, but it has been going up and down since the 90s. At least since when I was little I have heard that they lay off people and hire people, all the time, all the time, but my brother went to the same education and finished his education the year before I was to start the education. He got a job at the company immediately after finishing his education, and he is very happy with the job. He told me about the education, and said that it was a very good education, and I chose it.

Unlike Isak and Ingemar, Melvin is dissatisfied with his choice of industrial education. Melvin says:

> We were four besties since childhood. When we went out primary school, we all chose the industry, but I knew nothing about CNC. […] Workshop is fun, but not math and stuff like that, and as I remember, when we were at an open house, they said nothing about math. They just showed us how to draw in the computer, and they made an eggcup in a CNC machine. It looked cool, so really, they didn't show the whole truth, but the study counsellor actually said that there was a lot of math behind that eggcup and I shouldn't choose industrial education, but my friends chose it, so I chose it too.

From the students' descriptions, it appears that the parents can have an influence in their children's educational choices, the children's future university educations, and their future profession (for example to become an engineer). Other family members such as siblings, and even friends who have previously studied at the Industrial Technology programme can also influence the students' choice of education. In addition to these people, teachers, guidance counsellors and other school staff give tips and advice regarding the education that the students

should choose or not choose. Activities such as open houses can also arouse students' interest in choosing the Industrial Technology programme.

The theme that emerges solely from the newly arrived refugees' stories

In response to the second research question, a fourth theme becomes visible, but solely from the newly arrived refugee students' descriptions of their choice of the Industrial Technology program. The theme is: 4) Industrial education as a way to obtain a permanent residence permit through work.

Industrial education as a way to obtain a permanent residence permit through work

This prominent theme shows one of the reasons why some newly arrived refugee students choose the Industrial Technology program. Farid says:

> I have to find a job within six months after my education, otherwise I will be deported to my home country. I saw that the job opportunities after [industry] education were great here, and I could get a job and stay in Sweden, which was not true for the Healthcare program. It was before the pandemic and they didn't need so many assistant nurses. Then, I saw that the employers were not like my bosses in my home country either, and I thought okay, I choose industry and not Healthcare program. […] I have already been promised from my APL places [workplace learning] to get a job after the education. The situation is actually good.

Like Farid, Mahdi says that he chose the welding education to be able to get a job and stay in Sweden:

> If I had a choice, I would never start welding again. I would instead choose a college preparatory program. […] I was never allowed to go to school in my home country, I had no [identity] paper, so, I didn't even exist, and I couldn't go to school either. I was illiterate before I came to Sweden, so I can't read and write in my native language, and here when I learned to read and write in Swedish, it was an incredibly nice feeling. I can't explain that feeling. I'm just eager to study more and more. I want to study further at university, become an engineer, but I don't have this opportunity. I have a pressure on me to get a job six months after completing education and it was the welding education that had good job opportunities.

Ingemar also tells about one of his former classmates who was a newly arrived refugee student:

> I had one. It was a guy who was very kind. He came here with the refugee wave. I was always amazed at how quickly he had learned Swedish. He always said that if he doesn't get a job after school, he will be expelled, and I know that the department manager at our company [who owns the school] had promised him that he would get a job with us, but when we were in grade two, he suddenly disappeared. There was a rumor that he would be deported, so he hid from the authorities, so he didn't come to school anymore.

The newly arrived refugee students' situation, which puts them at risk of deportation, can be decisive for them when choosing the Industrial Technology program. Newly arrived refugee students can also choose industrial education, not to work as industrial workers, but because there is pressure on them to get a job six months after completing their upper secondary education. The stories also show that there may be newly arrived students who want to study at

university and become engineers but do not have the opportunity to do so. The obstacle that deprives them of this opportunity is the threat of deportation. For these students, the choice of the Industrial Technology program seems to be based on the lack of labour in industry, promises of employment from the APL places [workplace learning], and opportunities for employment within six months after completing upper secondary education as required by the Gymnasielagen Act (Swedish Code of Statutes, 2017). Even if a newly arrived refugee student receives a promise from the company management of employment after completing upper secondary education, the expulsion decision can still come before.

Discussion

All people have basic psychological needs for independence and for acquiring the skills that benefit society (Deci & Ryan, 2012), and this also applies to the students in this study. However, some of these students have negative experiences of how the industry treated their relatives. These experiences can also create uncertainty in them about choosing the Industrial Technology program a number of years later. Before students choose educations, they do self-sorting based on what suits them and their backgrounds best (Nylund et al., 2018; Sandell, 2007). Students who have grown up in countries other than Sweden also seem to do self-sorting based on their previous experiences of different work environments, different industries and different types of industrial work. Those students who have work experience from their home countries also compare the work environments in their home countries with those in Sweden before choosing the Industrial Technology program.

The fact that many immigrant students want to study at university can be understood in relation to their upbringing, where studying at university can be considered important, but also that university studies give them a better opportunity to enter the labour market (Bunar, 2015; Colding, 2006; Sharif, 2016). Two of the immigrant students who participated in this study (Mahdi who is a refugee and Frans who comes from an EU country) also say that they want to study at university. Based on Deci & Ryan (2012), I argue that the students' goals to study at the university and become engineers have been created in a process during their lives, and in the interaction with other people in society (for example their teachers, families, acquaintances, friends, etc.). This process appears in Frans' case through his upbringing when his father motivated him to study further and become an engineer, and in Mehdi's case, the process includes having grown up illiterate to then having the incredible feeling of being able to read and write.

Teachers are important for students' choice of education (Billett et al., 2020; Bratsberg et al., 2017; Brunila et al., 2011; Paulsen & Haug, 2020) as well as parents' education and profession (Birkelund et al., 2021; Hegna & Smette, 2017; Meriläinen et al., 2019; Paulsen & Haug, 2020). My study shows that not only the teachers but also other school staff, and other people, can be important for students choosing or not choosing the Industrial Technology program. The parents' experiences of industrial work also seemed to be important for their choice of industrial education, especially if the parents work in modern, clean and High-Tech industries. Learning in the company and school-based learning are also considered important for the vocational education status (Borkowsky & Gonon, 1998; Salter et al., 2017). In this study, the type of

industrial company, what school offers the education, the type of tasks, and the status of the work with the CNC machines can also be decisive for students' choice of industrial education.

Students' choice of education can also be understood in relation to the points made by Atkins and Flint (2015), that is, based on students' own perceptions of what the education is about, and whether they are able to complete the education. Students' perceptions of industrial education and the boring tasks of the education may be a factor that plays a role in their choice of the Industrial Technology program. In this context, it is important to point out that companies expect students to behave professionally and perform their duties, even if the duties may be considered boring. Companies also want to hire students who take responsibility and build up faith in themselves and their own professional judgment (Louw & Pløger Nielsen, 2021). Different educations attract students from different social classes (Billett, 2014), which in turn can also create different status levels for the various programs (Anders, 2017). The low admission criteria of the program can also give the Industrial Technology program a low status. Aarkrog (2020) writes that the low status of certain vocational educations may be a reason why students with low grades from primary school, and with less motivation for education, apply to these vocational educations. The status of vocational education has been discussed in previous research (Aarkrog, 2020; Billett et al., 2020; Sandell, 2007), and in this study, it appears that some students do not want to work with something that can be perceived as heavy and dirty though the industrial work can actually be about work in a workshop that is modern. There is a risk that students who do not enjoy their vocational education drop out. According to Louw och Pløger Nielsen (2021), the dropping out of education is not only a social problem at a time when we need to train a qualified workforce. It can also be experienced as a major defeat for the student himself. Students' perceptions that industrial work is a heavy and dirty work may also be a reason for the status of the Industrial Technology program being lowered. From my understanding, the Industrial Technology program has a varying status depending on the type of school. A school with a low status must somehow fill its vacancies and in that case, students with low grades from primary school can be admitted to the program. The low admission criteria of the program may be a reason why students who want to choose programs with a high status do not choose the Industrial Technology program, and in turn provide space for those students who are not motivated to study at the program.

According to Deci & Ryan (2012), the need to reach a goal in life creates motivation in humans. Newly arrived students also need a residence permit. The goal for them is to live in Sweden, work and study. They are therefore motivated to take an industrial education that gives them both a job and a residence permit, even if they would choose another education based on preference. Students' social backgrounds as well as their life situations are important for their educational choices (cf., Bratsberg et al., 2017; Brunila et al., 2011; Jørgensen, 2018). The life situation of newly arrived refugee students (the threat of deportation) can also be decisive for them in choosing the vocational education. Job opportunities after completing vocational education are important for all students' choice of education (Atkins & Flint, 2015; Kalalahti et al., 2017; Paulsen & Haug, 2020) and can make the vocational education popular among applicants (Bratsberg et al., 2017; Jørgensen, 2013, 2018; Nyen et al., 2013). What is specific to the newly arrived refugee young people is that they need opportunities for work that can help them stay in Sweden. In other words, the job opportunities themselves do not have to be a reason for them to choose the Industrial Technology program. The reason why they choose the

program may be the pressure of having to secure a job within six months after completing their vocational education.

Conclusion

There is a difference between different industrial companies when it comes to status. The industrial schools in the study seem to have more High-Tech industrial machines than municipal schools and friskolor [Independent schools] and thus also a higher status. They are moreover owned by world-famous industries that increase their status even more. It seems that the school belonging to a company with a high status is important for the students' choice of the Industrial Technology program.

All vocational students do not work within the field of their education after completing vocational education. Some change careers, some continue their studies at university, and some live in unemployment (Bjurulf, 2012; Hall, 2009). The result indicates that those who choose industrial education do not necessarily have the ambition to work as industrial workers. They may change careers or study further at university and work in other professions. Since Sweden is still an industrial country, and in need of competent workers, this may affect the supply of skills in industry in the future.

Sweden has taken in a large number of young refugees who in the future may be part of this supply of skills, but they too may have other ambitions than working as industrial workers. The choice of upper secondary education is free in Sweden, but it seems that this freedom does not apply to these young people who make the choice based on the pressure on them to get a job after completing their education in order not to be deported.

Note on contributor

Hamid Asghari is an Associate Professor at the Department of Educational Studies at Karlstad University in Sweden. He holds a PhD in Educational Work. His research interests focus on narrative studies, (vocational) teachers' life stories and vocational education. Asghari is active in teacher and vocational teacher education at Karlstad University.

[1] Although the Gymnasielagen Act does not exist in other Nordic countries, there have also been changes to the law on permanent residence permits for refugees there after 2015. For example, in Denmark, the Danish government has made it more difficult for refugees to obtain a residence permit by changing the law in 2017. Likewise, Finland no longer grants residence permits due to humanitarian reasons since the summer of 2016. In Norway, housing and care services for unaccompanied minors under the age of 15 are also not regulated under the Child Protection Act since 2016 (Nordens välfärdscenter, 2017).

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