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Table of Contents

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EDITORIAL

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International Perspectives on Vocational Schools as Pathways to Higher Education

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Abstract

This thematic issue investigates vocational schools as pathways to higher education (HE) across several countries, analyzing their potential to enhance educational and social mobility. With rising global demand for HE, vocational education and training (VET) systems offer alternative routes to HE, with vocational schools playing a crucial role, providing opportunities for students from less privileged backgrounds. The issue examines how vocational schools in various countries affect the permeability between VET and HE, highlighting the diverse narratives across different educational settings, including the DACH countries, China, the Czech Republic, Japan, Norway, and the United Kingdom. Despite vocational schools' potential to act as bridges to HE, findings remain mixed. Although vocational schools have expanded university access, they often reproduce social inequalities. Analyses suggest that these schools could improve their impact in more targeted ways through stronger teacher engagement, better preparation of students, and structured pathways that acknowledge and address students' diverse needs. The necessity for clear, common terminology and concepts, as well as for appropriate survey data to understand vocational pathways to HE in vocational school research, is emphasized, acknowledging significant research gaps, particularly in Eastern Europe and the Global South. Overall, this thematic issue calls for a new research agenda that includes diverse international perspectives, advocating for the recognition and enhancement of vocational schools as vital components to feed the HE landscape.

Keywords

China; Europe; higher education access; institutional and social permeability; Japan; vocational schools

1. Introduction

Over the last few decades, the demand for post-school education and training, especially university education, has increased worldwide. Education and training have become key parts of the European strategy for responding to major social and economic challenges (Council of the European Union, 2009). Expanding higher education (HE) is not only considered crucial for solving the high skills shortage, but also for achieving economic competitiveness and raising productivity in an increasingly service- and knowledge-based society; it also offers hope of slowing down the growing divide between rich and poor by increasing access to HE for previously excluded students. Accordingly, making access to HE more inclusive has become an important part of the European policy agenda (European Commission et al., 2014). The permeability between vocational education and training (VET) and HE is considered essential for promoting equal opportunities in terms of qualification pathways and enhancing social mobility. The development and upgrading of VET in many countries has created a variety of alternative and "second chance" routes into HE (Orr & Hovdhaugen, 2014).

2. The Special Case of Vocational Schools as Pathways to HE

While alternative pathways that improve permeability between dual VET and HE have been investigated and well conceptualised for the three DACH countries (Germany, Austria, and Switzerland; see Ebner et al., 2013), and while college-based HE common in Anglo-Saxon countries has recently been discussed as a linkage between vocational and HE that may foster social permeability (Moodie et al., 2024), research on vocational schools acting as pathways to HE has remained rare, despite their important function as feeder schools for HE in many countries. Thereby, Frommberger (2019) claims that dual qualifications of school-based vocational training courses that combine a vocational qualification with opportunities for transition to a university degree course are most commonly found in school-based vocational training systems.

According to Frommberger (2019), dual qualifications in school-based VET have traditionally played an important role in Eastern Europe, where the path from VET to HE has remained highly significant since the 1990s. Vocational schools as pathways to HE are also widespread in Nordic countries. Both in Finland and Sweden, the enhancement of the school-based model has been related to increased transitions to HE, although at a different pace and to a different extent (Virolainen & Persson-Thunqvist, 2017). In Norway, students who have completed two years of school-based VET in upper secondary education can opt for a supplementary school program (instead of an apprenticeship), allowing them HE access (Schmees et al., 2024). School-based VET pathways to HE have also been implemented in France (*lycées professionelle*) as well as in the Netherlands (*Middelbaar Beroepsonderwijs* [MBO]; Frommberger, 2019). Even the DACH countries offer this linkage to HE, traditionally via vocational high schools (*Berufsbildende Höhere Schulen* [BHS]) in Austria (Frommberger, 2019), different types of vocationally oriented upper-secondary schools (*Berufsgymnasien*, *Fachgymnasien*, *Fachoberschulen*) in Germany (Wolter, 2023), and upper-secondary specialised schools (*Fachmittelschulen/écoles de culture générale*) in Switzerland (Esposito et al., 2019).

3. More Equal Opportunities Through Vocational Pathways to HE?

Permeability between VET and HE is considered key for improving access for new social groups. Each country's enhancement of VET has created specific alternative and "second chance" routes into HE,

including vocational schools offering dual qualifications, which many students use to enter HE. While vocational routes to HE have evolved significantly, it's unclear if they boost social mobility or sustain social reproduction mechanisms, as seen in educational transitions to secondary education and traditional universities (Hillmert & Jacob, 2003). Research indicates that HE expansion has somewhat reduced educational inequalities, particularly between genders, but disparities by social origin persist (Arum et al., 2007). Evidence on whether vocational routes to HE reduce inequalities is mixed. In Germany, more and more students enter HE via vocational routes, but this expansion has directed less privileged groups to less prestigious colleges of applied sciences (Lörz, 2013). Conversely, Lassnigg (2011) asserted that Austrian VET colleges offer upward mobility opportunities for middle and lower-class youths. France's baccalaureate diversification increased baccalaureate rates considerably, with less privileged students more likely to achieve a professional baccalaureate than the more prestigious general one. Merle (2002) termed this trend the "segregative democratisation" of HE access.

Research from several European countries suggests that vocational pathways to HE may not enhance social mobility and often reproduce social inequalities (Boliver, 2011). In Switzerland, Falter and Chávez-Juárez (2016) found that dual qualifications connecting apprenticeship training with HE have not reduced inequality and might even strengthen the link between socio-economic status and educational achievement. Nika (2025) points out that in Germany, vocational school graduates are less likely to enter HE compared to general school graduates, and social background inequalities remain despite vocational schools being less socially selective both in terms of social composition and in the transition into HE. In contrast, findings from Finland by Haltia et al. (2021) indicate that those enrolling in HE through the vocational route are more often mature students from lower parental educational backgrounds. Schuchart and Rürup (2017) found that alternative university entrance routes in Germany can offer significant educational benefits, particularly for people with a migrant background. Imdorf et al. (2017) analyzed gender differences, showing that in France, vocational routes help young women with lower cultural capital access HE, whereas in Switzerland these pathways are mainly used by young men from privileged backgrounds to offset their underrepresentation in traditional general education paths. These findings highlight the need to consider an intersectional perspective when analyzing the social permeability of vocational pathways to HE.

4. Contributions of the Thematic Issue

We were especially interested in better understanding how vocational schools select (e.g., by expanding their aspirations) and prepare their students (e.g., by counselling strategies) for trajectories into HE, how effective those schools are in terms of transitions to HE and labour market returns, and the potential of vocational schools to reduce educational inequalities across countries. Finally, we were interested in the ways educational trajectories through these schools are governed at an organizational and institutional level. The aim of this issue is therefore to spotlight international research on these crucial but underexplored topics. The thematic issue contains 10 original contributions covering vocational pathways to HE in eight countries: Austria, China, the Czech Republic, Germany, Japan, Norway, Switzerland, and the United Kingdom. The contributions are on vocational schools of different kinds, which are, however, united in their institutional and social function to feed HE.

4.1. Individual Trajectories Through Vocational Schools Towards HE: Social Causes and Consequences

In Germany, socially disadvantaged students often take alternative routes to obtain the Higher Education Entrance Certificate (HEEC), but these paths lead to fewer transitions to HE. Authors Heiko Quast, Heike Spangenberg, Hanna Mentges, Jessica Ordemann, and Sandra Buchholz examine the differing social compositions of traditional versus alternative pathways to HE. Drawing on rational action theory, their article analyzes the reasons behind these differences using data from the DZHW Panel of School Leavers 2018, employing sequence analysis, logistic regressions, and decomposition techniques. Their findings identify six distinct, socially selective pathways to a HEEC, with four featuring strong vocational elements. Graduates from nearly all alternative paths are less likely to enter HE compared to those from the classical pathway.

Oliver Winkler, Robin Busse, and Stefanie Findeisen investigate opportunities for students in Germany taking vocational routes to obtain a HEEC and transition to university. Using rational choice theory and NEPS starting cohort 4 data, multivariate logistic regression models reveal that initial social selection into either general or vocational educational pathways fully accounts for the probability of obtaining a HEEC. This entry selection also largely explains the effect on transitioning to HE, with less than three percent attributed to developments during upper secondary education.

Petr Novotný, Katarína Rozvadská, and Martin Majcík study the challenges faced by upper secondary vocational education students in the Czech Republic who have failed the *Matura* exam at least twice. This failure restricts access to HE and limits job prospects, deeply impacting their educational and professional paths, as well as their identities. Through longitudinal biographical interviews with 46 individuals who failed the exam, a holistic content analysis shows these students struggle to establish their identities via study, work, or family, sometimes relying on non-systemic permeability mechanisms. The authors suggest that structured, institutional pathways would better support young people transitioning to HE or the workforce than unpredictable, ad hoc measures.

4.2. Organisational Perspectives on Permeability Between Vocational Schools and HE

Nadine Dörffer and Nadine Bernhard highlight that vocational schools' organizational and internal structures have been largely ignored in understanding the social gradient affecting students' HE aspirations and transitions. Utilizing the concept of institutional permeability (Bernhard, 2019), they examine how vocational schools in Lower Saxony, Germany, assist their diverse student body in transitioning to HE. Their qualitative exploratory study includes document analysis of school websites, legal regulations, and interviews with school staff from various vocational schools. Through theory-guided content analysis, they find that school structures can either facilitate or hinder HE access based on how support is institutionalized. While vocational schools could enhance social and institutional permeability, this potential is mostly untapped. School staff often lack awareness of disadvantaged students' specific needs and provide limited personalized support.

Anh Phuong Le examines how language academies and vocational schools in Japan accommodate international students from emerging countries in the Global South, focusing on their transition from VET to HE. Using the "education-migration industry" and institutional permeability (Bernhard, 2019) concepts, the

study finds that while pathways exist, they are hindered by structural barriers and informational gaps stemming from study-abroad agencies and institutional practices. Based on ten semi-structured qualitative interviews with Vietnamese vocational students and contextualized with official statistics and policy reports, the study identifies three types of vocational schools—vocation-oriented, hybrid, and further education-oriented—that offer varying levels of support for academic progression. The author concludes that permeability is negotiated and stratified, largely influenced by students' academic performance and persistence.

Yuan Wan, Nadia Siddiqui, Xiaodong Wei, and Zheng Li explore the shift in Chinese vocational schools from focusing on employment to emphasizing HE progression, amid China's nationwide growth in HE opportunities. Employing organizational sociology, particularly resource dependence theory and new institutionalism, they conduct a multiple case study of three public secondary specialized schools in Shandong. Their study investigates vocational schools' attitudes and actions regarding students' HE aspirations. Through thematic analysis of semi-structured interviews with thirteen organizational members in 2024, along with policy documents and administrative data, the authors find that these schools actively encourage the "HE progression" trend. This shift serves as a strategy for organizational survival and a way to establish legitimacy.

4.3. Labour Market Outcomes of Vocational School Graduates

Despite vocational high schools (BHS) being a key route to HE in Austria, half their graduates enter the labor market instead. David Binder, Nora Haag, and Bianca Thaler explore whether graduates from low-income families attending BHS in Austria are less likely to transition to HE in regions with lower unemployment rates. Using rational action theory and logistic regression models on the entire 2016–2017 cohort of Austrian BHS graduates, they find that graduates from families with lower educational levels are less likely to pursue HE. While higher regional unemployment rates correlate with increased transitions to HE, the study does not find evidence of graduates from lower-education families being diverted to the labor market in areas with lower unemployment.

Claudia Schuchart and Benjamin Schimke investigate whether vocational schools leading to a HEEC can mitigate the disadvantages faced by students transitioning from non-academic schools in Germany. They also explore income discrepancies between graduates of vocational and general education pathways to HEEC. Using human capital and signalling theory, along with data from the German NEPS-Starting Cohort 6-ADIAB, their gender-sensitive multilevel regression models and decomposition analyses show that graduates from general education pathways earn higher wages than those from vocational pathways. This wage gap is influenced by vocational graduates' lower further education rates and school-related achievements. Furthermore, female graduates of vocational pathways often face job overqualification and limited access to higher-paying "closed" occupations compared to their peers from direct pathways.

4.4. Governance and Institutional Perspectives on Vocational Pathways to HE

In Switzerland, four pathways to HE exist, but not all are equally supported by education policy. The traditional baccalaureate and the dual qualification of dual VET paired with a federal vocational baccalaureate are prioritized as the main routes, while vocationally oriented upper-secondary schools

receive less political attention despite their social permeability and high transition rate to HE. Drawing on the sociology of conventions and the concept of valuation practices, Raffaella Simona Esposito examines how the "royal roads" to HE concept is constructed and maintained, impacting the status of vocational schools as HE pathways. Through a theory-driven qualitative content analysis of policy documents, official statistics, and interviews with education governance representatives, the author finds that influential stakeholders in upper-secondary education governance downplay the significance of vocational schools. Their positive attributes often remain unacknowledged to align with educational policy interests, rendering their value and potential invisible or ignored.

In their comparative study, Johannes Karl Schmees, Tim Migura, Bill Esmond, Dietmar Frommberger, and Eli Smeplass explore how education systems in the UK, Norway, and Germany support or hinder progression from upper secondary apprenticeships to HE. They expand on vocational schools as pathways to HE and examine the promise of equal permeability for apprenticeships. Despite claims of increased permeability, they argue that structural, organizational, and individual factors often prevent apprenticeship holders from progressing to HE. The authors identify three routes from apprenticeships to HE, each involving different vertical, horizontal, and lateral transitions between vocational and higher education. Their findings show that more pathways are being developed to allow those with apprenticeship qualifications to access HE. However, nearly all these routes involve opportunity costs, posing significant challenges for individuals from low socio-economic backgrounds.

5. Conclusion

The articles in this thematic issue highlight how, in various countries, vocational schools have become essential for students lacking an academic background in their families to prepare for and access HE. In Germany, vocational schools account for about a third of HE entrance certificates, serving as the primary alternative route to HE. In China, they serve as a tool to expand university access, while in Austria, they offer an alternative HE pathway, especially when entering the labor market is uncertain. However, in some countries, vocational schools are less politically prioritized for widening HE access. In Switzerland, vocationally oriented upper-secondary schools receive little policy support, and in Japan, government policies emphasize placing non-Japanese vocational graduates in low- and middle-skilled jobs.

The findings of this thematic issue on vocational schools as socially inclusive pathways to HE remain ambivalent. Although vocational school students often come from less privileged backgrounds, these schools are not entirely effective in transitioning them to HE, and they tend to reproduce social inequality, though less so than traditional education pathways. Vocational schools as a potential bridge to HE appear to contribute little to helping disadvantaged students reach their potential. However, they could make a significant impact by implementing appropriate measures such as strengthening the pivot role of VET teachers in encouraging students to recognize their potential to succeed in their studies (Barber & Netherton, 2018). On a positive note, when students from disadvantaged backgrounds use vocational schools for university admission, they often experience job placement advantages, although this benefit becomes evident only at the final selection stage.

Most countries display institutional complexity with various alternative pathways to HE beyond the traditional academic track. This complexity is often coupled with insufficient representation of vocational

schools' organizational diversity in educational survey data, complicating research both within countries and from a comparative standpoint. Establishing common and clear terminology for the diverse vocational pathways to HE is crucial but not self-evident. We have to admit that the international perspectives in this issue are limited, predominantly featuring Western European views on vocational schools. Knowledge remains scarce about how vocational schools in Eastern European countries—where they are widespread—and the Global South prepare students for HE. The low status and institutionalization of VET research in the social sciences have further limited studies on vocational schools. For example, mainstream educational attainment research is often disconnected from vocational school research. This thematic issue aims to inspire the development of a new international research field and encourage further studies into vocational schools as a crucial pathway into the growing HE sector.

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Conflict of Interests

The authors declare no conflict of interests.

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ARTICLE

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Inequality at the Transition to Higher Education in Germany: Social Differences by Prior Educational Pathways

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Abstract

In this article, we assess the importance of alternative pathways via vocational schools and vocational education and training (VET) for social differences in the transition into higher education in Germany. Drawing on data from the DZHW Panel of School Leavers 2018, we use sequence analysis to identify both classical and alternative pathways to obtaining a higher education entrance certificate. We then apply logistic regressions and decomposition techniques to examine the variation in the probability of studying for each pathway compared to the classical pathway through general upper secondary school. Finally, we investigate the underlying reasons for these social differences. We show that the graduates in our analysis take six distinct and socially selective pathways to a higher education entrance certificate, four of which have strong vocational elements. All pathways differ in their study probability: Graduates of almost all alternative educational pathways are less likely to opt for higher education than graduates of the classical pathway. However, this is not solely due to the different composition of graduates in terms of social origin and school performance. Although graduates from less privileged social backgrounds and with lower school performance are disproportionately represented in the alternative pathways, they also differ in their assessment of the costs, benefits, and probabilities of success of investing in higher education. Finally, differences in study probability can be explained by several theoretical mechanisms, the individual explanatory power of which varies according to the pathways.

Keywords

educational pathways; Germany; higher education entrance qualification; study decision; vocational schools; vocational education and training

1. Introduction

Higher education plays a crucial role in shaping individual life chances around the world (Hout, 2012). Graduates typically enjoy better benefits from education over the life course (Gebel & Heineck, 2019) and specifically better labour market integration with higher average incomes (Ordemann & Pfeiffer, 2022), improved health and fertility outcomes (Brand & Davis, 2011; Oreopoulos & Salvanes, 2011), or increased longevity (Pakpahan et al., 2016) than those with other educational qualifications.

However, access to higher education remains a socially selective process, with marked inequalities between school graduates from privileged and less privileged families (Blossfeld et al., 2015; Lörz & Schindler, 2011). Germany is considered to have pronounced social inequalities in access to higher education (Scharf et al., 2023). There are indications that inequality in access to higher education has been developing less favourably in Germany compared to other European countries (e.g., Barone & Ruggera, 2018; Palmisano et al., 2022). The education system in Germany is characterised by early tracking, which has long directed students into either vocational or academic pathways. This process is strongly influenced by their family background (KMK, 2021). This early separation in the school system contributes significantly to the selectivity of access to higher education due to path dependencies (Mayer, 1990): Students from privileged families more frequently choose the classical academic pathway consisting of general upper secondary school and transition to higher education, while those from less privileged backgrounds are often referred to educational pathways that lead from middle or lower secondary school to the vocational education and training (VET) system. The education policy reforms of the 1960s and 1970s significantly strengthened alternative educational pathways in Germany. More practice-oriented types of schools that offered a higher education entrance certificate (HEEC) and the universities of applied sciences were established. A central aim of the reforms was to reduce social inequalities. Traditionally disadvantaged groups in the education system were to be given a second chance at higher education.

However, the recently published "education funnel" for Germany clearly shows that there are still major social inequalities (Kracke et al., 2024). On average, only 25 out of every 100 children from a non-academic family attend university. Out of every 100 children with an academic background, 78 transition to university. Moreover, among those with higher education entrance qualifications who come from academic families, barely 20 percent attended a vocational school. However, if they come from a non-academic family, slightly more than 40 percent, i.e., almost twice as many, have attended a vocational school to obtain a HEEC. Children from non-academically educated families, therefore, not only continue to have fewer opportunities to obtain a HEEC but are also more dependent on the vocational school system (Kracke et al., 2024, p. 4). It is also clear that pathways via vocational schools do not only open new opportunities but open new social selectivities as well (Buchholz & Pratter, 2017; Maaz, 2006). Children from academic households are more likely to use vocational schools as an opportunity to correct their educational path towards a HEEC.

With regard to the findings on persistent social inequalities in the enrolment in higher education despite the expansion of vocational school types that award a HEEC, there is a lack of detailed studies on the underlying mechanisms. Our study addresses this research gap by identifying the variety of pathways to a HEEC and going beyond a mere distinction between upper secondary vocational and general upper secondary schools. Instead, it includes the earlier educational and career paths over several years until a HEEC is obtained so that changes between school types, as well as vocational and school phases, are also considered. In this way,

any underlying (social) differences in the entrance to higher education can become visible. Following the identification of typical educational and vocational paths leading to a HEEC, the likelihood of graduates from alternative (vocational) pathways enrolling in higher education is examined in comparison to graduates from the classical educational path. A distinction is made here between the classical academic school path in Germany, which involves attending general upper secondary school after elementary school until the HEEC, and the alternative pathways, which include vocational school types, VET, or a change between school types. In the final step of the analysis, the focus shifts to the mechanisms that explain differences in access to higher education between classical and alternative educational paths.

Therefore, this article contributes to the research by exploring the complex interplay between educational pathways, social background, and higher education entrance in the German context, focusing on three key questions:

1. Which educational pathways lead to a HEEC?
2. How likely are these pathways to result in higher education entrance if social composition is also considered?
3. Why are graduates from alternative paths diverted from higher education?

To answer our questions, we proceed as follows: The next section introduces the German education system in more detail, with a focus on institutional pathways to attain a HEEC, and explains the theoretical background for the examination of our research questions. Section 3 describes the DZHW Panel of School Leavers 2018 as the dataset we use for our analyses, its operationalisation, and our methods. Section 4 presents our findings, which we discuss in Section 5.

2. Institutional and Theoretical Background

The German education system is known for its high level of stratification (Allmendinger, 1989; Leuze & Solga, 2013). Even today, after several decades of educational reform, tracking starts very early (Hadjar & Gross, 2016). As early as the age of 10 or 12, after only four to six years of joint primary schooling, children are selected into different types of secondary schooling that additionally vary between the German federal states (KMK, 2021, p. 119). While primary schools are designed to educate children of different ability levels together, secondary schools sort children by achievement based on teachers' recommendations at the end of primary school. Originally, there were three different types of secondary schools: lower secondary schools for low-achieving children, middle schools for children with average school performance, and general upper secondary schools (usually called *Gymnasium*) for high-achieving children. For some years now, Germany has been moving more and more toward a two-tier system in which the lower and middle tracks have become increasingly integrated (Hurrelmann, 2013; Maaz & Köller, 2019). Only schools of the upper track are designed to prepare for university, and only children who complete this type of school can obtain a HEEC. Schools belonging to the lower and middle tracks are supposed to prepare children for VET. However, with the expansion of education in the last century and the rising educational levels in the population, the HEEC has also become a prerequisite for access to promising positions in VET (Beicht & Walden, 2018; Konietzka & Hensel, 2017). Thus, not all graduates who obtain the HEEC transition to higher education. Instead, they opt for VET. According to administrative data, the transition rate to higher education of graduates with a HEEC is currently around 80% in Germany (Autor:innengruppe Bildungsberichterstattung, 2024, p. 212).

The high level of stratification and early tracking has always been a point of intense public, political, and academic debate (Esser, 2021; Müller & Kogan, 2010; Terrin & Triventi, 2023). Critics argue that dividing children into different types of secondary schooling at an early age promotes the formation of social inequalities (R. Becker & Hadjar, 2011; Hallinan, 1994). Research has frequently shown that social origin has a strong impact on the transition from primary to secondary school (R. Becker, 2017; Lucas, 1999). Compared to children from privileged families, children from less privileged social backgrounds have a much lower chance of going to an upper-track school after primary school (Dumont et al., 2014; Neugebauer et al., 2013; Schindler, 2017). However, the main argument in favour of this system is that early tracking ensures that children are taught according to their abilities (Ariga & Brunello, 2007; Esser, 2021). It was pointed out that there are alternative pathways that allow children who originally did *not* make it into the upper track to upgrade their level of education after completing a lower secondary or middle school. Today, we know that the German education system is indeed more open than long believed and that the role of alternative pathways to HEEC is anything but small (M. Becker et al., 2016). Administrative data indicate that about one-third of all HEECs are obtained through an alternative pathway rather than the classical path of attending an upper-track secondary school immediately after primary school (Autor:innengruppe Bildungsberichterstattung, 2024, p. 212). Against this background, it is very surprising that inequalities in alternative pathways to HEEC, in contrast to the classical path, have been comparatively little studied (for exceptions, see, e.g., Bittmann & Schindler, 2020; Buchholz & Pratter, 2017; Schindler, 2017; Schuchart & Schimke, 2022).

Institutionally, there are various ways in which children who attended and completed a lower secondary or middle school can upgrade their level of education to a HEEC (KMK, 2021, p. 121). As a rule, the only formal prerequisite is the completion of the 10th grade to receive the German middle school diploma. This entitles graduates to enrol in upper secondary school programmes. In principle, this grade also qualifies for enrolment in a general upper secondary school, i.e., the traditional *Gymnasium*. However, it is especially the schools of the vocational system that are designed to provide second chances to obtain the HEEC through alternative pathways (for an overview, see Table 1). In contrast to the traditional *Gymnasium*, these schools are characterised by a stronger vocational and practical orientation in their curriculum, making them an attractive option for children who originally attended another type of school within the stratified German system. These schools start in grade 11 and usually specialize in specific occupational fields, such as business, technics, health, or social services. There is a wide range of schools in the vocational system that offer the opportunity to earn a HEEC, and the exact institutional settings of these schools may vary from one federal state to the next. However, in broad terms, they can be classified in the following ways: First, there are specialized (vocational) grammar schools (*Berufliches Gymnasium*, or, in some federal states, *Fachgymnasium*). These schools offer 3-year programmes and graduates can earn the general HEEC, which entitles them to study at both universities and universities of applied sciences. In addition, there are several other upper secondary vocational schools (*Fachoberschule*, *Berufsfachschule*, *Berufsoberschule*, *Fachschule*) that also offer the possibility of obtaining the HEEC. In contrast to specialized (vocational) grammar schools, these schools are characterised by a stronger vocational and practical orientation in their curriculum. Typically, these schools lead to the more specialized type-restricted HEEC (*Fachhochschulreife*), which limits enrolment in higher education to universities of applied sciences. Under certain circumstances, however, it is also possible to obtain the general HEEC. In some cases, however, students are awarded the HEEC in addition to an apprenticeship or further training, as a kind of "by-product." Finally, evening schools (*Abendgymnasium*) and so-called *Kollegs* (adult education college) also offer the opportunity to obtain the

Table 1. Classification of types of schools leading to HEEC.

	Type of schools (German term)	Typical features
General upper secondary school	*Gymnasium*[1] *Gesamtschule*[2]	Part of the general school system Academic curriculum
Specialized (vocational) grammar school	*Berufliches Gymnasium* (in some federal states *Fachgymnasium*)[3]	Part of the vocational system Compared to upper secondary schools of the general school system characterised by a stronger vocational and practical orientation in their curriculum (usually in specific occupational fields)
Other upper secondary vocational school	*Fachoberschule*[4] *Berufsfachschule*[5] *Berufsoberschule*[6] *Fachschule*[7]	Part of the vocational system Compared to specialized (vocational) grammar schools characterised by a stronger vocational and practical orientation in their curriculum Usually complete with the specialized type-restricted HEEC limiting enrolment to universities of applied sciences
Evening school or so-called *Kolleg*	*Abendgymnasium*[8] *Kolleg*[9]	Part of the adult education system Particularly designed for people who already have some labour market experience or have completed VET

Notes: The Federal Ministry of Education uses a slightly different terminology. The terms used by the Federal Ministry are: [1] = grammar school, [2] = comprehensive school, [3] = specialized grammar school, [4] = specialized upper secondary school, [5] = fulltime vocational school, [6] = two-year full time vocational school, [7] = trade and technical school, [8] = evening grammar school, [9] = adult education college.

HEEC later in life. These schools are formally part of adult education and are specifically designed to allow people who already have some labour market experience or have completed VET to obtain a HEEC.

Hence, there are many institutional offerings besides the classical path to obtain the HEEC, and these alternative paths are also empirically relevant phenomena. Research has shown that alternative pathways to HEEC are particularly relevant for children from less privileged backgrounds (e.g., Bittmann & Schindler, 2020; Hillmert & Jacob, 2005; Kurz & Böhner-Taute, 2016). Although inequalities exist at *all* transition points in the educational career, social origin effects at least seem to be less pronounced at *later* points in life (Mare, 1981; Müller, 1994). An unsolved "dilemma," however, is that HEECs obtained through alternative paths less often result in transitions to higher education (Autor:innengruppe Bildungsberichterstattung, 2024, pp. 212–215; Bittmann & Schindler, 2021). The social opening of the highly stratified German system thus appears to be an "incomplete reform" when it comes to entering university. The reasons for the low probability of those who attained the HEEC over an alternative pathway may be manifold, and it is important to disentangle their relative roles to understand why the social opening of German education has so far been incomplete. Currently, we do not know much about the driving factors behind the finding that graduates who obtain their HEEC through alternative pathways are less likely to enrol in higher education. Shedding light on these mechanisms is, therefore, the starting point of our study.

First, it could be simply due to the different *social composition* of graduates. Graduates from alternative paths are more likely to come from less privileged social backgrounds, and since social origin has an impact on the

transition to higher education, this could explain why graduates from alternative paths are less likely to enter higher education. In addition, it is also likely that the school grades of graduates from alternative pathways are not as high as those from classical paths. The selection into the classical path to HEEC via the traditional *Gymnasium* is strongly based on children's performance. Alternative pathways have less strict requirements regarding prior academic achievement. A middle school diploma is often sufficient to enrol in educational programmes that allow obtaining the HEEC through alternative pathways. If previous school grades are a factor, it is not necessary to have excellent or above-average grades, which is required (Kurz & Böhner-Taute, 2016, p. 434). Thus, the fact that graduates from alternative paths are less likely to enter higher education may—at least in part—simply be an "effect" of their different composition in terms of social origin and school performance, both of which affect the transition to higher education (e.g., Müller & Pollak, 2016; Spangenberg & Quast, 2023).

However, we expect that it is not just the result of a different composition in terms of social origin and school performance, but that additional mechanisms are at work and explain the lower transition rates to higher education among graduates from alternative pathways. An important but often overlooked aspect addresses the long and strong tradition of institutional differentiation between vocational and academic education. Although the strong vocational programmes offer good job prospects also to those who do *not* enter higher education, this comes at the price of high persistence in inequalities in participation in higher education because children with less privileged social backgrounds are systematically diverted from university to vocational programmes. This criticism became known under the concept of the "educational schism" (*Bildungsschisma*; Baethge & Wolter, 2015). However, the more micro-level oriented "diversion thesis" has argued in a very similar direction (R. Becker & Hecken, 2009; Hillmert & Jacob, 2003; Shavit & Müller, 2000).

People who were diverted from the classical pathway have often first completed educational programs with a stronger vocational and practical orientation instead of a general upper secondary school. As the curricula of the alternative pathways are linked to this stronger vocational and practical orientation, they could therefore be more successful in enabling these individuals to obtain a HEEC after all. However, we also assume that the practical nature of alternative pathways might divert them from choosing to enter the higher education system. To understand why this might be the case and which mechanisms lead to this at the individual level, it is helpful to draw on rational choice theory (RCT). According to RCT, educational transitions are seen as the result of an individual decision-making process. The post-school educational decision can be understood as the result of an individual process of weighing up subjectively anticipated educational benefits, anticipated educational costs, and self-assessed prospects of success for the available educational alternatives (e.g., Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996). Graduates with a HEEC should decide to study in higher education if they expect advantageous benefits (e.g., labour market benefits) from this pathway, if they anticipate the study costs to be comparatively low, and if they are confident that they will successfully complete university (Jackson, 2013; Lörz, 2012).

The subjective assessments of prospects of success, benefits, and costs are made in interaction with significant others (educational expectations of parents, schoolmates, and friends) and against the background of the individual's level of information (Reimer, 2013). From a life course perspective (e.g., Hillmert & Jacob, 2010), the decision-making process must also be seen against the background of the previous educational career and life path and the experiences gained there. Graduates with a HEEC from different pathways differ in their

previous educational biographies, skills profiles, qualification options, and educational investments (Schindler, 2014). They should, therefore, assess the prospects of success, benefits, and costs of post-school education options differently and accordingly transition to higher education at different rates.

Therefore, it is expected that graduates from alternative educational pathways, for example, will rate their chances of success at university lower. This is because their school qualifications are more strongly geared towards VET with a practical focus, making them feel subjectively less prepared for the demands of a university degree (Tieben, 2020). Furthermore, they should underestimate the labour market prospects (material benefits) of studying, as they are more familiar with the advantages of VET than the labour market benefits of studying due to their school orientation. They should also underestimate the immaterial benefits of studying, such as the promotion of academic skills and interests, as they have more practical interests due to their school career. Finally, it can also be assumed that graduates from alternative educational pathways value the monetary costs of studying more highly and are therefore less likely to go on to higher education. Graduates from alternative educational pathways who have already completed VET before obtaining the HEEC, for example, have already invested more time in education and could pursue qualified employment after completing their VET. The opportunity costs of studying are therefore comparatively high for them, which is why they forego studying more often. The opportunity costs of higher education are even higher if VET is completed after obtaining the HEEC, as VET is generally shorter than university studies and a vocational salary is usually already earned during VET. Studying at a university is often also associated with non-monetary costs, as taking up a course of study often requires a change of location, which is associated with the loss of social ties at home. These non-monetary costs, which school graduates from alternative routes consider to be higher, could also help explain why they are less likely to choose to study.

Against the described theoretical background, this article examines the following questions: Which (alternative) educational pathways lead to attaining a HEEC in Germany if the previous pathways are considered in detail? To what extent do the social disparities in the decision to study differ according to these educational pathways? This, in turn, raises the question of which mechanisms can explain these disparities and what contribution the various mechanisms (composition according to social background, school performance, and individual decision-making behaviour) contribute to explaining the disparities in detail.

3. Data, Operationalisation, and Research Design

We answer our questions based on data from the Panel of School Leavers 2018 of graduates who obtained a HEEC at a general upper secondary or vocational school in Germany in 2018, conducted by the German Centre for Higher Education Research and Science Studies (DZHW). The survey took place six months before leaving school (first wave) and six months after graduation via a randomly chosen disproportionate cluster sample. The first wave of participants consisted of 39,714 students out of 82,413 contacted at 1,185 schools of various types throughout Germany (Woisch et al., 2022). In the second wave, 25,508 people with e-mail or address details were surveyed again, with a response rate of 37% (N = 9,175). The disproportionality of the sample was adjusted to the statistical population via a design weight. Data from 8,824 respondents who participated in both survey waves is used to identify typical educational pathways leading to a HEEC; 6,751 graduates with a HEEC remain in the sample for the subsequent analysis of the mechanisms underlying the different probability of studying according to these pathways.

First, we use sequence analysis to identify educational pathways leading to a HEEC. Potential states include various types of schools (middle secondary school, general upper secondary school at grammar and comprehensive schools), evening school/*Kolleg*, specialized (vocational) grammar schools (*Berufliches Gymnasium* or *Fachgymnasium*) and other upper secondary vocational schools, staying abroad, VET, employment, temp jobs, internships, further education, voluntary social year, unemployment, and other activities. Through optimal matching (Levenshtein distance) and cluster analysis with Ward's algorithm (e.g., Abbott & Tsay, 2000), we classify clusters that identify classical and alternative pathways up to the HEEC and subsequently describe their socioeconomic composition. The dendrogram, cluster size, and content-related criteria are used to determine the number of clusters. In accordance with our research question, the sequence pattern analysis only includes the months leading up to the HEEC, i.e., the 51 months from January 2014 to March 2018. In the case of parallel activities, only school attendance was considered.

Second, we use logistic regression models to analyse the probability of graduates from the different pathways identified via sequence analysis to enter higher education. In the first model, we have no explanatory variables. In the second model, only the social origin is considered before the final school grades are included to analyse if the varying likelihood of entering higher education is due to composition in terms of social origin and performance.

Finally, a non-linear decomposition using the KHB method (Karlson et al., 2012; Kohler et al., 2011) is used to determine the percentage of further individual theoretical components (probabilities of success, benefits, costs, and educational expectations of the significant others) that contribute to explaining why graduates from alternative paths are distracted from higher education. These decompositions can be used to determine to what extent the lower probability of studying on each alternative pathway compared to the classical pathway can be attributed to or "explained" by additional variables. Tables A3 to A6 in the Supplementary File show the results of the hierarchical models and the detailed explanatory shares for the mechanisms.

The dependent variable is coded 1 for graduates who have started or are planning to start studying at university six months after attaining their HEEC and 0 for those whose intention to study is uncertain or who have no intention to study. The analysis, therefore, refers to both those who have started studying (62%) and those who have not yet done so but have definite study intentions (38%). Analyses have shown that there is a close correlation between the intention to study and the realisation of this intention (Christoph et al., 2023).

The explanatory variable *social origin* is represented by the socioeconomic status (SES) of the parents. Using the dominance principle, SES is represented by the highest International Socioeconomic Index of Occupational Status (ISEI-08) of the parents (henceforth HISEI; Ganzeboom, 2010). For interpretative purposes, the HISEI is further divided by 10. To illustrate the social composition of educational pathways, three SES groups are distinguished by forming quartiles of the HISEI, whereby the two middle quartiles were combined to form a "middle" SES. The *school performance* is operationalised using the final grade.

The *probability of success* is operationalised via the self-assessed chance of successfully completing a course of study. In terms of *anticipated benefits*, respondents were asked to rate the career prospects of higher education graduates on the one and VET graduates on the other hand over a five-point scale. Career

prospects were asked about three aspects and included the prospect of material benefits ("getting a well-paid job later," "not becoming unemployed later") and status-related benefits ("getting a respected job in society later"). For all three aspects, the difference between the material benefits of VET paths and academic qualifications was calculated. This difference reflects the relative earnings expectations for non-academic and academic qualifications. In addition, the analyses for mapping non-material benefits include how important the "opportunity for academic work" is to the respondents or how important the "inclination towards practical work" was for their post-school pathway.

Anticipated costs are operationalised as both monetary and non-monetary (social) costs. For this purpose, several variables are combined to form a sum index. On the one hand, the cost sensitivity of the respondents considers the role that costs generally have in their decision to study. In addition, the question of how difficult it would be for the respondents and their families to cover various costs during their studies is included. Opportunity costs are considered via the assessment: "How great would the loss of income be for you if you were to study?" Finally, this index includes the importance of the motive of "early financial independence" for the chosen path after school. Social costs that may arise from leaving one's hometown due to a qualification decision are formed via an index consisting of two variables on the importance of local ties. The variables describe the importance that respondents attach to the aspects of "proximity to home" and "parents, relatives or friends who live in the place of training/study" when choosing the place of training/study.

To add information about *significant others*, variables relating to the respondents' parents and friends were included in the analyses. Respondents were asked what educational preference their parents have (studies vs. VET/no preference) and what their friends' intentions are after obtaining their HEEC (rating of the phrase "most of my friends want to go to university after school").

Finally, we adjust the analyses for *gender* and *migration background*, as research indicates that both characteristics are associated with the likelihood of pursuing studies (Kristen et al., 2008; Lörz et al., 2011). A migration background is defined as the respondents themselves, or at least one parent, being born abroad. Except for the HISEI, all independent metric variables and indices are z-standardised, and effect sizes are presented as average marginal effects in the logistic regressions. For detailed information about the variables, see Table A1 in the Supplementary File. The results of the non-linear decompositions are presented clearly as confounding percentages.

4. Results

4.1. Which Pathways Lead to HEEC? How Likely Are They to Result in Higher Education Entrance?

The results of our sequence analysis in Figure 1 confirm that there are indeed many ways in which graduates in Germany reach their HEEC. In total, we find six clusters of typical pathways to HEEC in our sample. A contribution to research is that the identified pathways are not only characterised by the type of school that finally leads to the HEEC but also by the professional, educational, and life paths that precede it. This also considers any change of school type due to dropping out of previous schooling, e.g., from general upper secondary to vocational school.

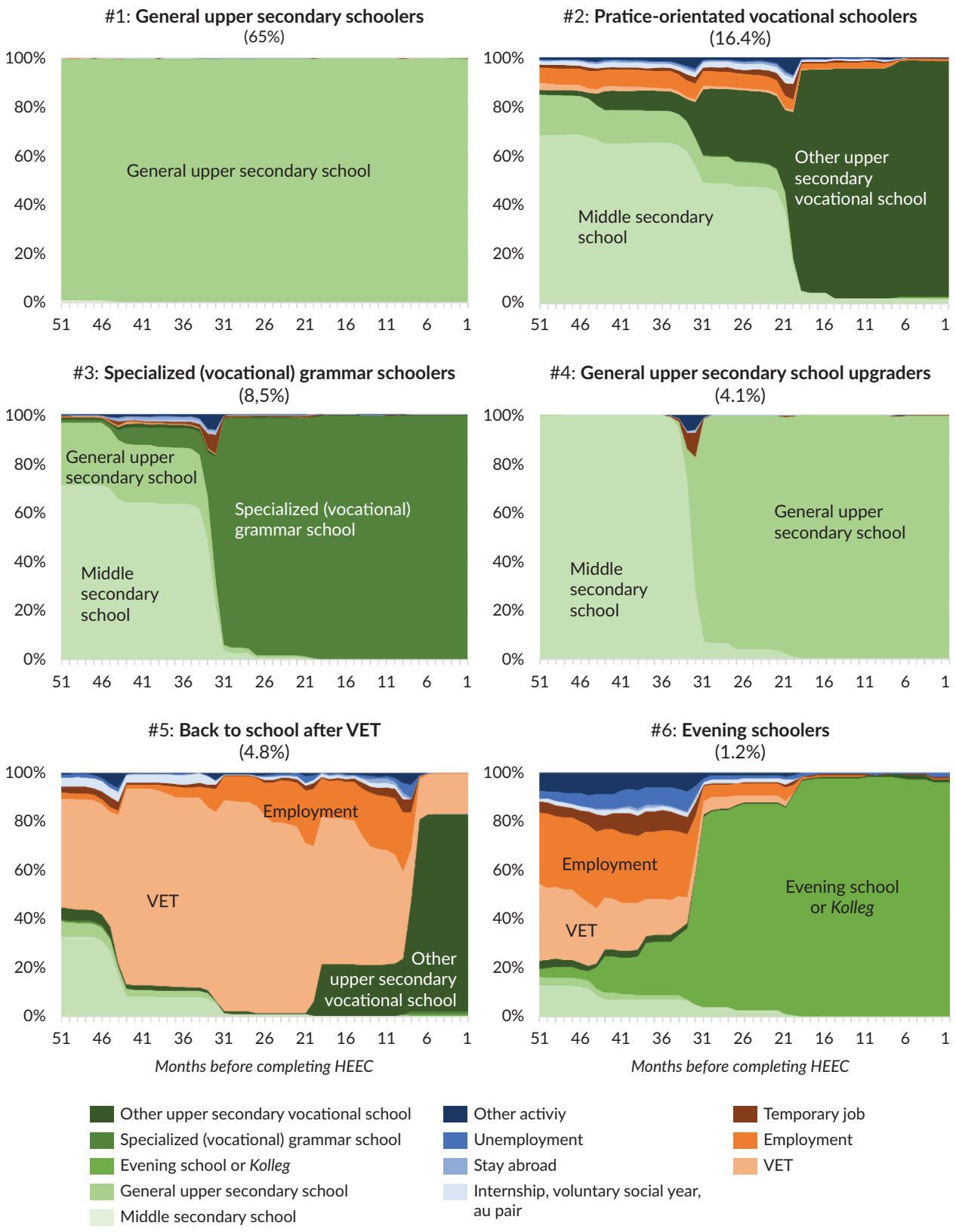

Figure 1. Individuals' pathways to a HEEC (sequence status plots). Notes: All results are adjusted to the statistical population using design weights. Source: Own calculations based on DZHW Panel of School Leavers 2018 (n = 8,824).

Unsurprisingly, the classical path, which is characterised by graduates having attended a general upper secondary school without interruption in the four years prior to obtaining their HEEC, is the dominant cluster (#1). Two out of three graduates belong to this group, and this cluster of "general upper secondary schoolers" (#1) will be the reference group in our subsequent analyses. The second largest group, by some distance, is made up of graduates who obtained their HEEC in a practice-orientated vocational school (e.g., *Fachoberschule*, *Berufsoberschule*). One in six graduates took this pathway and we refer to this cluster as "practice-orientated vocational schoolers" (#2). Typically, these graduates originally attended and completed middle school before transferring to a practice-orientated vocational school to obtain their HEEC. However, some also came from a general upper secondary school. The third group shows certain similarities with the cluster of "practice-orientated vocational schoolers," as it is also predominantly characterised by continued schooling. In contrast to the "practice-orientated vocational schoolers" cluster, these graduates obtained their HEEC at a specialized (vocational) grammar school. Like general upper secondary schools, this specific type of vocational school offers the possibility of obtaining the general HEEC (*Abitur*) while other vocational schools often lead to the more specialized type-restricted HEEC, the so-called *Fachhochschulreife*, which restricts access to universities of applied sciences. In addition, the curriculum of these schools is less vocational and practical than that of other vocational schools, though still less formal than that of general upper secondary schools. Also in this third cluster, most graduates first attended a middle school before moving on to a specialized (vocational) grammar school; only some had previously attended a general upper secondary school. In total, one out of 12 graduates belong to this group of "specialized (vocational) grammar schoolers" (#3). Rarely do those who originally attended and completed middle school choose to transfer to a general upper secondary school to obtain their HEEC. Only 4% took this pathway (cluster #4 "general upper secondary school upgraders"). Consequently, it is indeed usually schools of the vocational system that are used by graduates who obtain their HEEC via an alternative path.

The remaining cases are made up of two clusters of graduates whose pathways are quite different from those of the other clusters. In contrast to the graduates of the other clusters, these graduates interrupted their schooling for some time before returning to school to obtain a HEEC. In most cases, these graduates completed VET, sometimes followed by a (short) period of employment, and then gained their HEEC at one of the other upper secondary vocational school types (so-called *Berufsfachschule*, *Fachschule*, *Fachoberschule*, *Berufsoberschule*) that is not a specialized (vocational) grammar school. This cluster, which we call "back to school after VET" (#5), comprises 5% of the graduates in our sample. The last cluster includes graduates who earned their HEEC at an evening school (or a so-called *Kolleg*), mostly after a longer period of employment or VET. However, with only 1.2%, the cluster "evening schoolers" (#6) is by far the smallest. Just as all clusters represent specific pathways and are characterised by different general and vocational school types, school performance also differs in the form of school-leaving grades. The best grades are achieved by "general upper secondary schoolers" (#1 in the Supplementary File, Table A1). The grades of "practice-oriented vocational schoolers" (#2), "specialized (vocational) grammar schoolers" (#3), and school leavers who have upgraded to general upper secondary school after finishing secondary school (#4) are only below average.

As expected, the social composition of the clusters is also very different (Table A1 in the supplement). The cluster of "general upper secondary schoolers" (#1) is the most socially selective. Only 18% of the graduates come from families with a low SES. In all other clusters, the proportion of low(er) SES children is significantly higher. The highest proportions of low SES graduates can be found in the two clusters characterised by an interruption of formal schooling: In the clusters "back to school after VET" (#5) and

"evening schoolers" (#6), 35% and 47% of the graduates come from low SES families. Alternative pathways to a HEEC are thus indeed more socially inclusive. At the same time, however, they are, as expected and previously shown (Schindler, 2014), less likely to lead to higher education entry, as our regression analysis shows (Table 2). Compared to the group who obtained their HEEC via the classical general upper secondary school path, graduates from alternative pathways have a significantly lower probability of entering (or intending to enter) higher education. Their probabilities of making the transition to higher education are 10 to 26 percentage points lower than that of "general upper secondary schoolers" (#1). Only those who obtained their HEEC at an evening school or *Kolleg* (#6) do not differ from "general upper secondary schoolers." However, given their biographies, it seems very plausible that these persons invested in obtaining the HEEC through an alternative pathway already with the strong intention of entering higher education. As the sequence analysis shows, these graduates were often already in the labour market before returning to school to obtain their HEEC. Returning to school when already in or qualified for the labour market is a very high investment and, as our regression shows, it often appears to be an investment made with a very high intention of going to university so that this specific group from alternative pathways does not differ from graduates of the classical path (#1), even though they are more likely to come from less privileged social backgrounds (see Supplementary File, Table A1). However, at 1.2%, the cluster of "evening schoolers" (#6) is, as already mentioned, very small. Most graduates from alternative pathways have taken different routes to earn their HEEC, and for all of them, transition rates to higher education are significantly lower than those of "general upper secondary schoolers" (#1).

Model 2 in Table 2 of our regression analyses shows that these differences in graduates' probabilities of entering higher education are not due to the higher proportion of lower SES children in alternative pathways. Even after including SES in our model, the probability of graduates entering higher education remains significantly lower if they obtained their HEEC through an alternative pathway (the only exception is the small group of "evening schoolers"). The estimated average marginal effects decrease only slightly when our regression controls for graduates' SES. Also, after accounting that graduates of alternative educational pathways generally have poorer school grades on average, the differences remain highly significant and

Table 2. Logistic regressions for transitions to higher education (AME).

	Model 1	Model 2	Model 3
Individual pathway to HEEC			
(ref.: #1: General upper sec. schoolers)			
#2: Practice-orientated vocational schoolers	−0.26 ***	−0.23 ***	−0.18 ***
#3: Specialized (vocational) grammar schoolers	−0.10 ***	−0.08 **	−0.05 *
#4: General upper secondary school upgraders	−0.15 ***	−0.12 ***	−0.07 *
#5: Back to school after VET	−0.11 **	−0.07 *	−0.07 *
#6: Evening schoolers	−0.04	−0.01	−0.01
Parents' SES (HISEI/10)		0.03 ***	0.02 ***
Final school grade			0.11 ***
Pseudo R^2 (McFadden)	0.04	0.06	0.11
N	6,751	6,751	6,751

Notes: Adjusted for gender and migration background; weighted results; * = $p < 0.05$; ** $p < 0.01$; *** $p < 0.00$. Source: Own calculations based on DZHW Panel of School Leavers 2018.

barely change (Model 3 in Table 2; see also Table A2 in the Supplementary File). Thus, neither the different composition in terms of social origin nor the existing differences in their school performance can completely explain why graduates from most alternative pathways are less likely to attempt to enter higher education. Graduates from the quantitatively most relevant alternative pathway cluster—"practice-orientated vocational schoolers" (#2)—have the lowest probability of making the transition to higher education. Using this group as a reference category shows that "practice-orientated vocational schoolers" not only have significantly lower probabilities of entering higher education compared to graduates from the classical path (not presented), but they are also significantly less likely to enter higher education compared to all other groups. This shows how important it is not to simplistically reduce graduates from alternative paths into one single category but to recognise that heterogeneities may also exist *within* the group of graduates from different alternative paths.

Finally, we find that the SES of graduates has a significant impact on their likelihood of making the transition to higher education in *all* clusters (Figure 2).

Additional interaction analyses reveal that the SES gradient does, at least, not differ significantly between the various groups (not presented). To put it simply: In *all* pathways, social origin has a similarly negative impact on the probability of entering higher education. Despite being more socially inclusive, alternative pathways to HEEC not only lead to lower entry rates into higher education but also maintain the effects of social origin on higher education enrolment that are at least as strong as in the classical path (#1).

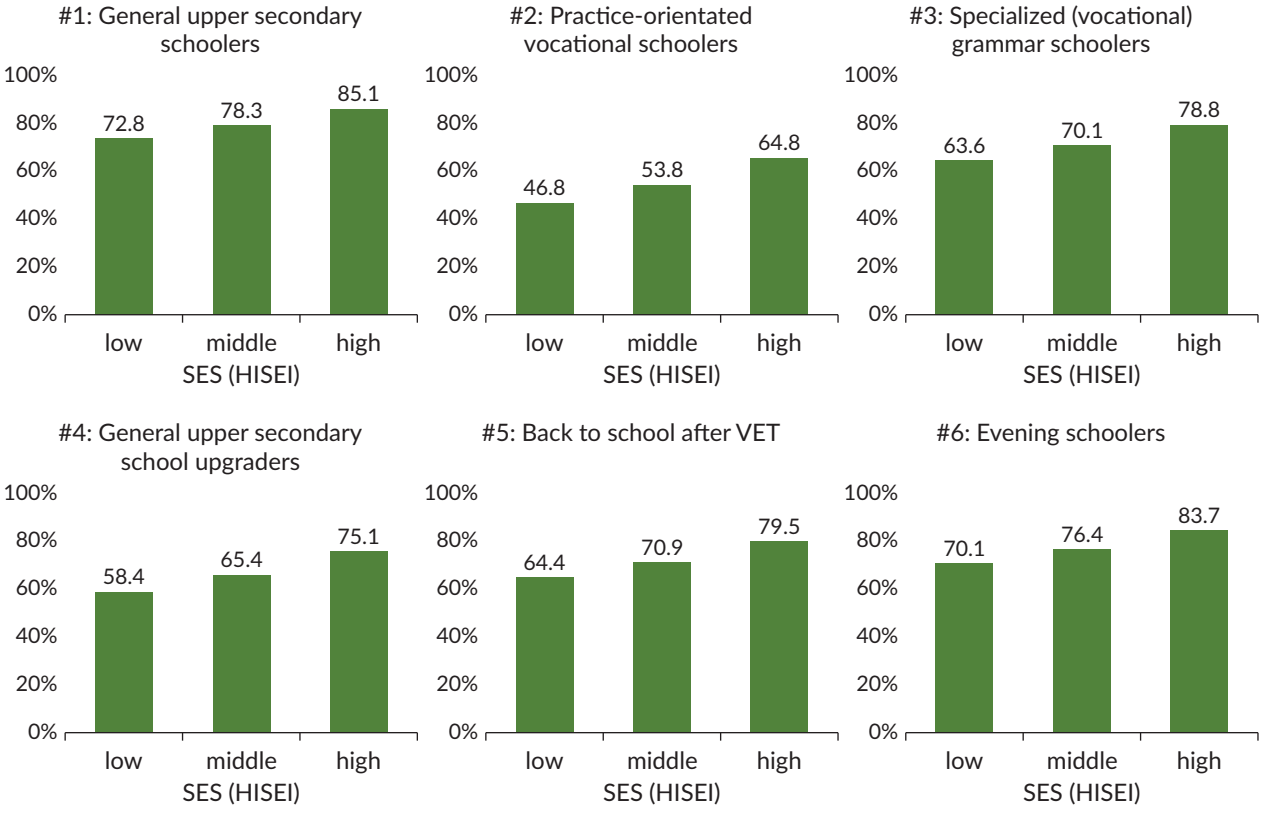

Figure 2. Predicted probabilities of entering higher education by individual pathways to HEEC and graduates' SES. Notes: Adjusted for gender and migration background; weighted results. Source: Own calculations based on DZHW Panel of School Leavers 2018 (n = 6,751).

4.2. Why Are Graduates From Alternative Paths Diverted From Higher Education?

So far, our analysis has shown that there are different ways in addition to the classical one of how school graduates with a HEEC earn their degree which permits them to enter higher education. Vocational programmes are particularly used by individuals to obtain a HEEC via alternative paths. These alternative pathways offer a second chance to earn a HEEC within the highly stratified German system, especially for children from lower SES families. At the same time, however, alternative pathways are far less "successful" in bringing graduates to university and this is not only due to a different composition in terms of social origin and school performance that explains these differences (Figure 2). In the final step of our analysis, we aim to shed light on the extent to which differences in theoretically relevant components of the individual decision-making process can explain why graduates from alternative pathways tend to enter higher education less often than "general upper secondary schoolers." We argued that graduates who obtain their HEEC through alternative pathways and enrol in vocational programmes may face a high risk of distraction from higher education. This may be due to very differing assessments of the expected probabilities of academic success, the benefits and costs of investing in higher education, and the educational expectations of the social environment (significant others) behind the decision-making process.

To understand the potential (relative) role of all these different factors in explaining why graduates from alternative pathways are less likely to attempt to use their HEEC to enter higher education, we conducted a non-linear decomposition analysis. The results are presented in Figure 3. Since "evening schoolers" (#6) do not differ from graduates from the classical path (#1) in their likelihood of entering higher education, this group was excluded in the final step of our analysis.

Indeed, we find that graduates from alternative pathways (#2 to #5) differ not only in terms of social origin and school performance from graduates from the classical pathway (#1) but also in their individual assessment of probabilities of study success, study benefits and the costs associated with higher education (for a descriptive overview of the different values of the mechanisms between the educational pathways, see Supplementary File, Table A1). The results of the decomposition (Figure 3) show that including further mechanisms of the individual decision-making process greatly helps to explain why graduates from alternative paths are less likely to attempt to enter higher education. In our full model, we can explain about 68 to 89% of their lower probabilities of entering higher education.

The fact that graduates on alternative pathways are more often from families with lower SES explains only a small proportion (2 to 9%; Figure 3) of their lower probability of entering higher education—at least directly and when controlling for other mechanisms. This is because the explanatory shares of social origin for the different study probabilities of the educational pathways are predominantly mediated by the further mechanisms (shown in Tables A3 to A6 in the Supplementary File, with stepwise decompositions).

Turning to school performance, we find that the final grade explains between around 8 and 22% of the decision to study, depending on the alternative path. This means, for example, that for "general upper secondary school upgraders" (#4), 22% of their lower propensity to study can be attributed to their comparatively lower final school grade. In contrast, the same mechanism only explains around 7% of the lower study propensity of graduates who transition from VET back to vocational school (#5).

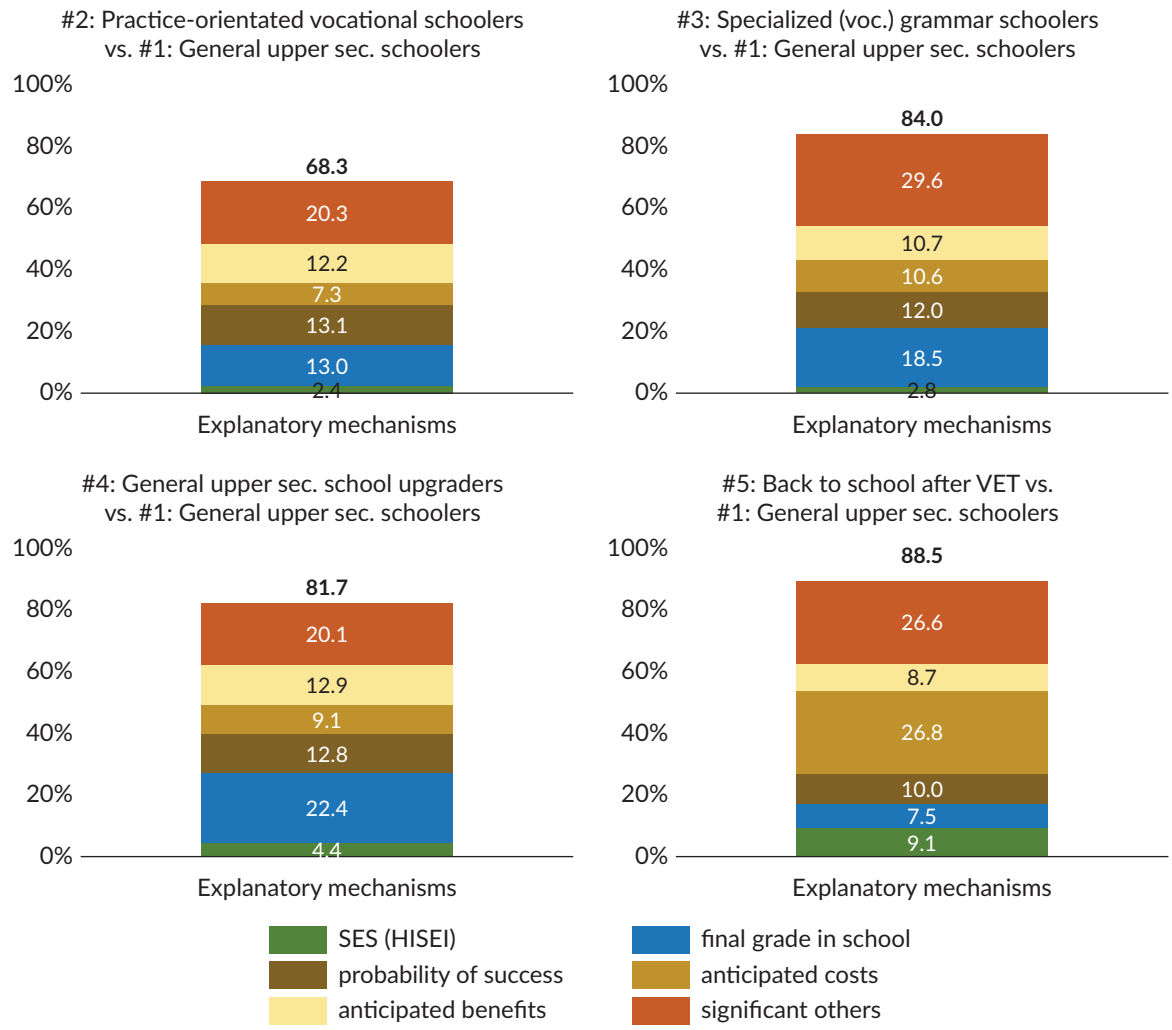

Figure 3. Confounding percentages of non-linear decompositions for the effect of the classical pathway versus alternative pathways (KHB method). Notes: Adjusted for gender and migration background; weighted results; individual variables grouped by mechanisms. Source: Own calculations based on DZHW Panel of School Leavers 2018 (n = 6,751).

Although differences in school performance also make a relevant explanatory contribution to our decomposition, their role is in almost all educational paths relatively small compared to the variables that capture the mechanisms of the individual decision-making process. Compared to graduates from the classical pathway (#1), students from the alternative pathways rate their prospects of completing higher education as lower. These self-assessed chances of completing higher education contribute, to a similar extent, to the explanation of the low probability of studying in the non-classical pathways, with shares of 10 to 13% over all pathways. Anticipated costs contribute, to a similar extent, to explaining the lower probability of studying for the clusters "practice-orientated vocational schoolers" (#2), "specialized (vocational) grammar schoolers" (#3) and the "general upper secondary school upgraders" (#4). However, if graduates went "back to school after VET" (#5), this proportion of anticipated costs is substantially higher when explaining the low study probability, even significantly higher than the proportion of the school performance. The costs of an educational alternative are offset by the expected benefits. Between around 8 and 12% of the lower probability to study is related to the fact that graduates from alternative pathways

rate the benefits from studying as lower. Next, the educational behaviour of friends and parental educational preference also significantly explains the lower study probabilities (20.1 to 29.6%). Compared to the classical pathway, friends of graduates on alternative pathways are less likely to want to study, and parents are less likely to want their children to study. Accordingly, significant others are less likely to encourage them to attend higher education.

Overall, despite all the similarities, each alternative path is characterised by a specific pattern of the investigated mechanisms compared to the classical path. "General upper secondary school upgraders" (#4) and "specialized (vocational) grammar schoolers" (#3) have more problems with school performance than students on the more practice-oriented paths. For the students on the pathway of "back to school after VET" (#5), the anticipated costs play a particularly important role compared to the classical pathway. The expectations of parents, classmates, and friends are of great importance for students on pathways #3 and #5.

5. Summary and Conclusion

This article aimed to assess the diversity of educational pathways to a HEEC, their relationship with graduates' SES and school performance during the transition to higher education, and the individual theoretical components that divert graduates on the diverse alternative pathways from studying at university. Drawing on data from the DHZW School Leavers Panel 2018, we illustrated that alternative pathways are diverse. Using sequence analyses, we identified six different educational pathways that lead to graduating from school with a HEEC. Although the straightforward classical pathway of general upper secondary schoolers remains dominant, alternative pathways to attaining a HEEC encompass around 35% of all graduates. The pathways vary not only according to the type of school attended, which has already been analysed more frequently in the context of studies on study decisions but also regarding other school and extracurricular activities (switch of school type, VET, or employment).

Furthermore, our findings show that alternative pathways are more socially inclusive than the classical pathway, as they especially offer graduates with a low SES the opportunity to attain a HEEC. While the classical pathway is more frequently attended by graduates with a high SES, graduates with a lower SES are more frequently represented in the other pathways. However, alternative pathways less often lead to higher education than the classical pathway: The probability of studying is between 10 and 26 percentage points lower for graduates from these (vocational) educational pathways than for graduates from the classical pathway. Further analysis has shown that these differences cannot be solely explained by the different composition in terms of social origin and school performance.

This brings us to our final analysis and the concluding question of why graduates from alternative pathways are distracted from higher education. According to the decomposition results, the lower probability of studying in (vocational) educational pathways compared to the classical path can be explained to a significant extent by the fact that graduates from these alternative pathways rate their prospects of academic success and the benefits from studying lower. They also rate the costs of studying higher than general upper secondary schoolers. In addition, their social network (significant others) is less likely to expect them to study, which is why they more often decide to pursue a career without a university degree after gaining the HEEC. These findings are in line with our theoretical considerations on the individual decision-making process. It seems plausible

that graduates from the alternative pathways rate their prospects of academic success lower, as their school qualifications are more vocationally and practically oriented, which is why they feel less well prepared for an academic qualification. Similarly, it seems reasonable that they underestimate the benefits of studying due to their greater familiarity with the advantages of VET as a result of their school orientation and the interests fostered at vocational school. Furthermore, as has been shown empirically, we had expected that graduates of alternative pathways in particular value the opportunity costs of studying more highly and therefore often forego studying, as some of these graduates have already completed VET with which they can immediately enter the labour market or, in the case of post-school VET, because they already earn a salary during this VET and can also enter the labour market earlier with the (shorter) VET. Compared to these components of the decision-making process, social origin and, with the exception of the "general upper secondary school upgraders," school performance can also only directly explain a relatively small proportion of the lower study probability of graduates from alternative compared to classical pathways. In the case of social origin, however, this has to do with the fact that the effects of origin are mediated by assessments of the prospects of success, educational achievements and costs (e.g., Jackson, 2013; Lörz, 2012).

Finally, considering the decomposition results, it should also be noted that there are clear differences between the educational pathways in terms of the extent of the mechanisms. While, for example, the difference in the probability of studying between graduates who returned to school after VET and graduates of the classical pathway can be explained to an above-average extent by the anticipated costs, this applies to the final school grades in the pathway of "specialized (vocational) grammar schoolers."

We acknowledge some limitations of our research. First, the survey data was collected six months after completing school. At this point, more than a third of the graduates were still in a temporary activity (e.g., travelling or volunteering) before starting higher education. It was, therefore, not possible to exclusively consider the actual decision to study as a dependent variable but rather the willingness to study, in which both the actual study decision and the study intention were considered. Even though the intention to study is a very good predictor of the decision to study (Christoph et al., 2023), further analyses with later survey waves could, therefore, be of interest. In addition, the differences in the probability of studying between the alternative and classical pathways cannot be fully explained by the mechanisms used. Further theoretical approaches would be of interest here (e.g., personality traits) since they could usefully expand the decomposition analysis.

Nevertheless, our work extends previous research by identifying the different pathways to a HEEC, particularly through vocational schools and the extended educational biography, and examining in detail the mechanisms that lead to a lower study probability of graduates of the alternative pathways compared to the classical pathway in Germany. Against the background of our results, the "decoupling" of social origin from school performance, the probability of success, the costs, and the benefits could reduce social disparities in the decision to study and, at the same time, the different probability of studying for different educational pathways. As experimental studies (e.g., Ehlert et al., 2017; Peter et al., 2021) have shown for the German context, information treatments—e.g., on opportunities to enter higher education, financial issues, or benefits of higher education—have the potential to increase the probability of enrolment. The results suggest that such information treatments could be used, particularly for alternative educational pathways, to support school graduates in their study choices and reduce the high levels of social inequality in these pathways. In this context, further research could examine the question of why students who have

completed VET and, in some cases, employment (#5), still obtain a higher education entrance certificate, but then so rarely use it to go to university. "Evening schoolers," on the other hand, who also have an apprenticeship and some professional experience, attend evening school for a longer period of time and then take up a course of university study just as frequently as school graduates from the classical pathway.

For countries that do not yet have alternative educational pathways for obtaining a HEEC but are considering introducing them to give more people access to higher education, our results suggest that alternative educational pathways for obtaining a HEEC do indeed mean inclusion for certain social groups. However, they also suggest that these alternative educational pathways should also provide an appropriate curricular and educational orientation, as well as information and guidance on the prospects of academic success and the benefits and costs of studying because otherwise, the educational potential for a course of academic study will be wasted to some extent.

Conflict of Interests

The authors declare no conflict of interest.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Breaking Barriers? Social Inequality in Pathways to Higher Education Between General and Vocational Schools in Germany

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Abstract

Pathways to higher education through vocational upper secondary schools (VUSSs) are intended to increase permeability. However, in both VUSSs and general upper secondary schools (GUSSs), participation is socially selective. This article examined differences between GUSS and VUSS students in (a) the attainment of a higher education entrance qualification (HEEQ) and (b) the subsequent transition to higher education. Taking entry selectivity into account, we analysed the extent to which inequalities between GUSS and VUSS in both outcomes could be explained by differences in school achievement and educational considerations—namely, cost–benefit perceptions, expected success, and status maintenance motives. Using data from the German National Educational Panel Study (NEPS; Starting Cohort 4), we selected a sample of individuals who entered upper secondary education in either VUSS or GUSS (N = 5032). Two binary dependent variables were used to indicate (a) the successful attainment of an HEEQ and (b) the subsequent transition to higher education (as opposed to vocational education and training). The results from logit models indicated that VUSS students were significantly less likely to obtain an HEEQ and progress to higher education. This association was smaller but still persistent when controlling for entry selection, school achievement, and educational considerations (AME_{HEEQ} = −0.047, $AME_{\text{transition}}$ = −0.150). However, when intake selection was considered in the logit models, school achievement and educational considerations during upper secondary education were insignificant in explaining why VUSS students were less likely than GUSS students to obtain an HEEQ and enter higher education.

Keywords
benefits of education; costs of education; higher education entrance qualification; school achievement; social origin; status maintenance; transition to university; upper secondary education; vocational education; permeability

1. Introduction

During periods of educational expansion, secondary school and higher education systems worldwide have undergone significant institutional differentiation, contributing to keeping educational pathways open for attaining higher educational outcomes. Countries with educational tracking (e.g., Austria, Belgium, Germany, Netherlands, and Switzerland) and those with mixed systems—including both comprehensive and tracked education (e.g., France, the United Kingdom, and Italy; see Triventi et al., 2016)—have undergone systemic secondary education reforms that have increased permeability in two ways. First, these reforms have facilitated track mobility and subsequent transition to general upper secondary schools (GUSSs) following the successful completion of non-academic lower secondary education (Hallinan, 1996; Jacob & Tieben, 2009). Second, educational routes via alternative pathways have been extended or created at the upper secondary school level to pave the way to higher education entrance qualifications (HEEQs) following the completion of lower secondary education (i.e., International Standard Classification of Education [ISCED] 2). These routes have been established as vocational upper secondary schools (VUSSs) within either general education systems (e.g., *lycée technologique* in France) or vocational education systems (e.g., *Istituto Tecnico* in Italy, *Berufliches Gymnasium* in Germany, *Berufsfachschulen* in Switzerland; see Murdoch et al., 2014; Shavit & Müller, 2000). As a result, in addition to vocational training and preparation for work, vocational school systems provide different, more academic types of schooling that prepare students for tertiary education (Iannelli & Raffe, 2006). Certificates attained in VUSS consist of (a) general HEEQs, (b) subject-specific HEEQs (allowing entrance to general universities for certain subject areas), and (c) HEEQs for certain lower-tier higher education institutions (e.g., technical colleges or universities of applied sciences).

At the upper secondary level, social inequality is evident based on students' placement into GUSS and VUSS tracks. Students from non-academic family backgrounds or with a lower socioeconomic status are more likely to attend VUSS (Herbaut et al., 2019; Panichella & Triventi, 2014). Prior research has investigated how the type of upper secondary school attended influences the relationship between social origin and the chances of successfully attaining an HEEQ (Hällsten & Thaning, 2018; Hänni et al., 2022) as well as the association between social origin in the chances of transitioning to higher education compared to employment or vocational education and training (VET; Becker & Glauser, 2018). However, the extent to which upper secondary schools themselves, as well as students' achievement and educational considerations during upper secondary education, influence HEEQ attainment and the transition to higher education—while controlling for selection into different upper secondary schools—remains to be examined. The aim of this article is to investigate these relationships with respect to GUSS and VUSS, which we refer to as two different upper secondary school tracks.

Germany's education system provides the context for examining the educational transitions and attainment of both GUSS and VUSS students in relation to the influence of social inequalities. In this highly stratified system, the traditional route to HEEQs is via GUSS (*Gymnasium*). Hence, the choice of school at the transition

from primary school to secondary school is, to some extent, a landmark decision regarding higher education access. However, permeability in relation to HEEQs is often attained through VUSS. In Germany, 33% of all HEEQs are attained at VUSS—of these HEEQs, 39% are general and 61% are for lower-tier higher education institutions (KMK, 2024).

In the German context, several studies have analysed social selectivity in educational routes to higher education and the use of second-chance pathways (Hillmert & Jacob, 2010; Lörz, 2013; Schindler & Bittmann, 2021; Schuchart, 2006). While these studies provided valuable insights, they did not distinguish between GUSS and VUSS (e.g., Buchholz & Schier, 2015; Schindler et al., 2024; Schindler & Lörz, 2011; Schuchart & Schimke, 2022), focused solely on a specific region (e.g., the TOSCA study that is based on data of one particular German federal state; Watermann & Maaz, 2006), or did not provide a (distinct) analysis of the predictors associated with HEEQ attainment or higher education enrolment (e.g., Spangenberg & Quast, 2023). Our study's perspective—namely the relationship between upper secondary differentiation, HEEQ attainment, and higher education access—has therefore not been extensively analysed regarding two main predictors: educational considerations and school achievement. Taking entry selectivity into account, orientations toward continuing education, the acquisition of competencies, and student achievement can vary between GUSS and VUSS. As a result, the chances of attaining an HEEQ and transitioning to higher education differ between students and graduates from GUSS and VUSS. Research on upper secondary education reforms in Scandinavia has analysed the effects of extending vocational education programmes by adding further general content that allowed graduates access to higher education (e.g., Hall, 2016; Ollikainen & Karhunen, 2021). It was found that extending vocational programmes for the attainment of HEEQs did not necessarily promote stronger enrolment in higher education. Investigating the German education system could therefore make a substantial contribution to research on alternative routes to higher education.

The aim of our study is to analyse how the two alternative pathways to higher education—GUSS and VUSS—contribute to unequal chances of attaining HEEQs and transitioning to higher education. We investigate the extent to which school achievement and educational considerations explain differences in the chances of attaining HEEQs and accessing higher education between students in GUSS and those in VUSS. We control for aspects of social origin, prior achievement, and aspirations at the end of lower secondary education, which influence the selection of students for GUSS compared to VUSS. We are particularly interested in whether school achievement and educational considerations during upper secondary education influence the relationship between upper secondary school tracks (GUSS vs. VUSS) and educational outcomes, beyond selection effects into upper secondary tracks. This allows us to evaluate in greater detail why alternative educational pathways affect students' chances of pursuing higher education. We proceed in two steps. First, we compare the differences in attaining HEEQs and entering higher education between GUSS and VUSS students. Second, controlling for indicators of selection into tracks, we test the extent to which school achievement and educational considerations mitigate the differences between GUSS and VUSS students' chances of obtaining an HEEQ and transitioning to higher education. Our research questions are as follows: Are there differences between VUSS and GUSS students (a) in the attainment of HEEQs and (b) in the subsequent transition to higher education? To what extent can these differences be attributed to group differences in school achievement and educational considerations?

2. Theoretical Background and Prior Research

2.1. The German Secondary Education System

After completing primary education, students in Germany are separated into hierarchically ordered educational tracks (lower, intermediate, and upper) in the lower secondary school system. Either these tracks correspond to a specific school type—such as general secondary schools at the upper level (*Gymnasium*)—or two to three tracks are combined into a comprehensive school type. These multi-track schools are named differently in each of the 16 German federal states. Selection after primary education is based on parental choice and mandatory or non-mandatory secondary school recommendations, based on student achievement. At the end of lower secondary education, students attain a lower or intermediate school leaving certificate. The latter enables them to either continue their schooling in upper secondary education or pursue VET. Continuing upper secondary education requires graduates with an intermediate school-leaving certificate to enter the upper secondary school track in a GUSS or VUSS, for which good or very good grades and a second foreign language are usually required for admission (Maaz, 2006). Regulations differ between federal states (Helbig & Nikolai, 2015), but the performance-related barriers to entry for VUSS tend to be lower than for GUSS at the end of lower secondary education (Maaz et al., 2004). Curricula are comparable and final exams are standardised; however, intermediate secondary school graduates may attend fewer lessons in various subjects (e.g., a second foreign language) upon entering upper secondary schools in some federal states. In Germany, students can attain different types of HEEQs through both GUSS and VUSS: (a) the general *Abitur*, which grants access to any tertiary course of study; and (b) restricted HEEQs, which allow access only to certain study fields (*fachgebundene Hochschulreife*) or to universities of applied sciences (*Fachhochschulreife*) (Neumeyer & Will, 2024). For individuals with a secondary school degree, typical VUSSs are *Berufliches Gymnasium* and *Fachgymnasium*, where a general HEEQ (access to universities) can be attained in three years. Other typical options include *Fachoberschulen* (for individuals with an intermediate school leaving certificate) and *Berufsoberschulen* (for individuals who have completed a VET programme), which provide a two-year specialised upper secondary education that allows graduates to attain a HEEQ for lower-tier higher education institutions. In some federal states, these schools provide an additional year for attaining a general HEEQ, which enables graduates to pursue either higher education or VET. Compared to higher education programmes, VET programmes are typically shorter, the costs and the risk of failure tend to be lower, and employment prospects after graduation are favourable (Becker & Hecken, 2008; Müller & Pollak, 2016). However, the long-term returns from higher education tend to be greater compared to those from VET (Kriesi & Sander, 2024).

2.2. Theoretical Framework and Prior Research

Our theoretical framework assumes that VUSS students are less likely than GUSS students to attain an HEEQ and transition to higher education. We expect this to be linked to social origin, prior school achievement, and occupational aspirations at the end of lower secondary education. In addition, we anticipate that students from less privileged families with lower school achievement and stronger aspirations for VET are overrepresented in VUSS, are less likely to attain an HEEQ (H1a), and are more inclined to choose VET over higher education (H2a). This is based on theories of the primary and secondary effects of social origin (Boudon, 1974; Breen & Goldthorpe, 1997; Erikson & Jonsson, 1996) and selection processes during the school trajectory (Mare, 1980). Beyond entry selection, we assume that GUSS and VUSS differ in how they foster school achievement and

shape educational orientations. VUSS students are expected to gain lower achievement and have a stronger preference for VET. Consequently, these factors further reduce their likelihood of attaining an HEEQ (H1b) and pursuing higher education (H2b).

According to the primary effect of social origin, school achievement is connected to family resources that provide opportunities for parental support, guidance and stimulating learning environments. Therefore, students from less affluent or non-academic families tend to achieve less at school and be less likely to be recommended for an academic school track (i.e., GUSS) after primary school (Neugebauer, 2010). Even when school achievement is comparable between status groups, the secondary effect of social origin means that families from less advantaged backgrounds are less likely to choose an academic school track for their children after primary school (Scharf et al., 2020). At the lower secondary level, students with a more favourable social origin are more likely to remain on an academic school track, while students with lower social origin are likely to leave education early (Dräger et al., 2022; Winkler, 2017). Therefore, at the end of lower secondary schooling, students from privileged social backgrounds are more likely to enrol in GUSS. If individuals choose to continue school at the upper secondary level following completion of lower secondary education, those from less privileged and non-academic family backgrounds are more likely to enter VUSS than to transition and continue their education at GUSS (Busse, 2020; Glauser, 2015; Maaz et al., 2004). They are less likely to meet the achievement-related entry requirements of GUSS due to the primary effects of social origin. Moreover, students who switch to VUSS after completing lower secondary education are more likely to have a stronger vocational orientation than academic orientation (Jüttler et al., 2021; Schuchart, 2019; Watermann & Maaz, 2006), while educational aspirations directed towards VET are stronger among students from lower social origins (Buchmann & Dalton, 2002). These students are therefore more likely to decide on VUSS because it provides a learning environment that is more specialised in vocational orientations than academic orientations. These selection processes result in an overrepresentation of students with lower social origins in VUSS. Due to this entry selection, we expect VUSS students to be less likely to attain an HEEQ and to transition to higher education.

Beyond intake selection, track-specific differences in school achievement and educational considerations during upper secondary school may also explain why GUSS students are more likely than VUSS students to attain HEEQs and to transition to higher education (H1b and H2b). Upper secondary school tracks differ in their curricular requirements, didactic traditions, teacher training, and instructional quality. These institutional conditions can influence learning environments between tracks and lead to different developmental trajectories (Maaz et al., 2008). Differential achievement gains may therefore not emerge solely from selective student intake. In the German lower secondary school system, it has been shown that gains in competences differ between school tracks, even when there is similarity in terms of students' social origin, ability, prior achievement, or aspirations or the social composition of the classroom (Herrmann & Bach, 2025). This indicates that there is a potential institutional effect on competence development. Generally, the GUSS system tends to have an academic teaching culture that corresponds to higher performance requirements and strong teacher qualifications. In contrast, the VUSS system contains a broad variety of school types with different purposes and admission requirements; hence, the variance in teaching cultures, performance requirements, and teaching methods is much more diverse compared to the GUSS system. This may, in turn, relate to differing achievement gains between GUSS and VUSS. As a consequence of the higher average school achievement of GUSS students, it is likely that they are more successful in obtaining HEEQs than VUSS students. They are also expected to be more likely to achieve higher average

grades in their HEEQs, which will allow them to overcome admission restrictions, ultimately making higher education more attractive. We therefore expect that, controlling for selective student intake, school achievement additionally influences the association between upper secondary school tracks and both attaining HEEQs and transitioning to higher education.

Moreover, the two upper secondary school tracks examined in this study may differ in how they shape the educational considerations of students. Empirically, it has been shown that the guidance and the preparation of students for higher education vary between VUSS and GUSS (Dörffer & Bernhard, 2025). VUSSs have been found to differ in their supply of structured and individualised counselling and support for the transition to higher education—especially concerning financial guidance. Furthermore, curricula and teaching methods tend to be less orientated towards the scientific or academic preparation required for higher education. Given the demanding higher education curricula, teachers in VUSSs may have lower expectations about their students' study readiness (Trautwein & Lüdtke, 2004). In addition, GUSSs may exhibit a stronger "college-going culture" (McDonough, 1997; Robinson & Roksa, 2016), which reinforces expectations or norms for pursuing higher education and ultimately fosters motivation and ambition to enrol in a study programme (Schuchart & Schimke, 2022). Against this background, VUSS students may perceive the attainment of an HEEQ—and the subsequent transition to higher education—as more costly and riskier in terms of successful completion than GUSS students (Trautwein et al., 2006).

We formulate the following hypotheses:

> H1a: Selectivity in social origin, prior achievement, and occupational aspirations before entering upper secondary education (partially) explain why GUSS students are more likely than VUSS students to attain HEEQs.
>
> H1b: Irrespective of selectivity effects, group differences in school achievement and educational considerations during upper secondary schooling (partially) explain why GUSS students are more likely than VUSS students to attain HEEQs.
>
> H2a: Selectivity in social origin, prior achievement, and occupational aspirations before entering upper secondary education (partially) explain why GUSS students are more likely than VUSS students to transition to higher education.
>
> H2b: Irrespective of selectivity effects, group differences in school achievement and educational considerations during upper secondary schooling (partially) explain why GUSS students are more likely than VUSS students to transition to higher education.

3. Data and Methods

3.1. Data and Sample

To analyse our research questions, we used data from the Starting Cohort 4 (SC4, grade 9) of the German National Educational Panel Study (NEPS, Blossfeld & Roßbach, 2019; NEPS Network, 2024), as it provides in-depth and longitudinal information on adolescents' pathways from grade 9 in secondary school to upper

secondary education and subsequent trajectories. SC4 comprises a stratified random and representative sample of ninth graders in German secondary schools. The first SC4 survey (wave 1), with a total sample of 16,425 students, was conducted in autumn 2010 in classrooms using paper-and-pencil interviews (PAPIs). A second survey (wave 2) followed in spring 2011; afterwards, surveys took place annually in the classroom using PAPI (waves 3–8). After the respondents left general secondary school, interviews were conducted twice a year (waves 3–13) using computer-assisted telephone interviewing (CATI). For this study, data from different survey waves were used, as we included information collected during lower secondary education as well as information on the upper secondary school attended (GUSS or VUSS), eventual completion with an HEEQ, and subsequent transition to higher education or VET (see Supplementary File, Table A1).

The analytical sample consisted of respondents who had entered upper secondary education (VUSS or GUSS) after completing grade 10 of lower secondary education (N = 5,032; see Supplementary File, Table A2). To examine entry into higher education or VET following graduation from upper secondary education, we further restricted this sample to 3,607 graduates who had obtained HEEQs at VUSS or GUSS (for sample statistics, see Supplementary File, Table A3). Taken together, our analyses are based on two distinct yet interdependent samples: Sample 1, consisting of students attending VUSS and GUSS, and Sample 2, comprising VUSS and GUSS graduates who had entered higher education or VET after completing upper secondary education.

The VUSS and GUSS students differed substantially in terms of the school track they had followed before transitioning to the two upper secondary education pathways. Respondents starting in GUSS mainly followed an academic track (i.e., a *Gymnasium* or a *Gymnasium* branch at a comprehensive school) before completing lower secondary education (80%). Only 20% were enrolled in non-academic tracks (i.e., lower and intermediate secondary school tracks, such as the *Hauptschule* or *Realschule*) before entering GUSS. To progress to GUSS, they had attained intermediate school leaving certificates via lower (e.g., *Hauptschule*) and/or intermediate secondary schools (e.g., *Realschule*). In contrast, 91% of the respondents who started VUSS followed a non-academic track during lower secondary education, while only 9% followed an academic track before entering VUSS (these numbers are not displayed in Table A2). Moreover, the majority of VUSS students in our sample (72%) attended two-year programmes (e.g., *Fachoberschule*) that led only to a restricted HEEQ (e.g., *Fachhochschulreife*) for universities of applied sciences (for details, see KMK, 2021).

3.2. Measures

3.2.1. Dependent Variables

We used two binary-coded dependent variables (DV) for our analyses. The first dependent variable (DV1) refers to students' upper secondary school completion and captures whether students attained an HEEQ (entrance qualification for general universities or universities of applied sciences) at the end of VUSS or GUSS. While a value of 1 indicates successful HEEQ attainment, a value of 0 denotes that upper secondary education was entered but was either left prematurely or the final exam was not passed. For students who attained an HEEQ, the second dependent variable (DV2) focuses on the first post-secondary transition and reports on students' enrolment in higher education—indicated by a value of 1—or VET—indicated by a value of 0—15 months after leaving VUSS or GUSS. The observation period of 15 months is in line with previous

research on post-secondary educational transitions (Neumeyer & Will, 2024), and it allowed us to include the post-secondary choices of school leavers who experienced short delays, such as a gap year.

3.2.2. Independent Variables

The focal independent variable represents the school attended during upper secondary education and distinguishes between GUSS and VUSS. We assigned to VUSS those students who attended any type of vocational school from which a general HEEQ or an HEEQ for universities of applied sciences could be attained, while those assigned to GUSS attended a *Gymnasium*. In investigating and explaining the associations between GUSS and VUSS during upper secondary education and both dependent variables, our empirical model accounts for the intake of those selected for the respective upper secondary schools. For this purpose, we controlled for students' social origin, school achievement, and occupational aspirations at the end of lower secondary education (i.e., before the students switched to VUSS or GUSS). These indicators were largely measured in grade 9, as follows:

- To capture important facets of the multidimensional construct of social origin, we used different indicators. We included parents' highest International Socio-Economic Index of Occupational Status (ISEI-08; see Ganzeboom, 2010) as an indicator of students' socioeconomic status. In addition, parents' highest education level was included using the 2011's ISCED. We distinguished between two main education levels: ISCED 1–3 (reference category) and ISCED 4–6. Both parents' HISEI and ISCED were primarily measured in grade 9 (wave 1). In the few cases where information on parents' indicator was unavailable in wave 1, data from subsequent waves were used.
- School achievement at the end of lower secondary education was measured by grades and standardised competence test scores. The use of grades has two advantages. First, they are a "major information source for students about their school achievement" (Keller, 2016b, p. 9). When making educational decisions, students are typically well aware of their grades (Jackson & Jonsson, 2013, p. 315) and rely on them as a performance indicator to assess their abilities and the educational options available to them (Keller, 2016a). Second, they play a crucial role in admission to higher education. However, grades have certain limitations, as they are not comparable across schools. Hence, we additionally accounted for competence scores as a more objective measure of school achievement or ability (Keller, 2016a). The aim of including competence test scores—alongside school grades—in the analysis was to account for unobserved ability (e.g., Keller, 2016a, 2016b). We used respondents' competence test scores in mathematics and German reading comprehension (measured in grade 9). In addition, we generated grade point averages (GPA) from annual report cards in grade 9, based on students' grades in mathematics and German, inversely recoded from worst to best.
- Given the close connection between educational aspirations and occupational aspirations (Rojewski, 2005, p. 140), we used students' realistic occupational aspirations at the end of lower secondary education to capture the specific occupations that they expected to attain in the future, while taking into account their perceived opportunities, individual resources and external constraints (Heckhausen & Tomasik, 2002; Rehberg, 1967). The relevance of realistic occupational aspirations to career-related behaviour was indicated by their correlation with our focal variables. Such aspirations at the end of lower secondary education were significantly and negatively associated with the probability of attending a VUSS ($r = -.26$, $p < 0.001$) but significantly and negatively associated with the probability of entering higher education after leaving upper secondary education ($r = .32$, $p < 0.001$). Realistic

> occupational aspirations were measured using the following open-ended question: "Considering everything you know now, what occupation will you actually pursue in the future?" (NEPS, 2019, p. 91).

School achievement and educational considerations during upper secondary education were measured using the following indicators. To assess the influence of school achievement during upper secondary education, we generated the GPAs of annual report cards in grade 11, based on students' grades in mathematics and German, inversely recoded from worst to best. To investigate the influence of educational considerations during upper secondary school, we used indicators referring to both higher education and VET, measured in grade 12 or 13. The operationalisation for educational considerations included respondents' perceptions of the benefits, direct costs, opportunity costs, probability of success, and the corresponding expectancy of status maintenance in relation to both higher education and VET (for a summary of the operationalisation, see Supplementary File, Table A1). The benefits of higher education and VET were captured using four items related, for example, to students' expected prospects of securing a well-paid job if they completed a higher education or vocational education programme. Scale reliability is satisfying for both educational options ($\alpha = 0.7$). The perceived direct costs of higher education or VET refer to the financial costs or burden associated with completing the respective educational option, whereas the *perceived opportunity costs* were determined by asking the students how great the loss of income due to limited opportunities to earn money to cover living costs would be if they were to study or enter VET. The perceived probability of success was determined by asking the students how likely they thought they were to successfully complete higher education or VET. Perceptions of the probability of status maintenance were assessed through students' beliefs about the extent to which higher education or VET could help them achieve a job similar to or better than their parents' jobs. Answer categories for all indicators ranged from 1 (*lowest agreement*) to 5 (*highest agreement*; see Table A1). Table A4 reports the correlations between the variables (for the correlations for the restricted sample of VUSS and GUSS graduates, see Supplementary File, Table A5).

3.3. Analytical Strategy

To investigate our hypotheses on attaining an HEEQ (DV1) and the subsequent transition to higher education (DV2), we applied diverse empirical analyses. All analyses were conducted using Stata 18. We imputed missing information on the independent variables using Multivariate Imputation by Chained Equations (Azur et al., 2011). In line with the recommendations from simulation and validation studies (von Hippel, 2007), both the dependent and independent variables were included in the imputation model. Missing values were imputed jointly across the full sample of students attending VUSS and GUSS. After the imputation of missing values, we excluded respondents with missing information on the dependent variables. To increase the efficiency of our imputation model, we included auxiliary variables, such as school track in grade 9 and students' perceptions of their parents' educational expectations. Furthermore, 20 imputation datasets were generated to increase the robustness of imputations. Parents' HISEI, as well as students' GPA, competence scores, and occupational aspirations, were *z*-standardised for all multivariate analyses.

To investigate our hypotheses, we applied a logistic regression approach (Best & Wolf, 2015). Average marginal effects (AMEs) were reported to display the average effect of our independent variables on the probability of attaining an HEEQ (DV1) and entering higher education (DV2), given that the respective covariates were held constant at their values (Stata command *mimrgns*). AMEs are robust against scaling and allow for comparability across logistic regression models (Best & Wolf, 2015). We estimated three nested models: Model 1 shows the

relationship between attending VUSS and the dependent variables without controls, Model 2 adds controls for the intake selection (i.e., parents' HISEI, parents' ISCED, and prior achievement), and Model 3 includes the indicators for school achievement (i.e., GPA and competence test scores) and educational considerations measured during upper secondary education. To avoid overcontrol bias, we refrained from including additional control variables, such as respondents' academic self-concept (Grätz, 2022). For comparing coefficients and average marginal effects across models, we used the Stata command *mecompare* (Mize et al., 2019) and pooled the estimates over the 20 imputed datasets.

4. Results

4.1. Descriptive Findings

GUSS and VUSS strongly differed with regard to the social origin of their students (see Supplementary File, Table A2). For VUSS, the (*z*-standardised) HISEI was −0.5, while for GUSS it was 0.7 (Cohen's $d = -0.54$, $p < 0.001$). The share of students with an academic family background was 59.8% for VUSS compared to 81.7% for GUSS (Cohen's $h = -0.49$, $p < 0.001$). Differences between GUSS and VUSS were also found in school achievement at the end of lower secondary education—that is, GPA in grade 9 (Cohen's $d = -0.46$, $p < 0.001$), reading competence (Cohen's $d = -0.77$, $p < 0.001$), and mathematical competence (Cohen's $d = -0.89$, $p < 0.001$). In addition, at the end of lower secondary education, VUSS students showed significantly lower realistic occupational aspirations than GUSS students in terms of the ISEI of expected occupations (Cohen's $d = -0.77$, $p < 0.001$). Concerning school achievement and educational considerations during upper secondary education, the differences between GUSS and VUSS were only small or moderate. For example, VUSS students perceived higher benefits of VET (Cohen's $d = 0.29$, $p < 0.001$), expected a higher probability of completing VET (Cohen's $d = 0.28$, $p < 0.001$), and anticipated a higher probability of maintaining their social status through VET (Cohen's $d = 0.56$, $p < 0.001$) compared to GUSS students.

4.2. Attaining an HEEQ

Estimating the raw association between attending a VUSS and the attainment of an HEEQ without adjusting for other variables revealed a negative and significant relationship, confirming H1a. Compared to GUSS students, students attending VUSS were 18.5 percentage points less likely to attain an HEEQ ($AME = -0.185$, $p < 0.001$; Model 1 in Table 1). After accounting for intake selection (Model 2 in Table 1), the difference between VUSS and GUSS students in attaining an HEEQ decreased to 4.7 percentage points. The results of Model 2 further confirm that social origin, prior school achievement, and occupational aspirations at the end of lower secondary education were relevant to attaining an HEEQ. A higher parental educational level was associated with a higher probability of attaining an HEEQ. In addition, higher achievement—as indicated by students' GPA, reading competence, and mathematical competence—was associated with a higher probability of attaining an HEEQ. In addition, a higher ISEI of the expected occupation was associated with a higher probability of attaining an HEEQ. Therefore, H1a is supported.

After adding respondents' school achievement and educational considerations in upper secondary education to the logistic regression model (Model 3 in Table 1), the gap between VUSS and GUSS students in achieving an HEEQ remained the same but was still significant ($p < 0.001$). In other words, beyond selection into upper secondary schools, school achievement and educational considerations in upper secondary education were

Table 1. Logistic regression model of attaining an HEEQ.

	Model 1		Model 2		Model 3	
	AME	*(SE)*	*AME*	*(SE)*	*AME*	*(SE)*
Attending VUSS (ref.: GUSS)	−0.185***	(0.017)	−0.047***	(0.011)	−0.047***	(0.011)
Parents' HISEI			0.012**	(0.004)	0.006	(0.005)
Parents' ISCED			0.064***	(0.013)	0.055***	(0.012)
GPA in grade 9			0.025***	(0.004)	0.008	(0.005)
Reading competence			0.021***	(0.004)	0.013**	(0.004)
Mathematical competence			0.021***	(0.005)	0.014**	(0.004)
Occupational aspirations (ISEI)			0.031***	(0.004)	0.023***	(0.005)
GPA in grade 11					0.022***	(0.006)
Perceived benefits of VET					−0.020	(0.016)
Perceived direct costs of VET					−0.023*	(0.010)
Perceived opportunity costs of VET					−0.005	(0.010)
Perceived probability to complete VET					0.007	(0.012)
Perceived probability to maintain social status with VET					−0.007	(0.010)
Perceived benefits of higher education					−0.014	(0.016)
Perceived direct costs of higher education					0.000	(0.009)
Perceived opportunity costs of higher education					0.016	(0.010)
Perceived probability to complete higher education					0.036***	(0.008)
Perceived probability to maintain social status with higher education					0.003	(0.012)
Observations	5,032		5,032		5,032	
Pseudo-R^2	0.062		0.206		0.272	

Notes: Logistic regression models (average marginal effects, standard errors in parentheses) with imputed data (20 imputed datasets); the imputation model is based on a joint imputation of Sample 1 (VUSS and GUSS students) and Sample 2 (graduates from VUSS and GUSS); discrete change effects for binary independent variables; GPA = grade point average; HISEI = highest socioeconomic index of occupational status; ISCED = International Standard Classification of Education; levels of significance (two-sided tests): *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Data: NEPS SC4 SUF 14.0.0, own calculations.

not statistically significant in explaining the gap between VUSS and GUSS students in attaining an HEEQ. This is not in line with H1b. Nevertheless, school achievement and educational considerations in upper secondary education played a role in the attainment of an HEEQ, even when accounting for intake selection into GUSS versus VUSS. Beyond intake selection, students' GPAs in grade 11 and perceived probability of completing higher education were associated with a higher likelihood of attaining an HEEQ. In contrast, higher perceived direct costs of VET were associated with a lower probability of attaining an HEEQ.

4.3. Entering Higher Education After Attaining an HEEQ

To answer hypotheses H2a and H2b, we focused only on students who attained an HEEQ in VUSS or GUSS and switched to higher education or VET after completing upper secondary education. Table 2, which

presents the estimation of the raw association without adjusting for other variables, shows that—compared to GUSS graduates—graduates from VUSS were 38.6 percentage points less likely to enter higher education ($AME = -0.386$, $p < 0.001$; Model 1). Introducing respondents' social origin, prior school achievement, and occupational aspirations at the end of lower secondary education to the logistic regression model led to a decline in the coefficient for attending VUSS. Overall, the gap between VUSS and GUSS graduates entering higher education declined to 17.9 percentage points (Model 2). This supports H2a. The results further showed that the measures to capture intake selection into GUSS versus VUSS (i.e., social origin, school achievement, and occupational aspirations) were associated with the probability of entering higher education after attaining an HEEQ. Among the indicators of social origin, parental HISEI showed a significantly positive association with the probability of entering higher education, while there was no significant association between parents' educational level and the probability of entering higher education.

Table 2. Logistic regression model of entering higher education.

	Model 1		Model 2		Model 3	
	AME	*(SE)*	*AME*	*(SE)*	*AME*	*(SE)*
Attending VUSS (ref.: GUSS)	−0.386***	(0.025)	−0.179***	(0.026)	−0.150***	(0.024)
Parents' HISEI			0.047***	(0.008)	0.019*	(0.008)
Parents' ISCED			−0.040	(0.020)	−0.034	(0.019)
GPA in grade 9			0.045***	(0.008)	0.012	(0.009)
Reading competence			0.023**	(0.007)	0.010	(0.007)
Mathematical competence			0.054***	(0.007)	0.039***	(0.007)
Occupational aspirations			0.067***	(0.008)	0.043***	(0.008)
GPA in grade 11					0.034***	(0.009)
Perceived benefits of VET					−0.115***	(0.016)
Perceived direct costs of VET					−0.003	(0.011)
Perceived opportunity costs of VET					0.011	(0.010)
Perceived probability to complete VET					−0.050***	(0.012)
Perceived probability to maintain social status with VET					−0.047***	(0.011)
Perceived benefits of higher education					−0.002	(0.017)
Perceived direct costs of higher education					−0.014	(0.008)
Perceived opportunity costs of higher education					0.005	(0.010)
Perceived probability to complete higher education					0.107***	(0.010)
Perceived probability to maintain social status with higher education					0.022	(0.014)
Observations	3,607		3,607		3,607	
Pseudo-R^2	0.055		0.148		0.227	

Notes: Includes only graduates from VUSS and GUSS. Logistic regression models (average marginal effects, standard errors in parentheses) with imputed data (20 imputed datasets); the imputation model is based on the joint imputation of Sample 1 (VUSS and GUSS students) and Sample 2 (graduates from VUSS and GUSS); discrete change effects for binary independent variables; GPA = grade point average; HISEI = highest socioeconomic index of occupational status; ISCED = International Standard Classification of Education. Levels of significance (two-sided tests): *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. Data: NEPS SC4 SUF 14.0.0, own calculations.

In addition, higher school achievement in grade 9 in terms of GPA and mathematical and reading competence was associated with a higher probability of entering higher education after graduating from upper secondary school. In addition, respondents' realistic occupational aspirations showed a significant and positive relationship with entering higher education.

After adding the indicators for school achievement and educational considerations measured during upper secondary education (see Model 3), the gap between VUSS and GUSS reduced to 15.0 percentage points ($p < 0.001$). A test of the difference in the AME from Model 2 to Model 3 showed that adding these controls significantly decreased the effect of attending VUSS by 2.9 percentage points ($p < 0.01$). This suggests that, beyond selectivity effects, differences in school achievement and educational considerations between school tracks partly explain why VUSS students are less likely to enter higher education. Net of the controls, students' school achievement and educational considerations during upper secondary education were associated with the probability of entering higher education. This is also assumed in H2b.

5. Discussion

In our study, we investigated differences between two alternative pathways to higher education—GUSS and VUSS—in attaining an HEEQ and transitioning to higher education, as well as the extent to which these differences can be attributed to school achievement and educational considerations when controlling for intake selection—namely, social origin, prior achievement, and occupational aspirations before the entrance to upper secondary education. The German education system provided the context for the analysis, offering a suitable setting for examining the research questions due to its highly stratified secondary school system. For graduates of upper secondary education, training programmes in Germany's VET system provide favourable career prospects and constitute a second important educational option alongside higher education. Our analytical approach did not intend to imply that higher education is generally a superior option for young people compared to VET. For many school leavers, VET is a very attractive option, and they make a conscious decision not to go on to higher education (Di Stasio, 2017; Scholten & Tieben, 2017). However, previous research has shown that the chances of completion and continuation along educational pathways differ between GUSS and VUSS students. Our results can be summarised in three key points:

1. Students who attended VUSS were less likely to attain an HEEQ—and those who attained an HEEQ were less likely to transition to higher education—than students who attended GUSS. The findings of the TOSCA study, which focused on a single German federal state, also showed that VUSS students were less likely to transition to higher education (Maaz, 2006). Our results extend this finding to a representative sample across Germany.
2. GUSS and VUSS students differed widely in their social origin, prior achievement, and occupational aspirations before entering upper secondary education. This selectivity partially explains the association between upper secondary school track and both HEEQ attainment and transitioning to higher education (H1a and H2a).
3. When controlling for intake selection, our logit analyses revealed that school achievement and educational considerations did not account for any additional share of the association between upper secondary school track and the probability of HEEQ attainment (H1b). Nevertheless, students strongly differed in school achievement between school types during upper secondary education. Such differences in school achievement between GUSS and VUSS students were also reported in the

TOSCA study (Watermann et al., 2004). School achievement and educational considerations explain, to a small extent, the association between upper secondary school track and entry to higher education (H2b).

The main findings show how institutional differentiation—not only in Germany—can influence pathways to envisaged educational outcomes. Differentiation of upper secondary education between GUSS and VUSS can be an effective tool to organise the allocation of the heterogeneous student body, paving the way to VET or higher education. VUSS can provide a solid, subject-specific foundation for students who have a stronger vocational orientation or more pronounced professional interests and who want to pursue specific careers in the occupations trained for in the VET system. In many countries, applying for VET often follows a competitive process. In Germany, in particular, an HEEQ can provide advantages in obtaining a more attractive training position. Consequently, a VUSS that leads to an HEEQ is often seen by students as a transitional solution before entering a VET programme. For instance, when asked about their motives for attending a VUSS leading to an HEEQ for lower-tier higher education institutions, students predominantly stated that they wanted to improve their chances of obtaining a training position (by attaining an HEEQ) and—to a lesser extent—that they wished to postpone their career decisions (Deißinger & Ruf, 2006). Moreover, Jüttler et al. (2021) showed that although affected by social origin, the choice between general and vocational education is also driven by individuals' interests.

Furthermore, German educational policy promotes the equality of VET and higher education (Powell et al., 2012). Vocational schools that award HEEQs and allow successful graduates to have both educational options—VET or higher education—support this objective. However, we argue that the differentiation of the German upper secondary education system into general and vocational school tracks serves not only the described allocation function but also a function for keeping educational pathways open. The latter function aims to ensure that VUSS students are prepared for a successful transition to higher education. Accordingly, previous studies have found no significant differences between GUSS and VUSS regarding the use of types of learning meant to prepare students for higher education (e.g., researching literature in a library, preparing and giving presentations; see Trautwein & Lüdtke, 2004). Transition to VUSS after the completion of lower secondary education is especially attractive for cautious families—or risk-averse—when making educational decisions at the end of primary education. Institutional differentiation in upper secondary education allows families and students to reverse or even postpone decisions, especially when students are at a young age (Winkler, 2020). As our results show, VUSSs are of great importance for this group of students when it comes to (re-)pursuing academic goals, such as following a second-chance pathway.

6. Conclusion

Our study provides novel insights into selection effects and possible processes during GUSS and VUSS education that affect the association between upper secondary tracks and the two investigated educational outcomes. Our results show that the selection effects of social origin, prior achievements, and occupational aspirations largely—but not entirely—explain the differences in educational success and participation between VUSS and GUSS. For both dependent variables, substantial differences remained between the two tracks. The examined processes during GUSS and VUSS schooling—influencing differential school achievement and educational considerations—were not found to explain inequalities between GUSS and VUSS to any great extent. However, this does not rule out that other "socialisation effects" (Schuchart &

Schimke, 2022) that were not analysed in our study could occur during GUSS and VUSS schooling and could further explain differences in the investigated outcomes. Therefore, the remaining gaps between VUSS and GUSS students should be discussed in light of unobserved theoretical mechanisms. Future studies should examine other factors that could contribute to VUSS students having a lower probability of successfully obtaining an HEEQ and pursuing higher education, such as the role of career and vocational counselling (Falco & Steen, 2018), the motivations and interests of students (Holtmann et al., 2021), their knowledge about the education system (Forster & van de Werfhorst, 2019), peer effects (Zwier et al., 2022), instructional quality (Kunter et al., 2013), and regional disparities in school supply (Matthewes & Borgna, 2025).

With regard to selection effects, our study shows that VUSSs typically attract students from certain social backgrounds who tend to have a disproportionately strong orientation towards VET. In this respect, VUSSs may act as catalysers of the—on average—non-academic professional motives of these students, ultimately channelling them into careers that do not necessarily require academic degrees. This finding and its implications are relevant beyond the German context. To ensure that the educational options created through increased institutional permeability actually allow for "barrier-breaking"—meaning the options are more strongly reflected in the educational trajectories of individuals—VUSSs need to provide information, guidance, and counselling to broaden career intentions and choice sets.

The findings of our study have limitations with regard to the following points. First, the indicators for assessing educational considerations related to VET and higher education were measured at a rather late stage of the students' educational trajectory. Therefore, the students' intentions and considerations regarding their subsequent educational pathways were mostly finalised; that is, their decisions had typically already been made. Second, we focused on two different school tracks to higher education and VET in the secondary school system, ignoring the fact that there are even more pathways. These can be summarised as second-chance education, which is part of adult education or further education. Such paths are particularly important for adults who are new entrants in the education system, such as immigrants, or for individuals who decide to upgrade their educational qualifications later in their lives. Third, the associations investigated in our study should not be interpreted as causal effects. Establishing causality would require strong theoretical assumptions about causal paths and relationships between the analysed predictors and outcomes. Although it was not possible to implement a corresponding design due to space constraints, the longitudinal structure of the NEPS data would enable such a research project. Fourth, when comparing the findings for attaining an HEEQ and the post-secondary transition to higher education, it should be considered that our results were based on different samples (i.e., students versus graduates from VUSS or GUSS). The sample of graduates from upper secondary education was already shaped by prior school achievement and educational decisions, which may have led to selection bias (Bernardi, 2012). Fifth, the VUSS track entails a number of different school types with a large heterogeneity in terms of entry requirements and the type of HEEQ awarded (see Section 2.1; see also Schuchart & Schimke, 2025). On the one hand, different types of VUSSs vary in their intake selection (Spangenberg & Quast, 2023), which may correspond to differing chances of attaining an HEEQ and subsequently transitioning to higher education (Innengruppe Bildungsberichterstattung, 2024, pp. 210–211). On the other hand, students may have different motives for entering a certain type of VUSS. Some types of VUSSs specifically cater to individuals who have already completed a VET programme and who want to obtain an HEEQ. It seems plausible that these individuals enter VUSS as a pathway to higher education—that is, with a clear motive to transition to

higher education after obtaining an HEEQ. Other types of VUSSs are predominantly regarded as transitional solutions. Moreover, different types of VUSSs influence the chance of subsequently enrolling in universities compared to lower-tier higher education institutions (Spangenberg & Quast, 2023). Since most of the VUSS students in our sample attended a two-year course leading only to a restricted HEEQ for universities of applied sciences (see Section 3.1), this could have contributed to the gaps observed in the transition to higher education between VUSS and GUSS students. Consequently, future research should distinguish between different types of VUSSs, HEEQs, and forms of higher education and examine students' motives for attending VUSS in greater detail to gain a better picture of the role it plays from individual students' perspectives. Against the background of our results, future studies should also take into account social inequalities in motives and decision-making processes.

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Conflict of Interests

The authors declare no conflict of interest.

Data Availability

This article uses data from the National Educational Panel Study (NEPS; see http://doi.org/10.5157/NEPS:SC4:14.0.0). The NEPS is carried out by the Leibniz Institute for Educational Trajectories (LIfBi, Germany) in cooperation with a nationwide network. All data collection procedures, instruments, and documents were checked by the data protection unit of the LIfBi. The data are available for scientific use.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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ARTICLE

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Guilty of Success and Failure: Permeability Struggles of Unsuccessful Upper Secondary VET Examinees in the Czech Republic

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Abstract

This article examines upper secondary vocational education students who have failed the exit examination (*Matura*) at least twice. Repeated failure leaves such students with only a basic education certification, restricting their access to higher education and limiting their labour market prospects. Although most of these young people wish to make another attempt to pass the *Matura*, they have lost their formal student status, along with its associated benefits, and most are compelled to seek employment. Academic failure, particularly at these critical transition points, can have profound implications on students' educational and professional trajectories and their identities. The research question we posed here, therefore, is: How do the identities of upper secondary vocational education *Matura* examinees evolve during the two years after they fail the final examination? The data corpus for this study consists of biographical interviews with 46 informants who failed the *Matura*. The data analysis reveals that they struggled to anchor their identities through study, work, or family, with some exploiting non-systemic permeability mechanisms.

Keywords

anchoring struggles; feelings of failure; identity struggles; *Matura*; permeability; upper secondary exit examination; vocational education

1. Introduction

Passing the *Matura* exam is a necessary precondition for entering higher education in the Czech Republic. There is no alternative pathway to higher education; all aspiring students must follow an upper secondary track

leading to the *Matura*. Besides, the *Matura* certificate proves the qualifications acquired through vocational education. This study concentrates on students from the vocational track (either from regular four-year studies or follow-up studies) who failed the *Matura* exam at least twice. These students failed their first attempt in their final school year and then failed their first retake attempt several months later. As a result, they were not awarded a certificate of completion of upper secondary education. Consequently, they were unable to perform as qualified workers in the job for which they had been trained or to pursue higher education (either higher scholastic education or higher vocational education). They are permitted to make one more attempt (a total of two retake attempts) to pass the *Matura* at the end of the following school year. This situation leaves them in a state of uncertainty, as they are no longer students, but they have not yet graduated either.

To more clearly present this research problem, we explain the key features of the Czech education system. One of its distinctive features (Table 1) is the division of students into different educational tracks at the upper secondary education level.

At the upper secondary education level, students enter the academic track, the non-academic vocational track, or the vocational apprenticeship track. Students who finish lower secondary education in the Czech Republic are distributed among the different tracks (Table 2). The proportion of students who continue on the academic track surpasses 30%. More than 45% of students choose the non-academic vocational track, leading to the *Matura* exam. Around 23% of students opt for a vocational apprenticeship track. Students with apprenticeship certificates can pursue follow-up studies to obtain the *Matura* certificate later. These figures may vary slightly depending on the specific year and region.

The academic track providing general education includes programmes whose primary aim is to prepare students for further study in tertiary education. This encompasses the Gymnasium educational programme and several Lyceum study programmes. The Gymnasium programme corresponds to what is typically referred to as a grammar school. A Lyceum is a type of upper secondary education that serves as a middle ground between a Gymnasium and vocational programmes. Students at a Lyceum receive a general education alongside an introduction to specific professional fields. Graduates from the academic track, which invariably culminates in the *Matura* exam, are expected to progress to higher education, a path followed by the majority (90%).

The secondary vocational education track offers specialised instruction in various fields of study, equipping students for both professional careers and further studies at higher vocational schools or universities. These programs last four years and culminate in the *Matura* exam. Among graduates of secondary vocational education, approximately 50% pursue higher education. This proportion has seen a slight increase in recent years, possibly due to a growing interest in higher education within technical and vocational domains.

The apprenticeship track focuses on practical training in specific trades and professions. The programs typically last three years, leading to an apprenticeship certificate or other qualification lower than an apprenticeship. The programmes do not culminate in the *Matura* exam, which is the condition for proceeding to higher education. Among graduates of secondary vocational apprenticeships, the proportion of those who find their way through follow-up studies to higher education is very low.

Table 1. The Czech education system.

Education level	Pre-primary		Basic								Secondary				Tertiary
Cycle			Primary					Lower-secondary			Upper secondary				
Type			Elementary schools					Elementary schools Grammar schools (8- or 6-year *gymnázium*) Art schools (8-year *konzervatoř*)			General track with *Matura* Grammar schools (*gymnázium*) Lyceum				
											Vocational track with *Matura* * Vocational school * Vocational schools with 50% time of apprenticeship				
											Vocational tracks with VET certificate Shorter professional schools (3 or 2 years)			* Follow up vocational schools for VET certificate holders, leading to *Matura*.	
Grade			1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th
Tracking points							x		x		x					
Age	<4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		Compulsory education														

Source: OECD (2023), simplified; *segments of education addressed in this article.

The educational outcomes of students differ among the tracks. This is reflected in the failure rate of the *Matura* exam. The *Matura* exam contains a uniform part that does not differ across tracks, even though the secondary school curriculum of the subjects represented, primarily in the Czech language, can differ significantly in terms of the number of teaching hours. While failure in the academic track is almost negligible (2%), failure in the non-academic tracks is much higher (8%). In the follow-up classes for graduates of the apprenticeship track, the rate is as high as 22%. These data, specifically concerning examinees who failed twice consecutively, have not yet been systematically monitored or coherently published. Therefore, it was necessary to reconstruct them from partial data published in the statistical yearbook of the Ministry of Education, Youth and Sports (MoEYS, n.d.), in reports from the Centre for Evaluation of Educational Results (CERMAT, n.d.), and in the annual reports of the Czech School Inspectorate (CSI, 2021). Table 2 presents the averages for 2018, 2019, and 2020, when the majority of our sample first took the *Matura* examination.

Table 2. Approximate indicators of the distribution of pupils and their outcomes.

Distribution of pupils among tracks at the upper secondary school level (age 15–19)		Failure rate in *Matura* exam*	Proportion of students who continue to higher education **
Academic track 31%		2%	80% (+10%)
Non-academic vocational track 46%		8%	40% (+10%)
Vocational Apprenticeship 23%	*Follow-up classes* 3%	22%	15% (+20%)
	Rest: 20%	Without the possibility of advancing to higher education	

Source: Based on data from CERMAT (n.d.), MoEYS (n.d.), CSI (2021); * after two attempts, ** higher education plus higher vocational education (in brackets).

2. Literature Review

Upper Secondary School Exit Examinations (USSEE) are a pivotal component of many education systems, as passing them is often a prerequisite for graduating and for obtaining a qualification certificate (Majcík et al., 2024). This diploma serves as formal evidence of secondary education completion; in some countries, it is essential for pursuing higher education (higher education entrance qualification) or career opportunities. It is clear that exit exams significantly shape student life trajectories in various ways, not all of which are positive. While the overall impact of these examinations remains ambiguous, two contrasting perspectives emerge. The first emphasizes that USSEE requirements serve as incentives, encouraging students to engage more deeply in learning before graduation and motivating schools to enhance the quality of instruction. The second perspective argues that USSEE can create barriers and perpetuate inequalities (Reardon et al., 2010). Research by Jürges and Schneider (2010) suggested that USSEE is linked to negative student outcomes, such as heightened anxiety, increased achievement pressure, and reduced motivation. USSEE requirements disproportionately affect students with lower abilities or those from disadvantaged socioeconomic backgrounds (Hemelt & Marcotte, 2013). Failing these exams often leads to decreased self-efficacy and increased discouragement toward school (Benner, 2013). L. J. Kruger et al. (2016) emphasized that failing can negatively impact academic motivation, with the effect varying depending on individual characteristics—potentially either diminishing or, in some cases, enhancing motivation. How such

failure affects examinee transitions to higher levels of education and/or the labour market remains a question that can be approached through the concept of permeability.

2.1. Limited Permeability in the Czech Education System

The idea of permeability between general, vocational, and higher education systems and the employment system was raised in the 1970s (Spöttl, 2013). The idea is based on the argument "that permeable structures of education improve the effectiveness of selection mechanisms in education and work that aim at equality of opportunities" (p. 458). The permeability is limited by the segmentation of the education system, the division of the student population into tracks, and the separation of academic and non-academic tracks with limited inter-track mobility (cf. Wolter & Kerst, 2015). These permeability limits also apply to the Czech Republic in some ways (Dvořák et al., 2016; Straková et al., 2024). Recent research examined some of the consequences of this track system. The effects of various secondary school tracks on cognitive and non-cognitive learning outcomes were analysed (Straková et al., 2024), and several reasons for differing school outcomes were suggested (Straková et al., 2023, 2024). Students typically choose their educational track at the age of 15, although some make this decision earlier, choosing the academic track as early as age 11. Once chosen, changing tracks is almost impossible. Mobility between the tracks is very limited, with downward mobility (from academic track to vocational tracks) being more common (Dvořák et al., 2020). While the permeability between upper secondary school tracks and higher education is monitored statistically, it lacks in-depth discussion and interpretation from researchers.

In the Czech Republic, in addition to the limits to permeability (Dvořák et al., 2020; Straková et al., 2024), the effect of the *Matura* as a final exam at the upper secondary education level is also evident in both the academic and non-academic tracks. One of the key permeability limits between vocational education and higher education is the existence of a single exit examination (*Matura*). Since passing the *Matura* is a necessary condition for entry into higher education, the *Matura* becomes a systemic element determining the future educational path. Therefore, even though up to 75% of students complete tracks leading to the *Matura* at the upper secondary education level, a significant part of them will remain at the level of a basic education, without qualifications and without the possibility of continuing their studies, precisely because of failing the *Matura* exam.

2.2. Youth Transitions After Failure at the Upper Secondary Education Level

Academic failure, particularly at critical transition points, can have profound implications for students' educational and professional trajectories and their identities. Upper secondary final examinations often serve as a gateway to further education or employment, making failure at this stage a significant life event. Leaving upper secondary education without a certificate is often perceived as a failure, leading to negative emotions, anxiety, and fears about the future (Majcík et al., 2024; Ogresta, 2023; Ramsdal et al., 2018). This experience can diminish internal motivation for further development and lead to adverse changes in self-concept, such as career-related confidence (Creed et al., 2003). Additionally, it may result in the abandonment of personal and educational ambitions, as well as a perceived decline in the quality of social relationships and an increased sense of social exclusion (Bühler-Niederberger et al., 2023; L. J. Kruger et al., 2016; Majcík et al., 2024).

Objectively, the consequences of incomplete studies include problematic employment in the labour market, limited participation in formal and non-formal education opportunities, and the chances of returning to the education system deteriorating over time (Ogresta, 2023; Schuchart & Schimke, 2022; Struffolino & Borgna, 2021). People with incomplete upper secondary education are at risk of poverty and poorer health, including mental health, in the long term (Matías-García et al., 2024). There are, therefore, many reasons to focus on failing *Matura* examinees in general and on permeability between the vocational track of upper secondary education and higher education in particular. Previous research has examined how students cope with failure through emotional regulation (Turner & Waugh, 2007) and resilience strategies (Martin, 2013), yet little attention has been given to how failing an upper secondary final examination shapes student identities in the aftermath. Given the societal and personal significance attached to passing such exams, understanding how students reconstruct their self-perception following failure is essential for addressing this gap. This study asks the research question: How do the identities of upper secondary vocational education *Matura* examinees evolve during the two years following their final examination failure? Specifically, we explore how students navigate the professional and educational implications of failure and how they redefine (or struggle to redefine) their educational and work identities. By focusing on post-failure identity reconstruction, this research provides insights into the lived experiences of unsuccessful examinees.

2.3. Identity Struggles of Young People in Transition

Since the beginning of the new millennium, a growing body of research has focused on the use of narrative and biographical approaches for studying young people and their transitions. The expanding use of narrative and biographical methods in youth research reflects a broader trend towards more qualitative, person-centred approaches in the social sciences. These methodologies are increasingly valued for their ability to capture young people's complex lived experiences shaped by societal contexts (Douglas & Poletti, 2017). This approach has been widely adopted across disciplines such as sociology, education, psychology, and social work (Moran et al., 2020). For example, studies have used narrative methods to understand the experiences of young carers (McGibbon, 2021), the impact of homelessness on young people (Toolis & Hammack, 2015), and the development of narrative identity in different cultural contexts (Cierpka, 2014; Hammack, 2008). Narrative studies were also done on the topics of study and career pathways (Rönnlund et al., 2017), early school leavers (Alexander et al., 2001; Battin-Pearson et al., 2000), and graduate transitions (Heinz, 2002).

Narrative research allows for a deep exploration of personal stories, providing insights into how young people make sense of their lives and identities. The narrative identity is understood as "the internalized and evolving story of the self that a person constructs to make sense and meaning out of his or her life" (McAdams, 2011, p. 99). This study works with the fact that "investigations of people's narratives therefore allow a glimpse into their identity, shedding light on how they came to their present identity and how they view the impact of significant experiences on it" (Eriksson & Frisén, 2024, p. 17). Moreover, the narrative identity reflects the interplay between agency and structure, as it refers to how individuals create and maintain a sense of self through the stories they construct about their lives, and the extent to which they feel they can author those stories.

In the biographical work framework, the process of identity transformation always starts with identity struggles, defined as "struggles that people experience in different periods of life in relation to different

social situations that are narrated retrospectively in their biographical story" (Thunborg & Bron, 2019, p. 40). Failure at the *Matura* exam can be viewed as a potential identity struggle. Anchoring (Bron & West, 2000; Fenwick, 2006) refers to "being able to handle identity struggles and successfully integrate them into their biographies" (Bron & Thunborg, 2017, p. 120). Floating describes a biographical experience when the individual is unable to create a future (Bron, 2000); this can help understand the processes related to what happens with the ambitions of the examinees after their failure at the *Matura* exam. Research on dualities in transitions—particularly in the shift from education to work—has been well established (Brown, 2015; Wenger, 1998), illustrating how individuals navigate between structure and uncertainty. However, less attention has been given to dualities in transitions between other life roles, such as the movement between education and unemployment, or dependence and self-sufficiency. Understanding the interplay between anchoring and floating in these contexts can offer deeper insights into how individuals experience and negotiate instability, ultimately shaping their long-term trajectories.

3. Methods

Our research is part of the Life Pathways of Unsuccessful Graduates project, which included a broader sample from which we selected the relevant segment. For this particular study, the sample consists of 46 informants who were vocational education students and failed the *Matura* examination twice consecutively. The sample is composed of four different cohorts: examinees who attempted the *Matura* examination for the first time in 2018, 2019, 2020, or 2021.

Individuals who fail the *Matura* examination are difficult to locate and engage in research. They are dispersed throughout the population, not specifically registered with any official authority, and often reluctant to discuss their experiences. Consequently, we employed various strategies to identify these individuals, including requesting that schools reach out to them and approaching them individually based on peer recommendations. From a social research perspective, this approach constitutes convenience sampling. Adjustments were made to maintain the population structure in terms of gender and educational track.

Data was collected through repeated longitudinal biographical interviews. The informants were followed through these interviews over two years after failing the upper secondary final examination. For each of the series of longitudinal interviews, a specific version of the research instrument was created. As these were biographical interviews exploring informants' life paths, the interview scheme was based on a biographical narrative approach (Burke, 2014; Kutsyuruba & Mendes, 2023; Rosenthal, 2004; Schütze, 1992; Wengraf, 2001). The interview scheme used in this study was in line with Rosenthal's (2004) conceptualisation: There was (a) an initial narrative assignment, (b) internal narrative questions based only on the informant's narrative response to the initial narrative assignment, and (c) external narrative questions (pre-prepared questions, semi-structured interview type). The first interviews with each cohort and the interviews with the 2018 cohort, with which one interview was conducted, were based on the following initial narrative assignment:

> We are interested in everything that preceded your first attempt at the *Matura* examination, how you entered secondary school, how you recall your studies, how you prepared for the *Matura* examination, how your *Matura* examination went, and what you did when you learned the results, how you perceived it all, and also how your life went on. Everything you can remember is important to us, and we would appreciate it if you could tell it as a coherent story in your own words.

The follow-up interviews followed the logic of the repeated attempts the informants had made over time and other events that had occurred in their lives since the last interview. In addition, these follow-up interviews included questions on specific areas that had emerged during the initial analyses and needed more focus. The research adhered to ethical research guidelines. All participants were adults over the age of 18 and provided written informed consent; they were informed in detail of the research objectives and their rights as participants. They were fully briefed on the study's purpose prior to the initial interview and retained the freedom to control their level of engagement throughout the process. Interview transcripts and participant data were anonymised and securely stored on a protected server, with all recordings subsequently deleted. The data was used exclusively for this study, and access was restricted to researchers involved in the project.

In the earlier stages of the research investigation, the data were first analysed using inductive open coding in ATLAS.ti. Several subsequent narrative analysis techniques (Lieblich et al., 1998) that revealed processes in the life stories of examinees were also used in the research, and the results are presented in this study. Particularly, we used holistic content analysis, which is a type of narrative analysis. In a holistic approach to narrative analysis, Lieblich et al. (1998) suggest that the researchers read the text multiple times until a pattern emerges. An individual's story is viewed as a whole and the parts within it are interpreted in relation to other parts of the story (Beal, 2013; Lieblich et al., 1998).

4. Results

The narrative analysis of interviews showed two opposing processes in the life stories of unsuccessful examinees: anchoring and floating. Anchoring provides stability, structure, and a sense of belonging; floating signifies a state of uncertainty, disconnection, or liminality. For a young person in transition, in this case transitioning between levels of education, transitioning between education and the labour market, or more generally transitioning to a broader range of life roles characteristic of adulthood, anchoring is essential. However, the relationship between anchoring and floating is not one of simple opposition; it constitutes a duality. These two states do not exist in isolation but rather interact fluidly within the processes of identity formation and life transitions.

4.1. Floating as Represented in the Narratives

Students who fail the exit examination on their second attempt lose their official student status. This transition often leads to feelings of marginalization or even exclusion, as they are left without institutional support. Upon losing their student status, these individuals are required to cover their own health and social insurance costs, and some no longer receive financial or emotional support from their families. Bára describes her struggle to navigate life after her second unsuccessful attempt, facing significant challenges in sustaining herself:

> So, I actually lost my student status, moved back to [name of the city] and….I thought it would be easy to find a full-time job. But with only elementary school on my CV, it wasn't really possible. And I was actually only hired for one….Like, one company on a trial basis. But there's…[name of the company]. Crazy manic, so I just couldn't do it. Well, so I've been looking for, like, other jobs, like contract work. And I had to pay for my own health insurance. And on top of that, rent for the apartment, so it was just too much. And so, I was just chasing jobs, and mentally I was just so bad about it….And I was also

> taking a math course but through that job….Through those jobs that I just didn't have, like, Monday to Friday, from this hour to that hour regularly, I lost a couple of those lessons too.

Consequently, Bára was unsuccessful in her third attempt at the exam. Lacking a stable connection to her work—consisting only of random part-time jobs—and not engaging consistently in any stable form of formal or non-formal education, she found herself in a state of uncertainty. She drifted between working merely to cover her expenses and attending the course solely to pass the exam, without perceiving any deeper meaning or long-term direction in her actions.

In Dalimil's case, the narrative reflects a state of floating—a liminal, uncertain phase where the student struggles with a lack of direction and stability after dropping out:

> Well, university has fallen apart because of that, actually; I was already there to look at the registration. I was already there and I registered, they were just waiting for me to provide my high school diploma, of course I didn't provide that and then it just ruined it for me because all of a sudden I didn't know what to do next, I thought to myself why didn't I just give it a second go, everyone would perceive me as if I was the one who did it a third time, I just felt like a person who was basically stupid, I thought to myself that I didn't have it or didn't know how. And then they started charging me taxes, so I had to start working.

Initially, there was a sense of movement toward a goal (registering for university), but the inability to provide a high school diploma abruptly halted this trajectory. The student's sudden realisation of being without a clear next step, coupled with feelings of self-doubt and societal judgment, deepens the sense of disorientation. The hesitation in attempting the exam again stems from a fear of being labelled a failure, reinforcing an identity of inadequacy. The floating is further amplified by external pressures—no longer a student, the student is now faced with financial obligations (taxes) that force an immediate shift into the workforce. This transition appears unplanned and reactive rather than intentional, highlighting a lack of anchoring structures that could have supported persistence in education. The student's experience embodies educational liminality, where the absence of institutional and personal clarity leaves them adrift between past failure and uncertain future possibilities.

4.2. Anchoring as Represented in the Narratives

Although all examinees who fail their second attempt and exit the education system face similar challenges, some individuals manage to navigate this period of uncertainty by finding stability in their personal identities. By anchoring themselves in aspects of their identity—whether through family, professional aspirations, or personal values—they create a foundation that helps them regain a sense of direction and purpose. This anchoring serves as a crucial mechanism for overcoming the setbacks associated with educational failure, allowing them to reframe their experiences and pursue alternative paths forward. Three narrative identities were crucial for anchoring processes of unsuccessful graduates—their educational, work, and family identities.

4.2.1. Anchoring in Family Identity

Some students came to recognize over time that greater support from their families would contribute to their stability. This was the case for Bětka, who initially concealed her failure at the final examination from her boyfriend. However, she later realized the importance of support from him and from her mother. Through this process, she strengthened her connection to her family identity:

> Well, now it was completely different, it seemed to me. Well, so I studied on my own. It helped me a lot to study, like, with my mother. It helped me when I learned and someone kept testing me. So, I said out loud to someone, my mom always corrected me. That it was always like that….Better. And I didn't do that before. So now I did it differently and it was much better. So, somehow, I just learned it. Well, when that day was like the graduation day, I got up in the morning, I had a completely different feeling than the two attempts before. I wasn't really like….I wasn't just sick, I was just like more at ease. I have no idea what it was. Maybe because I was better at it? I really don't know. I don't know. But I already went with the idea that I would pass the *Matura* exam.

This was also the case for Eliška, whose parents provided her with a place to stay without requiring rent. Their support allowed her to focus on her studies without the added pressure of financial insecurity, reinforcing her sense of belonging within the family:

> The family was really great about this. I told them that I wasn't actually a student anymore and that I wasn't living alone yet; I was living with my parents. So, I said that I would contribute to the rent, and my parents were actually great in that. They just told me to finish my high school diploma, finish my driving licence, and then find a job and maybe give them more for that year. But they said that I should just finish my own things in peace, that that was more important to them than getting money from me right now. So, that was a lot of support from the family, and I'm really grateful to them for that.

In Elvis's case, the role of support and guidance traditionally provided by the school had to be assumed by his family, as the institution refused to offer assistance. Elvis asked if he could attend classes for one year while he was waiting for his next attempt:

> They didn't want to accommodate me. The reason I asked them was because I didn't pass the exam, so they just thought it would help me if I went to those classes and just sat there and listened to what the teacher was saying and actually discussed the topic that I was actually interested in in those subjects. They told me to go to hell, saying that they weren't a higher education where people go to lectures and stuff.

Faced with this lack of support, his family became the primary source of encouragement, structure, and resources, helping him navigate the challenges that arose from the school's absence in his educational journey to attain the *Matura* certificate. The most significant role in anchoring *to* his family identity was played by his father. During the Covid period, when Elvis's father couldn't work as a tennis coach, he became a study coach for his son instead, providing essential support:

> He studied with me as much as he could. Plus, he tried to explain things that I didn't understand as simply as possible so that I could understand. Overall, he just studied with me; he was a kind of

> substitute teacher. Actually, during his job, even when he was working or simply didn't have a job, unfortunately, because the government banned it, he just devoted himself to me as much as he could.

4.2.2. Anchoring in Work Identity

Throughout secondary school and in between *Matura* examination attempts, students acquire various work experiences (e.g., part-time jobs and internships) that influence how they think about their futures. However, in the narratives of unsuccessful examinees, it is possible to discern differences in how they perceive themselves within these experiences, i.e., in the formation of their work identity, as described by Damián:

> If I actually passed that *Matura* examination, I could actually progress and be a construction manager or something like that. Which is what I want to be like. That I would like to be there as a construction manager and not as a worker like that.

Damián successfully anchored his work identity, and that helped him to be more determined and pursue this goal. For secondary technical school examinees, gaining a *Matura* certificate meant the possibility of a qualified career.

4.2.3. Anchoring in Educational Identity

All the informants had completed their entire secondary education prior to the exam—some with difficulty, others without any indication of potential failure at the *Matura* examination. However, they shared a common trait: a lack of confidence in their ability to learn independently that hindered the development of their educational identity. Once they were no longer part of the formal educational environment, they often sought tutoring support and had to secure financial resources to afford it. Finding a tutor is often complicated and takes weeks or months that could be used for preparation. On the positive side, they were sometimes able to find a competent person, as illustrated by Aneta:

> So, through, like, an acquaintance we arranged for tutoring. And she came every week mostly, sometimes twice a week, just depending on how we agreed, but the time was usually once a week as standard. And she also recommended completely different textbooks for me to buy, which we just went by, she taught me vocabulary, and we really focused most on the grammar that's in those standardised tests. And by the fact that she knew it from the school she taught at, she just knew what to focus on.

Somewhat paradoxically, secondary school teachers often re-enter the scene as tutors to compensate for student deficiencies that their colleagues have failed to address. This happens primarily in the form of private tutoring, but it may have an institutional structure, such as in private language schools or even driving license courses.

Another viable route to obtaining a final certificate from upper secondary education is transitioning to the vocational education and training (VET) pathway. Despite not passing the *Matura*, Arnošt found a way to remain within the education system:

> So, [after the unsuccessful attempts] I immediately threw myself into the apprenticeship course that I applied for. I wanted to go straight into the third year to do an apprenticeship for a year, and I got there through the differentiation exams.

Arnošt was able to maintain his student status and education identity by continuing his studies, thus avoiding the need to end his education status and start paying for his insurance. Furthermore, due to his efforts, he was not automatically relegated to having only achieved the level of basic education, as happened to others. Even if they finished all four years of upper secondary education, without passing the *Matura* exam they have completed only the basic education level. However, transferring to an apprenticeship also meant that Arnošt was no longer eligible to enter higher education.

4.2.4. Anchoring in Identities Enabled by Non-Systemic Permeability

Anchoring allows students to reframe their failure, ultimately transforming it into success in a different domain and reshaping their self-perception beyond the label of "unsuccessful." A key example of this transformation is found in stories of non-systemic permeability—instances in which examinees discover alternative pathways through the structural barriers of the education system and labour market. The narratives include cases of conditional entry into higher education or access to qualified employment, demonstrating that, despite institutional rigidity, certain exceptions and opportunities emerge. In some instances, an external actor plays a pivotal role—functioning as a "deus ex machina"—by facilitating access to these non-traditional routes. Among our sample, Berenika was the only examinee who experienced conditional admission to university, illustrating this rare but impactful form of non-systemic permeability:

> Then I actually, during the fourth year, took the entrance exams at (name of the university), and I got into the production study programme. For me, it was very stressful at that moment, even just the fact that I was accepted to the school. And I didn't actually graduate. Now it's like, what to do next? What to do, where to proceed? And nobody actually tells you what to do or how to do it. Well, in the end, it turned out that I was accepted to two universities in the Czech Republic, where they always took five people altogether, and both of them were for production. And….I actually always called after that because I didn't have a *Matura*. They told me at [the first university] that I simply had to have a *Matura*, that the train just doesn't go through them, unfortunately. And at [the second university], they looked at my results and said that I was above average interesting for them, above average talented. They would take me on the condition that, of course, I have to pass the *Matura* exam, and I have less than a year to do so.

However, since this procedure was not officially sanctioned by law, her non-systemic educational trajectory was not met with understanding, particularly at the school she had previously attended. Some teachers criticized Berenika for enrolling at university without having formally completed the preceding level of education:

> And the condemnation of those teachers when you just said: "You know what, I can't come on this date because I'm just at school, I have lectures. I have that day."…I still had an exam that day, so I said I had an exam at university. That I couldn't come. And they asked me nastily: What did I imagine would happen? That I have an exam at some university, and that it's like….That I'm simply not supposed to

> study at university at all, that I simply can't afford it at all….That I didn't manage something so trivial and at the same time I'm studying at university!

Some of the qualifications the unsuccessful examinees were studying, e.g., health care, allowed them to enter the next level even without the *Matura* certificate. If they entered a profession without officially completing their upper secondary education, then those cases can be considered as cases of non-systemic permeability. This happened when Dulčinea became a paramedic directly after her failure at the *Matura* exam:

> Then I failed the exam again in September, so I ended up joining that department full-time. Since I no longer had student status, I had to take care of my health and social insurance myself. Fortunately, my brother had experience with that, so he helped me out….So I worked as a paramedic—I didn't need to take any course or anything like that, because I already knew the job from my practical training.

In Dulcinea's specific case, a certificate confirming the completion of her school years was sufficient, as it demonstrated that she had received training for work in a hospital setting. However, in order to qualify for a higher position—such as that of a nurse—she needed to obtain the *Matura* certificate. Consequently, her ongoing work experience served as a motivation to re-enroll in the fourth year of her secondary school and attempt the *Matura* exam again.

5. Strengths and Limitations of the Study

The qualitative approach we have chosen does not permit us to generalise our findings, nor can we comment on causal relationships. Therefore, we cannot reliably comment on gender differences or measure the influence of socioeconomic status, which other research has identified as very fundamental (on gender, see Struffolino & Borgna, 2021; on socioeconomic status, see Munk, 2013). We can see these factors only through the life situations of the informants as described in their narratives. However, this view significantly contributes to our understanding of complex, lived experiences across various contexts. Additionally, by utilising a relatively large sample, we were able to identify specific cases that are often overlooked in statistical analyses and have yet to be addressed in existing research. This broad qualitative sample also enabled us to uncover instances of non-systemic permeability that have remained hidden in prior studies.

There are additional limitations to this study. Our research focused on the pathways of informants over a span of only two years, which means we cannot ascertain how their circumstances evolved afterwards or whether there were any significant changes in their identities. Furthermore, we are unable to trace the ongoing development of their life stories. Additionally, since the topic of permeability only emerged during data analysis, it was not explicitly addressed in our questioning; rather, we infer it from the broader narratives.

6. Discussion

This study examined the anchoring struggles of those who experienced failure in the upper secondary exit examination. Informants shared their perspectives on failure, reflecting on their experiences and on their subsequent plans. They discussed how they coped with failure and its consequences, their own prerequisites for mastering this life phase, and the external conditions influencing their experiences. The analysis of their biographical narratives revealed several key findings.

First, informants found themselves adrift after unexpectedly failing the exit examination. They are floating in a vacuum created by leaving the education system. Consequently, they struggled with new responsibilities, such as paying for their health and social insurance, searching for part-time jobs to cover these costs and their rent, as well as struggling with newly acquired adult roles. If they managed to overcome these struggles, they were able to integrate their identities through the process of anchoring. The analysis of their life stories indicated that anchoring can be beneficial for maintaining their work or academic ambitions.

Moreover, research shows that students who experience failure in examinations often carry their previous educational experiences into this new phase. These experiences frequently hinder the development of a strong educational and work identity. Within non-academic tracks, the culture of schools tends to provide a weak foundation for establishing a solid education identity. The narratives from some students revealed that they faced the challenges of academic futility, as evidenced by Straková et al. (2023) and other studies. In this study, the academic futility was evident in the teachers' disapproval of these students pursuing their university studies on condition, which was framed as non-systemic permeability.

When students need to reassess their study and career plans following a failure in the *Matura*, their educational and work identities can feel precarious, resembling structures "built on sand." This situation constrains their ability to make informed career decisions (Hloušková et al., 2022). However, positive changes in their trajectories often arise when non-systemic permeability measures are utilised. These measures allow individuals to participate in work experiences or gain valuable insights that contribute to their learning and growth. By engaging in both educational and professional contexts, they develop a sense of agency over their life trajectories, thereby reshaping their identities in a more constructive way. Consequently, their educational and career choices become a reflexive practice (Rönnlund et al., 2017). These conclusions align with earlier research by Matías-García et al. (2024), underscoring the importance of participation, engagement, and agency in the trajectories of young people at risk.

Although this research was conducted in the Czech context, its findings may be relevant to other educational systems as well. Structural barriers to educational transitions—particularly between secondary and tertiary levels—are present in many systems. These obstacles hinder both individual career development and the overall efficiency of the system, underscoring the need to address them. The sporadic emergence of non-systemic permeability further illustrates the importance of creating more flexible and inclusive structures.

If non-systemic permeability were integrated into the system, transition processes would become more transparent and inclusive. Young people navigating the shift to higher education or the labour market would benefit from structured, institutionalised pathways rather than relying on unpredictable, ad hoc interventions. One potential systemic measure could be the introduction of conditional acceptance to higher education for students retaking their final exams who have already been admitted to a university. Similarly, conditional entry into qualified employment—typically requiring a *Matura* certificate—could provide opportunities for individuals to gain work experience while completing their studies. Implementing such structured measures would create more equitable and accessible transitions, reducing reliance on external actors or chance-based opportunities.

This study highlights the importance of fostering positive identities as a means of gaining control over one's life. The study also sheds light on the complex interactions between study and work identities and the relations to family, peers, and colleagues in both educational and professional settings (Matías-García et al., 2024). Additionally, it points to the intricate interplay between individual dispositions and structural factors. When the condition of anchoring identities is met—ideally in conjunction with meaningful interactions with significant others—and structural factors and individual dispositions are balanced, the period following failure can be viewed as one of many transitional discontinuities (Heinz, 2002) throughout life.

7. Conclusions

Our findings are consistent with the conclusions of authors who have argued that support for students at risk of early school leaving remains markedly underdeveloped across national education systems. Based on these findings and in light of other research (e.g., Alexander et al., 2001; Battin-Pearson et al., 2000; Bowers & Sprott, 2012; Matías-García et al., 2024), it is possible to draw implications for educational policy aimed at improving the equity and permeability of vocational education. Our recommendations are grounded in findings regarding the potential for fostering positive educational and work identities. To mitigate the negative effects of failing the *Matura* exam, it is crucial to eliminate barriers to further participation in education. Consequently, all students should graduate, regardless of their success in the *Matura* exam, with a recognised certificate of competencies. This would enable them to either enter the labour market or pursue advanced adult VET. Additionally, formalising non-systemic permeability measures into a structured system for conditional admission to higher education would be beneficial.

Although various instruments aimed at enhancing permeability in the transition from vocational education to the labour market have been discussed, none have yet been implemented in the Czech Republic. One way to prevent problematic transitions is through the validation of acquired skills. An example of a systemic measure to support students at risk that is currently undergoing experimental verification is the option to obtain a professional certificate after completing the third year of a four-year study program (Kaňáková, 2024). Students could also benefit from the implementation of school portfolios that document the competencies acquired during their studies (E. J. Kruger et al., 2013).

The research results highlighted the significance of providing support between the attempts to pass the *Matura*. As the narratives have shown, floating is marked by uncertainty and a sense of disconnection from school. Monitoring students could be beneficial in establishing effective support activities (Haugan et al., 2019; Kennelly & Monrad, 2007). A sense of belonging to the educational environment can be fostered by strengthening students' work identity through collaboration with companies and practical training opportunities (Skorikov & Vondracek, 2011). Additionally, career counselling plays a crucial role in supporting students by enhancing career readiness (Dodd et al., 2022) and aiding in transitional decision-making (Psifidou et al., 2021).

The reintegration of young individuals into the formal education system and the improvement of their labour market prospects require educational and guidance structures specifically designed to meet the needs of this target group and equipped with the necessary competencies for effective intervention (Chisvert-Tarazona et al., 2024; Schuchart & Schimke, 2022). Addressing and alleviating the negative effects of academic failure constitutes a viable strategy for reducing long-term repercussions in the lives of young people.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

The data corpus (in Czech) analysed during the current study is available from the corresponding author upon reasonable request.

LLMs Disclosure

No generative AI tools were used in the writing or editing of this manuscript. However, an AI-based assistant was occasionally consulted to check the clarity and fluency of selected English formulations.

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Overcoming Obstacles? Institutional Support for the Pathways to Higher Education at German Vocational Schools

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Abstract

The institutionalization of new types of vocational schools in the 1960s and 1970s aimed to open up the German education system and create new pathways for accessing higher education, particularly for socially disadvantaged students. Today, one-third of German students with a higher education entrance certificate graduate from vocational schools. However, these graduates are less likely to pursue or succeed in higher education. This raises the question: How do vocational schools support their heterogeneous student body in transitioning to higher education, and to what extent do differences exist between school types? Sociological research has shown that institutional support for and during transitions is crucial for expanding access to education. In particular, organizational structures and practices play a role in the (re)production of social inequality. To analyze these, we apply the concept of institutional permeability, focusing on information and counseling, financial support, learning organization and pedagogy, and school culture. The study draws on problem-centered interviews with staff from different types of vocational schools in one German federal state, analyzed through qualitative content analysis. The results reveal significant variations in how schools aim to prepare students for higher education. Specifically, students of *Fachoberschule* face a double disadvantage due to their social background and institutional structures, which hinder their higher education pathways. The lack of personalized support at vocational schools complicates students' orientation process, placing much of the responsibility on students and a few dedicated teachers.

Keywords

Germany; higher education; institutional permeability; institutional support; school types; social background; study orientation; vocational schools

1. Introduction

Beyond the traditional route through grammar schools, vocational school types that lead to a higher education entrance certificate (HEEC) play a crucial role in the existing pathways to higher education (HE) in Germany. Vocational schools account for one-third of all HEECs (Autor:innengruppe Bildungsberichterstattung, 2024). Students often attend these school types after completing vocational education and training (VET), following employment, or coming from non-academic lower secondary school tracks. Due to the high stratification within the German secondary education system, a significant proportion of students from socially disadvantaged backgrounds enroll in vocational school types that provide access to a HEEC. Thus, vocational schools can be seen as institutionalized "permeability bridges" aimed at creating more opportunities and overcome the obstacles to HE access for socially disadvantaged students. However, vocational school graduates are less likely to pursue HE (Lörz, 2013; Van den Broeck et al., 2020) and more likely to drop out (Heublein et al., 2017; Tieben, 2020).

Nationally and internationally, few empirical studies have examined vocational school types, their certificates, and students' transitions to HE (Bodin & Orange, 2018; Imdorf et al., 2017; Leemann et al., 2016; Murdoch et al., 2016; Schindler, 2014; Schuchart, 2019; Schuchart & Schimke, 2022; Watermann & Maaz, 2006). These studies often focus on the individual level, examining students' transition behavior and aspirations. Research has shown that students' HE aspirations and transitions vary considerably depending on the vocational school type and their students' social background (Imdorf et al., 2017; Schuchart, 2019). However, the role of vocational schools as organizations—and the structures and practices within them—has been largely overlooked. This gap is notable given that educational research consistently shows that structures and practices at the organizational level strongly influence the (re)production of social inequality (Bourdieu & Passeron, 1971; Emmerich & Feldhoff, 2021; Smyth & Banks, 2012). Organizational structures, such as institutionalized information and counseling on future education options, and pedagogical practices that are sensitive—or insensitive—to students' habitus and social differences, have been shown to affect students' educational behavior (Ehlert et al., 2017; Erdmann et al., 2022; Horvath, 2018; Lange-Vester et al., 2019; Pfahl, 2012).

We argue that vocational school structures and practices can support or hinder students' transitions to HE. However, we still lack knowledge about how institutional and organizational support varies across different types of vocational schools in Germany. Therefore, we ask: How do vocational schools support their diverse learners in transitioning to HE, and how does this support differ between vocational school types? To address these questions, we structure our analysis around four bundles of support structures and practices that can facilitate institutional permeability for heterogeneous learners: information and counseling, financing, pedagogy and learning organization, and organizational culture (Bernhard, 2017). In addition, we examine how these vocational schools support their socially diverse student body and how this contributes to re(pro)ducing inequality within the education system.

Following, we will describe the different types of vocational schools in the German education system, their student populations, transitions, and success in HE. Using the theoretical concept of institutional permeability (Bernhard, 2017), we present current knowledge on school-based study orientation. Our qualitative-exploratory study is based on document analysis and qualitative interviews conducted with school staff from various types of vocational schools in Lower Saxony. The data were analyzed using

theory-guided qualitative content analysis. Our findings suggest that schools' support structures and practices are not well-aligned with the needs of their student populations. The aim of preparing students for HE varies by school type, with socially disadvantaged students, particularly those enrolled at *Fachoberschule* (FOS), facing a double disadvantage in their transition to HE due to their social background and teaching practices. Overall, we found a lack of individualized support within schools, leaving much of the responsibility to students and a few dedicated teachers.

2. Pathways to HE in Germany

2.1. General Structure of the Education System

The German education system is known for its pronounced stratification (Allmendinger, 1989; Kerckhoff, 2001). Traditionally, after primary school, students were tracked into three different types of lower secondary schools, in addition to special needs schools (*Förderschulen*), based on their performance, each leading to distinct post-secondary education pathways. As a result of this early selection, *Realschule*, *Hauptschule*, and, to some extent, *Förderschule* led to VET, while grammar schools (*Gymnasium*) led to HE. However, in recent decades, lower and upper secondary education have become more permeable and diversified, evolving into a system of general education that can be described as two-tiered. While grammar schools remain the dominant direct pathway to HE, other secondary school types, such as comprehensive schools (*Gesamtschulen*), have emerged. These schools offer different lower secondary school leaving certificates and access to HE. Additionally, a variety of vocational school types now exist, also offering pathways to HE (see Figure 1).

Access to HE is regulated through various types of HEECs. General education schools, such as grammar and comprehensive schools, primarily award general HEECs (*allgemeine Hochschulreife*), which grant access to all HE institutions and subject areas. Vocational schools, on the other hand, often award subject-restricted HEECs (*fachgebundene Hochschulreife*), limiting access to specific subject areas, or type-restricted HEECs (*Fachhochschulreife*), which allow access only to universities of applied sciences (UASs). UASs are generally considered less prestigious than full universities. Historically, in Germany, VET has been regarded as an attractive alternative for graduates with a HEEC, leading to qualified and well-paid professions (Pilz et al., 2020). Moreover, dual study programs combining VET and HE have become increasingly popular. These programs are typically offered by UASs, vocational academies (*Berufsakademien*), or dual universities (Cedefop & Bundesinstitut für Berufsbildung, 2022). For simplicity, we do not describe these hybrid organizations of HE (Graf, 2013; Graf et al., 2024) in detail in Figure 1.

Despite the development of new, hybrid HE institutions and study programs, tracking within the German education system persists and is associated with social segregation. Socially privileged students are more likely to transfer to grammar schools, obtain a HEEC, and attend universities than socially disadvantaged students (Buchholz & Schier, 2015; Schindler & Bittmann, 2021; Shavit & Müller, 2000).

2.2. Vocational Schools as Pathways to HE

Across Germany, various vocational school types offer a wide range of qualifications. This article focuses on vocational school types that lead to a HEEC rather than a vocational qualification. Figure 1 provides a

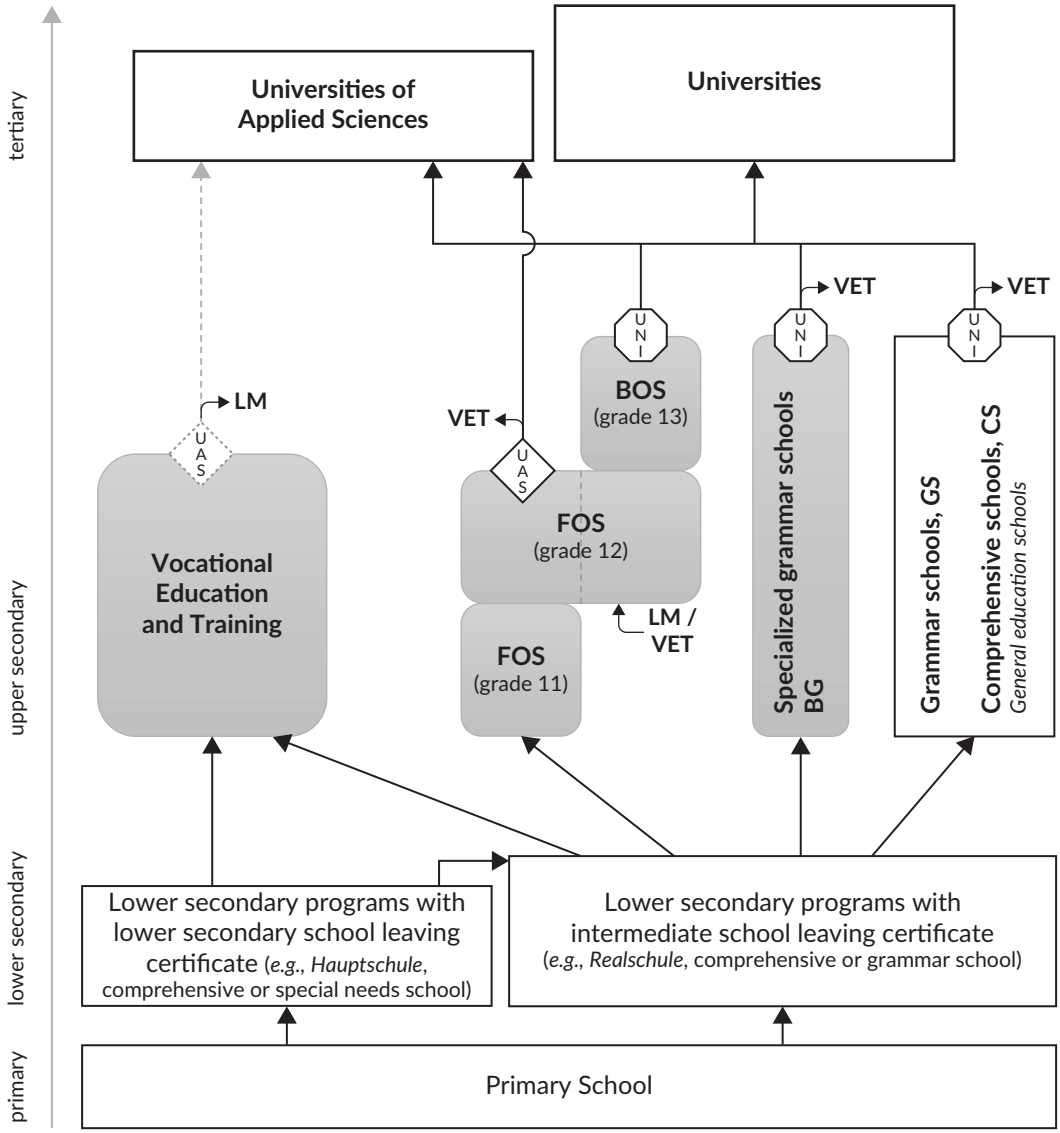

Figure 1. Pathways from vocational schools to HE. Notes: UAS (diamond) = type-restricted HEEC; UNI (octagon) = general or field-restricted HEEC; dashed and greyed arrows = exceptional HEEC; LM = labor market; VET = vocational education and training.

schematic overview of common vocational school types, their access routes, and the opportunities available after graduation. However, due to Germany's federal education system, school types and regulations vary significantly between states.

Specialized grammar schools (*Berufliches Gymnasium*, BG) lead to a general HEEC within three years. The BG is similar in structure to grammar or comprehensive schools but is distinguished by its vocational subject-specific orientations. Across Germany, BGs award the most general HEECs among all vocational school types, accounting for 32% of all HEECs at vocational schools (Statistisches Bundesamt, 2023). The specialized upper secondary school (FOS) leads within two years to type-restricted HEECs. It is more accessible to students from non-academic lower secondary tracks, as its formal entry requirements are lower than those of BG (Kultusministerkonferenz, 2010, 2021). FOS begins in grade 11 with an extensive internship, and students who have already completed VET can shorten the duration of FOS by entering

grade 12 directly. FOS awards the most type-restricted HEECs in Germany, making up 29% of all HEECs at vocational schools (Statistisches Bundesamt, 2023). The two-year full-time vocational school (*Berufsoberschule*, BOS) provides students who have completed VET with subject-restricted or general HEECs through the years 12 and 13. In some federal states, such as Lower Saxony, grade 12 is completed at FOS, followed by a one-year BOS course (*Aufbauschulform*). Compared to BG and FOS, BOS is much less common, accounting for only 5% of all HEECs at vocational schools (Statistisches Bundesamt, 2023). Other vocational school types that also offer vocational qualification certificates (e.g., trade and technical schools/*Fachschulen*, full-time vocational schools/*Berufsfachschulen*) or unusual combinations of school type and HEEC (e.g., FOS awarding a general HEEC) make up the remaining 34% of HEECs at vocational schools (Statistisches Bundesamt, 2023).

The limited research on the social backgrounds of vocational school students and their transitions to HE reveals differences between school types. Most students across all vocational school types come from non-academic backgrounds (Schuchart & Schimke, 2022; Watermann & Maaz, 2006). Students at FOS and BG often come from non-academic tracks in lower secondary schools (Schuchart & Schimke, 2022; Trautwein et al., 2011). Overall, BG students have higher aspirations to pursue HE than FOS students (Schuchart & Schimke, 2022). In addition, graduates of vocational schools are more likely to drop out of HE compared to graduates from general education schools, particularly those with a type-restricted HEEC (Heublein et al., 2017; Tieben, 2020).

In summary, vocational school types offer institutionalized pathways to HE for socially disadvantaged students. However, vocational school students are less likely to enroll or complete HE. While the literature highlights differences between school types, it primarily focuses on the individual level, neglecting the organizational level. This article addresses this gap by examining how school structures and practices support or hinder the transition to HE.

3. Support in the Transition to HE as a Component of Institutional Permeability

Conceptually, we aim to develop a better understanding of how different vocational school types and organizational contexts can promote institutional and social permeability to HE. Institutional permeability refers to the removal of institutional barriers between educational sectors, facilitating transitions and enhancing educational mobility (Bernhard, 2017, 2019). Permeability in the education system is closely tied to social opening and closure, particularly in meritocratic societies where social positions are primarily mediated and legitimated through the education system (Meyer, 1977; Solga, 2005). In Germany, the traditionally highly stratified institutional design and tracking into either vocational or academic education contribute to processes of social closure (Allmendinger, 1989; Shavit & Müller, 2000). Vocational school types that offer qualifications for HE can serve as institutionalized "permeability bridges" for individuals who do not follow the traditional route through general education schools to HE. However, since the literature indicates this is not always the case (Schindler, 2014; Schuchart & Schimke, 2022), it is essential to examine where new closure mechanisms have emerged and how permeability is being hindered.

Research on educational inequality consistently highlights the role of educational organizations in reproducing social inequalities. Studies inspired by Bourdieu and Passeron's (1971) work on the cultural fit of learners to educational organizations have shown that there is often an alignment between the habitus of

learners from high and medium social backgrounds and the habitus institutionalized as requirements and structures of schools and HE organizations. This alignment disadvantages students from low social backgrounds (Horvath, 2018; Kramer & Helsper, 2010; Lange-Vester & Vester, 2018; Schmitt, 2010). Additionally, research on institutional discrimination (Gomolla, 2021; Gomolla & Radtke, 2009; Hasse & Schmidt, 2022) underscores the significance of institutionalized structures and practices at the organizational level. Therefore, we consider two central levels of institutional permeability: the education *system level*, by examining types of vocational schools (tracks), and the *organizational level*, by scrutinizing the institutionalized structures and practices within individual schools. Tracks and organizations are not always congruent, as multiple school types are often located within a single vocational school.

Permeability can be analytically divided into several aspects, including support for learners' heterogeneous needs (Banscherus et al., 2016; Bernhard, 2017). We focus on learner support at vocational schools as students transitions to HE. Within the concept of permeability, Bernhard (2017, 2019) distinguished four bundles of support structures and practices: (a) information and counseling, (b) financial support, (c) learning organization and pedagogy, and (d) organizational culture.

Firstly, schools should provide information and counseling structures and practices regarding educational opportunities to mitigate information asymmetries based on social background (Bernhard, 2017). It is essential to investigate the extent to which vocational schools institutionalize information and counseling tailored to diverse student groups. Studies emphasize the significance of such measures for HE choices, particularly for socially disadvantaged students (Ehlert et al., 2017; Erdmann et al., 2022; McGuigan et al., 2014; Plank & Jordan, 2001; Smyth & Banks, 2012; Smyth & Hannan, 2007; Stephan & Rosenbaum, 2013). Individualized and target group-oriented counseling measures have proven more effective than standardized, informative measures (Herbaut & Geven, 2020; Whiston et al., 2003). However, research on vocational orientation in German general education schools indicates a lack of differentiated provision (Ohlemann, 2021; Schmidt-Koddenberg & Ganß, 2023), raising the question of the situation at vocational schools.

Second, the availability of financial aid for prospective students and accompanying counseling on these options significantly influence enrollment decisions, particularly for socially disadvantaged students (Bernhard, 2017). Research indicates that education costs are a crucial factor for socially underprivileged individuals when choosing their educational trajectories (Becker & Hecken, 2009; Breen & Goldthorpe, 1997; Daniel et al., 2018; Engelhardt & Lörz, 2021). Means-tested, early, and sufficient financing support has been shown to increase enrollment among socially disadvantaged students, unlike merit-based or one-time financial assistance (Herbaut & Geven, 2020; Peter et al., 2017).

Third, the organization and adaptation of learning and teaching to the learners' needs play a critical role in student success and preparation for HE (Bernhard, 2017). This raises questions about the alignment of teaching content and curricula with the academic preparation for HE (Nylund & Rosvall, 2016; Tarabini & Jacovkis, 2022; Wheelahan, 2007). In addition, the heterogeneous needs of diverse student groups can be addressed through difference-sensitive teaching and learning organizations (Lange-Vester & Teiwes-Kügler, 2014) or by recognizing social differences within the student body (Behrmann, 2021). However, little to nothing is known about how vocational schools prepare their students for HE.

The fourth support bundle focuses on fostering an organizational culture that embraces the diverse needs of learners and recognizes the importance of study orientation support (Bernhard, 2017). School culture plays a significant role in shaping teacher behavior and student opportunities (Helsper, 2008), as a positive climate can encourage the decision to pursue HE (Bornkessel et al., 2011; McDonough, 1997; Reay et al., 2001; Smyth, 2016; Smyth & Hannan, 2007). Teacher attitudes also shape school culture, affecting their perception of student competencies and visions for students' future educational pathways (Schuchart, 2019; Tarabini & Jacovkis, 2022). Therefore, it is essential to institutionalize difference-sensitive support structures for learners, reducing reliance on individual teacher or counselor practices (Bernhard, 2017). This can be achieved through internal school concepts, designated staff for career counseling, school conferences, or teacher training (Lembke, 2021).

While research highlights the importance of the organizational level in reproducing social inequalities, there remains a significant need for further study of vocational schools, their study orientation, and difference-sensitive support during the transition to HE.

4. Data and Methods

To empirically investigate how vocational schools support students' transition to HE and how different types of vocational schools differ in this regard, we conducted an exploratory study using qualitative interviews at various vocational school types and document analyses of school home pages and legal regulations. This qualitative-exploratory approach allows us to examine a topic where research is generally scarce and no quantitative data exist at the organizational level. Quantitative data sets that include vocational schools typically only enable the analysis of students' preferences between school types (with a notable exception being Schuchart, 2019). Our exploratory qualitative approach allows us to focus on specific school types and to open the "black box" of vocational schools as organizations. Given the federal structure of Germany's education system and the substantial differences in the availability and institutional design of vocational school types, we limited our study to the federal state of Lower Saxony. As one of the largest federal states in terms of area and population, Lower Saxony features a wide regional spread, encompassing both rural and urban as well as socially privileged and disadvantaged regions. Additionally, it has historically pursued progressive educational policies to foster socially open access to HE (Banscherus et al., 2016). Therefore, Lower Saxony represents a most likely case (Gerring, 2007) where structures and practices promoting permeability can potentially be observed in vocational schools.

The sampling of cases (schools) was conducted in two steps. First, we selected three vocational school types (BG, FOS, BOS) that are full-time institutions leading to HEECs rather than vocational qualifications. These school types differ significantly in student composition and HE aspirations. Although only a few BOS remain in Lower Saxony, previous findings from Bavaria indicate that BOS students have high HE aspirations, and a considerable proportion come from socially disadvantaged backgrounds (Gensch, 2008, 2009). Therefore, we included BOS in our analysis.

Secondly, we drew on the idea of theoretical sampling (Strauss & Corbin, 1996) to choose individual schools based on minimal and maximal contextual contrasts. Schools were selected according to the criteria of urban/rural and socially privileged/disadvantaged regions (see Table 1). By "socially disadvantaged regions," we refer to areas characterized, for example, by higher unemployment rates and a greater incidence of

Table 1. Four-field matrix for selecting individual schools.

	Rural region	Urban region
Socially privileged region	3× individual schools (3× BG, 2× FOS)	1× individual school (1× BG, 1× FOS)
Socially disadvantaged region	1× individual school (1× BG, 1× FOS)	2× individual schools (2× FOS, 2× BOS)

child-raising assistance (socio-educational support from the Children and Youth Welfare Office). We focused exclusively on schools within the subject area of economics to minimize variation between different subjects and ensure a mixed student population (e.g., in terms of gender).

The dataset for subsequent analyses consists of 47 interviews (49 interviewees, including two paired interviews) conducted at seven schools (five BG, six FOS, and two BOS) between September and December 2021. The interviewees were evenly divided between males and females. Most had several years of work experience and were aged between 46 and 60 (32 out of 49). Notably, the majority of interviewees had obtained a vocational qualification prior to assuming their roles as teachers or counselors (35 out of 49).

We conducted problem-centered interviews (Witzel & Reiter, 2012) with episodic elements (Flick, 2016) to focus on our research interest: how schools support the transition to HE. Our interview guidelines were based on questions derived from theory and literature. The basis of our guidelines were questions regarding the support structures and practices outlined in the permeability concept. For example, we asked: "What opportunities for information and counseling on career and study orientation are offered?" "To what extent is study orientation and preparation regularly discussed as a fixed goal among school staff?" Additionally, we included questions deemed relevant based on the current state of research, such as inquiries about the schools' characteristics and student population. We often incorporated episodic elements with narrative stimuli, prompting interviewees with questions like: "Please describe how you provide this support using examples or by recalling specific situations." This approach encouraged the free narration of practices and descriptions of structures within the schools, enriching the problem-centered approach of the interviews with more exploratory elements.

Interviews were conducted with school heads (SH), department heads (DH), teachers (T), and counseling staff of the school (C) and the Federal Employment Agency (FEA). Department heads oversee the various branches of vocational schools, such as BOS, FOS, or BG. This selection allowed us to gain deeper insights into the school culture, counseling practices, and differences in pedagogy and didactics across subjects or school types. We chose to interview school staff rather than students because we were primarily interested in the support structures and practices offered by the school, as understood by its personnel. However, the absence of student interviews also presented limitations, which will be discussed later.

In preparation for the interviews, we analyzed school home pages and legal regulations using theory-guided content analysis based on Gläser and Laudel (2010). This approach allows for both the deductive inclusion of overarching categories from the concept of permeability in the category system, as well as other factors identified as relevant from the existing research. In addition, we incorporated inductive codes based on the individual perspectives of the interviewees. The specific subcategories within the theoretically defined

categories were also gathered inductively. In the following paragraphs, we provide examples of the deductively and inductively derived categories used in our analyses.

Beyond the apparent category of "support structures and practices," we deductively defined overarching categories such as "interviewees' biography," "characterization of the school," and "characterization of the students." The latter category was particularly important for understanding how students are perceived (e.g., as legitimate candidates for HE or not) and to what extent interviewees recognize differences among their students (e.g., in terms of resources, educational biography, family background, work ethics, barriers, and future aspirations/fears). We also aimed to determine whether this awareness of differences translated into appropriate support for students on their path to HE.

The central category of "support structures and practices" was further divided into four theoretically predefined categories: (a) information and counseling, (b) financial support, (c) learning organization and pedagogy, and (d) school culture of support. In interpreting the material, we employed our theoretical understanding of, for example, support structures and practices and social closure, as sensitizing concepts for further categorization. For example, in the area of information and counseling, we identified subcategories such as information activities by teachers, distribution of leaflets, information provided by HE institutions, and information shared during job fairs. In examining pedagogical practices, we defined subcategories such as propaedeutic work, implicit orientation toward HE during lessons, and teaching key competencies for HE (e.g., learning, presenting, and working independently).

To ensure the reliability of our study, we collectively coded the initial interviews and documents within the project team using a primary coding scheme adapted throughout the process. The same trained project members performed subsequent coding of interviews and documents. We regularly discussed coding issues, problematic cases, and questions within the project team.

5. Empirical Findings on School Support in the Transition to HE

Our presentation of empirical findings aims to address how vocational schools support their heterogeneous students' transitions to HE and the extent to which school types differ. The presentation is structured around the four bundles of support for heterogeneous learners.

5.1. Lack of Targeted Information and Counseling, Especially for Socially Disadvantaged Groups

Information and counseling on HE are provided at all schools and across all school types. The foundation for this is the institutionalized services of the FEA, which are mandatory by law (Kultusministerkonferenz & Bundesagentur für Arbeit, 2017). FEA services include one or two general information sessions for each cohort and individual counseling upon request. These information sessions cover a broad range of post-graduation options, such as dual and school-based VET, dual studies, or HE, and are scheduled around application deadlines for dual VET and dual study programs (S1_FEA; S6_FEA). One-on-one meetings with an FEA counselor occur only if students actively request them (S3_FEA; S6_FEA). Responsibility for personalized counseling is thus shifted to the students, and access to this service is limited as counselors are only available at schools on specific days.

Beyond this minimum standard, schools often supplement their information and counseling services with external resources, such as career or study fairs. University information days play an important role, with attendance typically being mandatory for BG students, while participation is often optional for FOS students (S1_T2; S4_SH). One reason for the voluntary nature of these events for FOS students is that many are not interested in pursuing HE or find the university information days discouraging, as they tend to compare themselves to other graduates:

> But most of them only dream of going to university….There is also the university information day, where they realize who they are competing with. The others, the grammar school graduates, ask their questions very precisely. And that is what I always hear: "Oh my." (S3_T2, 45)

Preparation and follow-up for university information days in class are rarely conducted in any school. Only in exceptional cases do students attend university information days with prior preparation and ongoing reflection (S3_BOS_T1; S4_BG_T3), again placing the responsibility for meaningful study orientation on the students and their families.

In contrast, BG classes, and especially FOS classes, regularly attend internal or external career fairs, where regional employers—primarily seeking apprentices or dual study students—are represented (S3_FOS_T2; S4_BG_T3). Regional HE institutions, particularly private universities, are occasionally present at these fairs. One popular career fair provider is highly regarded by teachers because its staff helps prepare students for the event in class, alleviating some of the burden on teachers (S2_DH; S4_T3).

In addition, four out of the five BGs we studied offer collaborations with specific UASs (S4_BG; S5_BG; S6_BG; S8_BG). In contrast, none of the BOS and only two out of six FOS (S5_FOS; S8_FOS) collaborate with HE institutions. One example of such cooperation is the *Frühstudium* (early studies) program, where students not only receive information about university life but can also earn credit points for future studies at a private UAS while still in school (S4_BG; S5_BG; S8_BG). Higher-achieving students, often selected and approached directly by teachers, tend to benefit most from these opportunities.

Information or counseling initiatives provided by school staff are rare and typically do not extend beyond distributing informational materials or offering ad hoc advice during grade discussions (S6_T4, S8_DH1). When more comprehensive initiatives do exist, they are generally the result of individual teachers' personal commitment (S6_T5). Further, these efforts are usually not institutionalized, revealing a structural gap in the implementation of study orientation at vocational schools. The schools' severely limited financial and time resources compel staff to plan only basic information events for all student groups. As a result, the burden of information gathering shifts to the students, exacerbating information asymmetries between those from different social backgrounds.

5.2. Non-Systematic Support for Financial Aspects

Overall, research indicates that students generally find it challenging to obtain information on financing HE, especially those who need financial support and lack access to knowledgeable individuals in their social circles (Lörz, 2013; Müller & Pollak, 2008). In Lower Saxony, however, there is no legal requirement for vocational schools to provide structured support or information on financing options for studying. Although schools

recognize the importance of financial considerations in HE decisions, few formal support structures are in place to address this need.

Aside from a few individual initiatives by dedicated teachers and social workers, there are no offers on student financing issues within schools. Teachers often find the topic too complex for their counseling and refer students to the FEA, expressing a desire for proactive external support (S1_T3). The limited individual initiatives that do exist are typically based on personal educational experiences, such as a teacher who, having been a first-generation student herself, now provides information on financing opportunities for HE:

> And I think that it [the question of financing] plays a big role, especially for students who cannot afford it or whose parents cannot afford it….However, I do think that this is a very, very big hurdle for many. And I also experienced that when I brought up the subject of scholarships, the students reacted like this: "Ah, I will not get it anyway. I am not highly gifted. With my [grade point] average, it will not work anyway." So, either that is so ingrained, or they do not even know what a scholarship is. (S6_T5, 56)

School social workers possess counseling skills, are more attuned to social differences, and assist students in applying for financial aid:

> How often do I have students here who apply for student loans, and I say: "It is good that we have done this now. You will need this knowledge later when you go to university." (S5_C, 104)

However, career counseling is not the primary responsibility of school social worker; this role falls to FEA counselors (S2_HP; S4_HP; S5_HP; Kultusministerkonferenz & Bundesagentur für Arbeit, 2017). In their financing counseling, FEA counselors primarily direct students to external information services, such as student service organizations (S3_FEA; S6_FEA). As a result, professionals often refer students from one resource to another. Only one school occasionally invites a non-profit organization to inform interested FOS and BG students in the afternoon about admission and financing questions, specifically addressing socially unequal cost considerations in decisions regarding HE (S8_DH1).

5.3. School-Specific Study Preparation Through Learning Organization and Pedagogy

At all types of schools, achieving university readiness is defined as a formal goal of the educational program (Niedersächsisches Kultusministerium, 2014a, 2014b, 2020). University readiness (*Studierfähigkeit*) is a concept not universally defined in Germany; it encompasses the skills and characteristics necessary for success in HE. It is primarily discussed in relation to university students without a school-based HEEC (Kerst & Wolter, 2022). To achieve university readiness, teaching at all school types should orient students towards scientific propaedeutics (Niedersächsisches Kultusministerium, 2014a, 2014b, 2018b). While a scientific orientation should theoretically also be trained in FOS, teachers highlight the differing curricular requirements among the school types:

> In terms of the curriculum, [study preparation] is not yet as strongly pronounced at FOS 12 as at the *Berufsoberschule*. At the FOS, it is integrated into the curriculum to the extent that independent work is also a learning area….Otherwise, there are more normal subjects. (S3_SH_62)

These curricular differences are reflected in teaching practices, with varying emphasis on skill promotion depending on the school type. At BG and BOS, lessons incorporate clear scientific propaedeutic measures (e.g., citation and research) to prepare students for HE. University materials and practices, such as simulated lectures, are also utilized for this preparation (S2_BG_T4; S2_BG_T2; S3_BOS_T1, S8_BG_DH1). The proportion of theoretical units is intentionally higher to foster in-depth specialist knowledge. In contrast, FOS in grade 11 focuses on teaching basic skills for work and learning (e.g., learning independently, working cooperatively, basic competencies in math and German), along with some specialist (economic) knowledge, some of which is considered an implicit preparation for further studies (S3_FOS_T2; S5_FOS_T1).

At all school types, study projects lasting several weeks are considered an important method for promoting skills necessary for HE. While project work must be documented in a written report at BG, this requirement is often not mandatory at FOS (with some exceptions: S4_FOS_T1; S8_FOS_T2). By writing a project report, BG students may be better prepared for HE than their FOS and BOS counterparts. However, there are indications that BG students could be disadvantaged in their HE preparation relative to peers from general education schools, as teachers perceive the reports as less science-oriented (S6_BG_T2).

While there is minimal differentiation in learning organization and pedagogy at BG and BOS, significant variation exists within individual FOS organizations (S1_FOS, S3_FOS, S4_FOS). Typically, FOS students who have completed VET learn alongside those coming directly from lower secondary schools in grade 12. However, teachers observe substantial differences between these student groups in terms of their subject knowledge, behavior, and practical experience:

> Well, I always have the feeling that those [students] who have completed VET: They want to, they are more stringent, they are somehow more organized. And for those [students] who come through grade 11, I sometimes think: “Man, they are not mature yet.” (S1_DH1, 56)

The organizations respond to this heterogeneity in various ways. For example, some FOS implement internal tracking, allowing students who have completed VET and are deemed more competent to be taught in separate classes:

> Some schools even teach them together. In our case, if we have enough students, we can separate the classes. They are also very different. In terms of age, of course. And, of course, in terms of their background experience and, in some cases, their determination to achieve their qualifications….To be honest, I am glad and very grateful that we can separate the two [groups]. I think it is a good opportunity for the students. (S1_T3, 14)

This tracking, or “ability grouping,” at FOS results in less academic preparation and a reduced emphasis on scientific work and in-depth theoretical topics for students without a vocational qualification. In contrast, preparation for VET is more firmly integrated for these FOS students, such as through an intensive internship in grade 11. The need for segregation of student groups at FOS appears to be influenced by the school’s social and regional context, with greater segregation in learning organization observed in socially disadvantaged and urban areas (S1_FOS, S3_FOS) compared to socially privileged or rural regions (S6_FOS, S8_FOS). However, in some FOS, heterogeneity is leveraged as a resource, where learners who have completed VET support their peers, often pedagogically encouraged through the formation of mixed working groups (S6_T4, S8_T2).

Overall, FOS students are disadvantaged in terms of pedagogy and learning organization, while BG and BOS place a stronger emphasis on preparing students for HE pedagogically. The tracking based on completed VET at some FOS results in varying levels of support for different student groups, reinforcing inequality (Gamoran et al., 1995; Oakes, 2005).

5.4. Lack of Importance of Study Orientation in School Culture

Study orientation and preparation are rarely institutionalized in schools' structures or practices. None of the schools have a formal concept for vocational orientation (S1_HP; S2_HP; S3_HP; S4_HP; S5_HP; S6_HP; S8_HP), which is prescribed for general upper secondary schools in Lower Saxony (Niedersächsisches Kultusministerium, 2018a). Although all school stakeholders identify FEA counselors as contact persons for career counseling, there are no internal study counseling officers with broader responsibilities. Day-to-day teaching activities are largely disconnected from a long-term, shared goal of study orientation and preparation among the teaching staff. Instead, teachers share material for lessons and exams to ensure students pass their final exams successfully (S2_T1; S2_T5; S8_DH1). Staff meetings seldom address study orientation and preparation, and further teacher training in this area is rarely attended (S5_T2; S6_T5). These findings across all school types highlight the need for organizational prioritization of study orientation and preparation, as well as the institutionalization of measures to support students' orientation process in a manner equivalent to that of general education schools.

In addition, the openness of school staff toward the heterogeneous needs of learners and the significance of collective support in study orientation are noteworthy. On the one hand, across all school types, there is an emphasis on the respectful approach that vocational schools take toward students perceived as low-achieving (S4_T3; S8_DH1). Some teachers demonstrate particular sensitivity to those with disrupted educational biographies and limited self-confidence regarding their potential for studying:

> So, the concerns are mostly…that, firstly, they don't even know where you can study specific programs….And the second question is often: "What do you think? Can I do it at all?"…And they actually want to get some reassurance, a nudge in the direction of: "Wow, my teacher also said that I can do it."….Some of them really need that and, in my experience, these are often students who [are] more working-class children. (S8_DH1, 121–122)

On the other hand, significant differences in the attribution of university readiness emerge based on school type, as reflected in teachers' attitudes. For BG graduates, both VET and HE are viewed as realistic options (S2_BG_DH; S8_BG_T2). In contrast, at FOS, many teachers favor subsequent VET for students without a vocational qualification, perceiving them as not yet "university ready" (e.g., S1_FOS_DH2; S3_FOS_T2; S5_FOS_SH; S8_FOS_DH2) and having unrealistic expectations about school, HE, and the workforce:

> They are also really naive to a large extent….They really believe not only that they will get their degree but also that they will go to university. What they will study, they often do not know. They assume: "The main thing is to get a type-restricted HEEC, then I will study, and then I will have 5000 euro net." Then I always say: "What has gone wrong in your life?" (S1_DH2, 52)

In contrast, FOS and BOS students who have completed VET are viewed as a target group for HE:

> We can clearly say that those who come via the vocational route are significantly stronger, significantly more goal-oriented. There is a guaranteed correlation that those who are goal-oriented also graduate better. Accordingly, these are our elite classes, so to speak, when they come via the profession. (S1_T4, 37)

However, some FOS teachers emphasize the school type's actual goal of preparing all students for HE (S1_FOS_SH; S6_FOS_T4; S8_FOS_T2). Consequently, there are variations in teachers' attitudes toward their students' university readiness and within different organizations. FOS students who have not completed VET, in particular, are at a disadvantage, which may further dissuade them from pursuing HE.

6. Conclusion

Viewed through the concept of permeability, school structures and practices can either overcome or erect obstacles to HE, thereby influencing the social opening or closing of the education system. Our empirical findings reveal examples of both phenomena. However, the potential of vocational schools to enhance permeability has yet to be fully realized.

Overall, our empirical findings confirm existing knowledge about study orientation at general education schools while expanding it to focus specifically on vocational schools. We found that staff at vocational schools often lack sensitivity to the socially differentiated needs for study orientation and preparation. For example, only one school actively informs socially disadvantaged students about financing options to address distorted cost perceptions. A one-size-fits-all approach, characterized by limited individualized counseling, prevails across all vocational school types. This aligns with current literature emphasizing the importance of individualized and target group-oriented information and counseling for socially disadvantaged students (Erdmann et al., 2022). Furthermore, we found that vocational schools often shift the responsibility for individualized orientation onto the students, with few teachers stepping in to offer the necessary support. This strong individualization of responsibility, coupled with a lack of institutionalized supportive measures, exacerbates social inequalities in the transition to HE.

This article highlights the disparities among school types, particularly disadvantaging FOS and, in some cases, BOS. FOS and BOS students face compounded challenges due to socially disadvantaged backgrounds and institutional barriers that hinder their access to HE. BOS students experience a lack of informational support and counseling, while FOS structures fall short in terms of effective information dissemination and pedagogical approaches. Specifically, FOS tends to prioritize VET over preparation for HE, a viewpoint reinforced by teachers who often view FOS students primarily as candidates for VET and question their suitability for HE. Our qualitative findings enhance the understanding of why lower transition rates and higher dropout rates are especially prevalent among students in vocational schools with a type-restricted HEEC (Lörz, 2013; Tieben, 2020), as well as the declining aspirations for HE during their schooling (Schuchart & Schimke, 2022). In contrast, BOS and BG provide more comprehensive preparation for HE, including more scientifically oriented study projects. Our organizational perspective corroborates previous findings that students from socially disadvantaged backgrounds in BG are comparatively well prepared for HE, even though VET remains a pedagogically prepared option (Watermann & Maaz, 2006).

Overall, the organizational analysis has provided valuable insights for transition research by exploring the "how" and "why" of school support during the transition to HE (McDonough, 1997). This finding is relevant not only for analyzing the German system but also for enhancing the understanding of support in the transition to HE within international research contexts.

However, several unanswered questions remain for further research. The results revealed variations not only across school types but also between individual schools. Notably, at FOS, differences emerged that were likely influenced by the social context of the school. For instance, teachers may adopt practices that separate students based on perceptions of their abilities, distinguishing between those who have completed VET and are considered high achievers and those who have entered grade 11 and are considered less capable. This introduces a new categorical social distinction (Tilly, 1998) based on vocational qualifications. Overall, the data provide opportunities for further individual case analyses within the realm of permeability, including the examination of variations in segregation practices among FOS based on school context and clarifying individual school differences in information and counseling provision.

As a limitation, our study adds to a series of state-specific publications on vocational schools in Germany (Schuchart, 2019; Watermann & Maaz, 2006), highlighting the need for a more comparative approach in future research. Additionally, the analysis is limited to the subjectively reported support structures and practices of school staff, which excludes the perspectives of students discussed in other publications (Giese, 2011; Köhler et al., 2017).

In summary, our article emphasizes the importance of examining different national vocational school types to understand the various factors contributing to the reproduction of inequality within the education system.

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From Vocational Schools to Universities: Navigating Educational Permeability for Vietnamese Students in Japan

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Abstract

This article explores how Vietnamese international students in Japan navigate the transition from vocational education to university, using the concepts of "institutional permeability" and the "education-migration industry." Findings from qualitative interviews revealed that while vocational-to-university pathways exist, they are obscured by structural barriers and informational gaps perpetuated by study-abroad agencies and institutional practices. The study identifies three types of vocational schools—vocation-oriented, hybrid, and further-education-oriented—with varying degrees of support for academic progression. Educational mobility is shown to be stratified and conditional, highlighting the need for more transparent and equitable systems to support international students' academic aspirations.

Keywords

access to university; educational mobility; international student mobility; Japan; Vietnamese students; vocational education

1. Introduction

In July 2008, the Japanese government, under Prime Minister Yasuo Fukuda, introduced a plan to accept 300,000 foreign students as a part of a "global strategy" (Ministry of Education, Culture, Sports and Technology [MEXT], 2008, p. 3) that Hennings and Mintz (2015, p. 244) saw as door openers for "highly qualified international students." These "outstanding international students" (*yūshūna gaikokujin ryūgakusei*) enrolling in Japanese universities were deemed "global talents" (*gurōbaru jinzai*). The government expected them to play an important role in both the internationalization of Japanese higher education and the development of the Japanese economy (MEXT, 2014; Nomiya & Takahashi, 2022).

While the plan focuses on attracting and retaining students from international universities, it has resulted, in practice, in bringing in students from developing countries like Vietnam or Nepal, who end up enrolling in language academies and vocational schools. In the hierarchy of educational institutions, these students are seen as a somewhat less desirable group of international students in Japan, being often referred to in pejorative terms such as "fake students" or "labouring students" (Akira, 2010; N. T. K. Cao, 2022; Idei, 2019; Kawakubo & Kawakubo, 2022; Sellek, 1994). While there are studies that explore why international students choose vocational education (see Nohata, 2023) and why they choose to work in Japan after graduation (Mazumi, 2021, 2023), how international students move from vocational schools to universities in Japan is a subject that is still missing from the current literature. While government policies associate non-Japanese vocational graduates with the newly introduced Specified Skilled Workers (SSW) visa, a visa category that focuses on low- and middle-skilled sectors with no degree requirement (MEXT, 2021, p. 9), little attention has been given to vocational students' educational mobility. This perspective prioritizes their role in the workforce over their academic aspirations, often overlooking their potential and aspirations to pursue further education.

Although there is a credit transfer system between vocational schools and universities for international students in Japan (Japan International Cooperation Center [JICE], 2024), its utilization remains minimal. In 2023, only 8.5 percent of international students pursued further education after completing vocational school, highlighting the limited permeability between vocational education and universities in Japan. This low transition rate raises concerns about the polarization of international students' educational trajectories. On one side, vocational school graduates are funnelled into the low- and middle-skilled labour market, reinforcing their role as a labour supply for Japan's workforce. On the other hand, university students are seen as the "desirable international students" that Japan aims to attract for the internationalization of its higher education system. These two contrasting educational pathways are closely tied to structural challenges that make it especially difficult for vocational students to overcome institutional obstacles and gain access to university education. This article explores the educational mobility trajectory of international students in Japan, from vocational education to universities, using the experiences of Vietnamese students, the largest population of non-Japanese students in vocational education as of March 2024.

I propose to address the following questions: How do Vietnamese students navigate their path from vocational training to universities? How do Japanese vocational schools facilitate this transition? Understanding this route is crucial for several reasons: These students represent a group that defies the typical "channel" in vocational education—i.e., leading directly to employment—by instead focusing on academic and professional aspirations beyond what is expected of them. Their experiences offer insights into the permeability of Japan's education system and the role of institutions in either enabling or hindering the mobility of international students. By shedding light on the aspirations and challenges faced by Vietnamese students, this article contributes to broader discussions on the educational mobility of international students in host countries and institutional permeability.

To answer the research questions, I first present the context of vocational training and its connection to higher education in Japan. Section 2 discusses the conceptual framework of the study: the "education-migration industry" and the institutional permeability in the educational mobility of international students. Section 3 presents the data and how they were gathered and analysed. Sections 4 and 5 discuss the main findings of the research, focusing on international students' access to higher education in Japan and the categorization of vocational schools based on how effective they are in transitioning students to

universities. The research concludes that vocational students aspiring to pursue university education encounter significant challenges largely due to information gaps perpetuated by the education-migration industry. Additionally, Japanese vocational schools exhibit varying levels of support, depending on their classification as vocational-oriented, hybrid, or further education-oriented.

2. Vocational Training and Pathways to Universities for International Students in Japan

2.1. Japanese General Educational System

Japan is currently hosting more than 368,000 non-Japanese students enrolling in different educational institutions (MEXT, 2024). Figure 1 illustrates the pathway to Japanese higher education for international students.

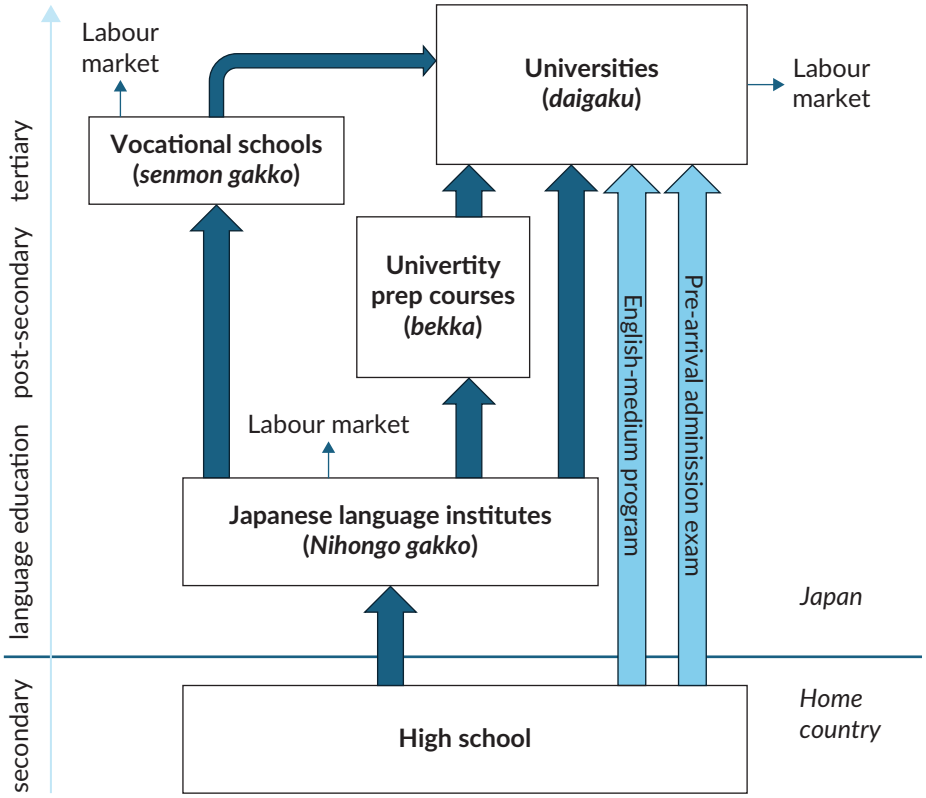

Figure 1. Pathway to higher education in Japan from overseas.

International students generally start their journey by enrolling in Japanese language institutes (Liu-Farrer, 2011). In 2023, the number of international students enrolled in Japanese language institutes exceeded 90,000 (MEXT, 2024). According to MEXT (2021), many foreign students from Japanese language education institutions learn Japanese intending to pursue higher education in Japan, and about 80 percent of the students remain in Japan after graduating from language academies. These institutes equip students with linguistic skills for life in Japan, teach them about Japanese culture, and provide post-graduation consultation. Language schools offer a structured curriculum designed to prepare students for academic and professional life in the country. Many schools align their courses with the Japanese-language proficiency

test (JLPT) and require the test results as graduation criteria. Students typically spend two years in language schools before moving on to the next stage of their education. A small number of international students can join the labour market directly because they already have college degrees; they are, thus, qualified for an ESHIS visa (engineer/specialist in humanities/international services) or can easily obtain a Specified Skilled Worker visa. Around 10 percent of language school graduates joined the labour market in 2022 (Japanese Students Support Organization [JASSO], 2024).

Students who wish to continue their education (*shingaku*) have the choice to apply for vocational schools (*senmon gakko*) or universities (*daigaku*). Vocational schools generally have lower entry requirements compared to universities. Admission to vocational schools typically involves an interview, a simple written test, and/or a document review, with minimal or no standardized exam requirements. In contrast, universities—particularly public and prestigious private institutions—set higher admission standards. Most universities require students to take the Examination for Japanese University Admission for International Students (EJU), which assesses proficiency in subjects like Japanese language, mathematics, science, or humanities, depending on the chosen major (Study in Japan, n.d.-a). Additionally, many universities have their own entrance exams, which may include written essays, interviews, and subject-specific tests. These requirements make university admission more competitive and demand a strong academic foundation.

An option for students who may not meet the language or academic requirements for direct university admission is enrolling in university preparatory courses (*bekka*). These programs are operated by universities and provide structured training in Japanese, subject-specific knowledge, and university entrance exam preparation. As of 2023, there are 42 universities in Japan offering *bekka* programs specialized in Japanese education (Agency for Cultural Affairs, 2023, p. 27). University preparatory courses typically last one to two years and focus on intensive Japanese language education, Japanese culture, and Japanese affairs. Some schools also provide academic skill classes such as note-taking and reading strategy, or general courses like English or Mathematics (Kansai University, n.d.). Overall, the goal is for international students to acquire the necessary skills for higher education in Japan.

On the other hand, recent shifts in Japan's international education policies have introduced alternative pathways to universities for foreign students. The plan to accept 300,000 foreign students has played an important role in the surge of international students in Japan, especially in universities. The plan has encouraged universities to launch pre-arrival admission processes, allowing students to apply to universities by submitting EJU scores from overseas. For "the promotion of the globalization of universities," it has also contributed to the increased number of English-medium programs, which enable students to enroll directly in Japanese universities without needing prior Japanese language skills (MEXT, 2008). As a result, international students with a strong academic background but limited Japanese proficiency can access higher education without going through the traditional language school route. While English-based programs offer opportunities for internationalization, they are still limited in number and tend to be concentrated in a small number of institutes. Statistics from JASSO show that, as of 2021, only 50 in 788 universities in Japan are offering programs in English, a proportion of 6.3 percent (JASSO, 2021).

While the percentage of international students who transition to post-secondary education is high (74.8 percent), in 2023, 64 percent of these students enrolled in vocational schools instead of universities and graduate schools after completing their language education (Association for the Promotion of Japanese

Language Education [APJLE], 2025). The number of Nepalese and Vietnamese students pursuing education in vocational schools is significantly higher compared to other nationalities. Notably, in 2021, 83 percent of Nepalese and 84 percent of Vietnamese students who graduate from Japanese language schools continued their education in vocational schools (APJLE, 2023).

2.2. Japanese Vocational Schools and the Path to Universities for International Students

In Japan, vocational schools—officially designated professional training colleges or specialized training colleges (*senmon gakko*)—are recognized by the MEXT as part of the higher education system. According to MEXT (2015), these institutions correspond to the UNESCO International Standard Classification of Education (ISCED) Level 5 (short-cycle tertiary education), also known as non-university higher education. This level is characterized by programs that are shorter than university degrees, typically lasting at least two years but generally less than three, and focusing on practical, technical training and vocational skills closely aligned with employment outcomes.

In this article, these colleges are referred to as vocational schools for consistency. These institutions equip students with the skills, techniques, and knowledge necessary to initiate and progress in their careers, while also enhancing their general education. At vocational schools, students can acquire a wide range of qualifications, including specialized knowledge and skills across eight fields: (a) technology, (b) agriculture, (c) medical care, (d) personal care and nutrition, (e) education and welfare, (f) business practice, (g) fashion and home economics, and (h) culture and liberal arts (MEXT, n.d.).

With the rapidly shrinking Japanese student population—resulting from a declining birth rate—private Japanese vocational schools see international students as a golden opportunity to fill the vacancies (Liu-Farrer, 2011). In 2019, 215 out of 291 (73.9 percent) Japanese vocational schools reported that they did not fulfil their quotas, with an average of only 64 percent of their total capacity filled (Nikkan Gendai, 2019; The Promotion and Mutual Aid Corporation for Private Schools of Japan, 2021). With a shortage of students, vocational schools turn to international students. A recent government survey found that, in 2019, 871 vocational schools in Japan were accepting international students. Of those schools, 195 reported that international students made up more than 50 percent of their student bodies, while the proportion of non-Japanese students was 90 to 100 percent in 145 vocational schools (MEXT, 2019). Many vocational schools, aiming to attract more international students despite their over-representation, have evolved into *ryūgakusei-muke senmon gakkō*—schools oriented specifically towards international students with courses that cater specifically to non-Japanese learners, such as interpretation or translation (Le, 2022).

Two types of vocational programs confer different qualifications based on the duration and intensity of study. Students who complete a program lasting at least two years (with a minimum of 1,700 instructional hours) are awarded a Diploma, which allows them to transfer to a university. Those who complete a more advanced four-year program (with at least 3,400 instructional hours) receive an advanced diploma, which equals a bachelor's degree and qualifies them for enrollment in graduate school. These institutions serve as both career-focused training centres and potential stepping-stones for further academic advancement (Study in Japan, n.d.-b). In 2023, approximately 85 percent of international students enrolled in two- or three-year vocational programs, while only 3.5 percent were in four-year advance diploma programs (Tosenkaku, 2023). The remaining students enroll in training courses that allow them to graduate within one

year without a diploma; popular courses include (a) Japanese language, (b) dental hygiene, and (c) nutrition and cooking.

Students who meet specific criteria are eligible to transfer from vocational schools to universities. The credit transfer (*hennyū*) system allows students who have already completed part of their post-secondary education—whether in Japan or abroad—to transfer credits and enter a Japanese university at the second or third-year level (Study in Japan, n.d.-c). Unlike the new application process, the emphasis here is on demonstrating existing knowledge and expertise in the specific field of study that the student wishes to pursue. To qualify for transfer admission, students must have completed a vocational school program lasting at least two years with a total of 1,700 instructional hours and must also possess university entrance qualifications such as a high school diploma (MEXT, n.d.). However, the specific conditions for transfer, including the academic year in which students can enroll and the number of credits recognized, vary by university. Prospective transfer students need to consult the admissions offices of their desired universities to understand the necessary procedures and required documents.

To understand students' transitions from vocational education to university, and the institutional mechanisms that support or hinder them, the following section presents the conceptual framework guiding the analysis of this study.

3. Conceptual Framework: The Education-Migration Industry and the Institutional Permeability

Studying the educational mobility of international students within host countries is essential to understand the structural (in)equality embedded in higher education access. While international students are often seen as a homogeneous group, their educational trajectories vary significantly depending on institutional pathways, socio-economic background, and policy frameworks in the host country. Some studies have touched on the topic of educational mobility of international students in the host country, including the transition from language schools to vocational education in Japan (Le, 2022; Nohata, 2023), and many address vocational training as a temporary stop before higher education in the case of international students in Japan and Australia (L. Cao & Tran, 2014; Liu-Farrer, 2009; O'Shea et al., 2012). However, educational pathways from vocational schools to universities in Japan have not been extensively explored. Studies on institutional support for international students typically focus on students' life support, with a particular emphasis on mental health and well-being (Kwon, 2009; Versteeg & Kappe, 2021). This includes counselling services, peer support programs, and initiatives aimed at helping students adapt to cultural and academic challenges. However, there has been less attention given to institutional mechanisms that directly facilitate or hinder educational mobility.

By examining how international students navigate their pathway from vocational school to university, this study contributes to the literature on the education-migration industry in Asia—an industry that thrives alongside the growing mobility of students from developing Asian countries—by focusing on the practices of study-abroad agencies and their impacts on migrants' educational trajectories.

Like other forms of migration, international student mobility is produced, maintained, and promoted by actors with diverse interests participating in the process (Cranston et al., 2018). Migration scholars use the

term “education-migration industry” to refer to “education agents” and “recruiters,” who play important roles in shaping the educational trajectories of international students (Baas, 2019). Targeting Asian students, these “study-abroad agents” or international education brokers not only commercialize study-abroad information and services that connect “lower-middle class prospective migrants in Asia with educational institutions in the developed world” (Luk & Yeoh, 2024, p. 4), but also profit from the dependency of prospective students in navigating the complex migration policies of host countries (Wickramasekara & Baruah, 2017). This dependence on brokers also results from students’ lack of access to information, putting them at a disadvantage in their relationship with the brokers (Hagedorn & Zhang, 2011; Lan, 2019). Additionally, by providing services that ensure students get into elite universities and promoting the notion of “travel-studying,” education-migration agents can trigger the desire for an international education among their prospective clients—students and their parents—which Lan (2019, p. 273) called “the consumerism in the self-funded study-abroad market.” In Asian countries, such as China, Vietnam, or Nepal, these agents with intermediary roles provide paid services to the prospective students before their departure, ranging from consultation, language training, and visa preparation to more unethical activities like falsifying student backgrounds for visa or school application purposes (Feng & Horta, 2021; Kharel, 2022; Lan, 2019; Liu-Farrer & Tran, 2019; Ying & Wright, 2021). While existing research has analysed the recruitment and “packaging” processes that facilitate migrants’ entry, less attention has been paid to how brokers’ practices shape the post-departure trajectories of student-migrants. To address this gap, this study examines how such practices influence the long-term educational mobility of international students within the host country.

Next, to examine how Japanese vocational schools facilitate international students’ transition to university, this study draws on Bernhard’s (2018, 2019) concept of institutional permeability. This concept refers to the degree to which institutional barriers between educational sectors are dismantled, allowing for smoother transitions and greater educational mobility. A permeable education system supports students in navigating their pathways by offering structures that accommodate diverse learning needs and aspirations (Bernhard, 2019).

In my research, institutional permeability serves as an analytical lens to understand vocational school practices and their effectiveness in enabling upward mobility. Bernhard (2018) identified four key structural conditions that influence permeability: (a) access opportunities, i.e., whether students are eligible to advance to the next level; (b) recognition and validation of prior training; (c) institutionalized linkages between vocational schools and universities; and (d) institutional support for students’ heterogeneous needs.

Building on the fourth dimension, Bernhard (2019) also outlined four support structures necessary for institutions to effectively serve students aiming for further education: (a) information and counselling, (b) financial support, (c) learning organization and pedagogy, and (d) organizational culture. First, to increase the educational permeability of vocational students, schools need to provide them with information and counselling that motivates them to recognize their academic abilities and apply for level-appropriate programs. Second, providing financial aid opportunities along with comprehensive counselling on these options plays a crucial role in shaping enrollment decisions, especially for students from disadvantaged backgrounds. Third, structuring and adapting teaching and learning methods to align with students’ needs is essential for their academic success and readiness for higher education. Lastly, fostering an institutional culture that acknowledges student diversity and emphasizes the importance of academic guidance and orientation is a key aspect of support.

In the Japanese context, where vocational education is often positioned as an endpoint for international students rather than a bridge to higher education, the concept of institutional permeability offers a valuable lens for exploring the structural dynamics of educational mobility. In particular, the dimensions of information, counselling, and organizational culture are especially important for understanding how institutional practices influence students' ability to transition to university. These dimensions provide a preliminary framework for analysing the extent to which vocational schools support or hinder students' aspirations for further education. The following section outlines the methodological approach used to investigate the proposed research questions, focusing on the experiences of Vietnamese vocational students as they navigate the pathways between vocational education and university in Japan.

4. Data and Methods

This research focuses on the experiences of the Vietnamese students in Japan as the "typical case" (Gerring, 2008). As of 2023, Vietnamese students comprise the second biggest population of foreign students studying at Japanese higher education institutions (more than 22,000 students), ranking only after Chinese students (MEXT, 2024). As of March 2024, Vietnamese is the most frequent citizenship background of international students in vocational schools in Japan, with 8,547 students making up 29 percent of the total (JICE, 2024). This study is particularly relevant because it focused on the largest group of international students enrolled in vocational schools in Japan. While the findings were grounded in the experiences of this specific group, the study offers important insights into how institutional structures and support mechanisms shape educational mobility within Japan's vocational sector. By examining the opportunities and challenges of this prominent student population, the research contributes to broader discussions on the educational trajectories of non-Japanese vocational students and the systemic conditions that may similarly affect students of other nationalities.

This research uses a qualitative approach in gathering data. I conducted an exploratory study to understand the experiences of non-Japanese vocational students in Japan and their pathways to universities. I conducted semi-structured qualitative interviews with ten participants. The informants chosen for this research were (a) Vietnamese students who enrolled or are currently enrolling in vocational schools in Japan, who are interested in advancing to higher education or are already accepted into university, or (b) Vietnamese university students or university graduates who graduated from Japanese vocational schools. All informants were recruited through Facebook, the most popular social media platform used by Vietnamese people.

Table 1 shows the demographic information of this research's informants. The selected cases mirror the diversity of the Vietnamese students who pass through vocational schools regarding gender, age, and university enrollment method. The gender ratio of informants was balanced. Regarding their status, three of them were vocational school students, six were enrolled in universities in Japan, and only one was employed. The year of entering Japan as students also ranged from 2015 to 2022, so the perspectives of both pre- and post-Covid-19 international students were included. The method of entering higher education also varied, with six informants entering or planning to enter universities through the credit transferring (*hennyū*) process, while the other four entered universities as new students. Although I did not specify the location of university after graduation from vocational school while recruiting participants, all informants went to universities in Japan or had planned to apply to Japanese universities.

Table 1. Research participants information.

Name (Pseudonym)	Sex	Age	Current status	Year of entering Japan	Method to enroll in a university
Vy	F	25	University student	2019	Credit transfer
Chi	F	28	IT engineer	2015	New student
Thinh	M	23	Vocational student	2021	Credit transfer
Phuong	F	27	University student	2017	New student
Quy	M	21	Vocational student	2022	Credit transfer
Quyen	F	21	Vocational student	2022	Credit transfer
Hung	M	23	University student	2021	New student
Quang	M	23	University student	2020	Credit transfer
Mai	F	23	University student	2020	New student
Long	M	23	University student	2020	Credit transfer

All interviews were conducted in Vietnamese, with each lasting between 60 minutes to 120 minutes. All informants were residing in Japan at the time of the interview. The informants could choose between in-person and online interviews. I conducted five one-to-one interviews and two group interviews at the request of my informants. Only one of the one-to-one interviews was conducted in person, in Tokyo, while all other interviews were conducted online according to informants' preference or geographical proximity. Online interviews were conducted via Zoom and only the audio recordings were saved for the purpose of this research. All interviews were audio-recorded and transcribed.

Maintaining an exploratory approach, I examine the life stories of my informants through semi-structured interviews. I designed my open-ended questions around the central question: How do international students experience the transition from vocational education to universities? The research design of the study was shaped by some underlying theoretical considerations. Inspired by Bourdieu's (1986) *Theory of Capital*, each interview began with an exploration of the participant's family background, life before coming to Japan, and their motivations for studying abroad. The concept of the education-migration industry (Baas, 2019; Liu-Farrer & Tran, 2019) provided a lens through which to examine the role of study-abroad agencies in structuring students' pathways, including the ways these intermediaries influence access to information and shape students' mobility. The questions then focused on their educational experiences in different educational institutions in Japan. The interviews typically concluded with a reflective question about possible alternative pathways—what the informants might have done differently in their educational journey if they had access to more information. In line with Bernhard's (2018, 2019) concept of institutional permeability, this question aimed to explore the extent to which better awareness of available options could have influenced their past decisions, shedding light on the role of information gaps in shaping their educational trajectories.

In my analysis, I started with the open coding method. After the initial coding phase, I proceeded to selective coding, where I identified recurring patterns and developed key themes for discussions, revealing institutional structures and practices. A key aspect of my analysis involved coding their decisions regarding *vocational training* or *university education* as high-level categories, identifying when and why these choices were made. Another essential thematic code is *the meaning of vocational schools*, which provides insights into

how international students perceive the role of vocational institutions in supporting their transition to universities, in order to analyse the institutional permeability of these schools. Additionally, the theme of *university preparation* complements this analysis by capturing students' experiences in navigating the transition. I developed a classification (or "typology") of vocational schools based on these recurring themes. This typology should help interpret the different ways vocational schools operate, particularly in how they assist students in transitioning to university. In addition, in order to provide a statistical description of international student trends in Japan, I referenced official statistics, including the data from MEXT for international student numbers and annual surveys conducted by JASSO and APJLE on post-graduation pathways of non-Japanese language school and vocational students. I also analysed policies and policy reports on international students from the Agency of Cultural Affairs and MEXT. To gather general information on the Japanese educational system for students, I referenced different sectors from the Study in Japan website (https://study-japan-ptc.jp/index_en.php), a government-approved information site for prospective international students seeking education in Japan.

5. The Japanese Education-Migration Industry and International Students' Educational Mobility

5.1. Marketing Japanese Educational Mobility

My research data revealed that the students who aspired to enroll in universities were typically high school graduates who had already secured their place in universities in Vietnam but chose to pursue study opportunities overseas instead. In Vietnam's fast-developing and competitive economy, holding a domestic university degree without international exposure often limits career prospects, particularly for those without strong personal connections or networks. The pressure to secure a good job in such an environment leads many students to seek international experiences, which are increasingly valued in Vietnam's labour market. Japan is considered an ideal study destination for these students based on its proximity to Vietnam, its affordable fees, and/or based on recommendations from acquaintances. The relatively low barriers to entry into Japanese educational institutions—especially Japanese language schools—and the ease of obtaining a student visa make Japan a particularly attractive destination for students who may have been unable to secure visas for other developed countries. One of my informants, Quang, a 23-year-old male student, chose Japan as an alternative route after failing to get a visa to study in the United Kingdom. This accessibility is not incidental and is a key feature of the Japanese education-migration industry (Liu-Farrer & Tran, 2019), which constructs and markets education as a migration pathway. In this way, the education-migration industry capitalizes on global inequalities in access to education and migration, positioning itself as a more attainable alternative to restrictive Global North destinations.

Seeking a university education that they could have pursued in Vietnam, in Japan, these students have high expectations and refuse to settle for less, i.e., they are unwilling to accept educational opportunities in their host country that are perceived as inferior to what they could have had at home. These students often possess significant economic capital and cultural capital—such as foreign language proficiency, university admission at home, or strong motivation for upward mobility—which means they do not require the kind of "packaging" or narrative construction typically provided by study-abroad agencies (see Luk & Yeoh, 2024). Instead, their choices are shaped by the lack of information or, more specifically, the asymmetric access to information in comparison with the agencies (Hagedorn & Zhang, 2011; Lan, 2019). Study-abroad agencies, functioning as

key intermediaries within the education-migration industry (Liu-Farrer & Tran, 2019), exploit this information gap to construct a narrative of educational mobility. Profiting from promoting the language school pathway, these agencies often fail to provide clear and comprehensive guidance on alternative routes, such as direct admission to higher education institutions. Liu-Farrer and Tran's (2019, p. 239) study indicated that consultants from study-abroad agencies provided students with "various kinds of universities and vocational schools to which they could apply." However, in my current research with data collected in 2024, language schools as an entry to Japan and transition channels to vocational education are the only sources of information provided to all my informants. Prospective students, through consultation with agency staff, perceive the transition from language schools to vocational education as an obvious norm and are not made aware of the opportunities available to them to study in universities upon arrival. These agencies construct a narrative—perhaps even an illusion—of educational mobility, attracting students to study-abroad programs in Japan by promoting the easy transition from language schools to vocational schools, which have relatively low admission requirements:

> The people from the agency injected the idea into our head. They draw an easy pathway….Even before coming to Japan, I already knew that I would advance to vocational school after graduation. You know, it is like finishing junior high school, then we go to high school. (Long, 23, male, university student)

5.2. Marketing Pathways From Japanese Education to the Workplace

The education-migration industry has also profited from promoting a seemingly linear and attainable pathway for international students: language school → vocational school → employment. This narrative is particularly appealing to students from less privileged backgrounds, who see vocational education as a shortcut to entering the workforce and earning money quickly right after language school. Many Vietnamese students, often with limited financial support from their families, initially choose vocational schools as a strategy to escape the low-wage labour markets in Vietnam, where economic opportunities are limited and with little room for upward mobility (Le, 2022). For these students, Japan's labour shortage initially presents an opportunity: Even manual labour roles are relatively well-compensated.

However, after graduating, these students are often confronted with the precarious realities of the Japanese labour market for vocational graduates, including low salaries, the abundance of physically demanding jobs, limited career advancement, and job insecurity, even in positions perceived as white-collar. They recognize that vocational education can trap them in the very labour conditions they sought to escape, those that have led some to reconsider their educational trajectories in the first place. University education begins to emerge as a viable path for achieving more stable, skilled, and well-compensated employment. For these students, aspiring to enter a university becomes a conscious act of resistance against the predetermined pathway marketed to them by the education-migration industry and a reassertion of their long-term ambitions for upward mobility:

> I enrolled in a vocational school specialized in interpretation/translation and my major was [interpretation/translation] from Vietnamese to Japanese….It was first my dream to become an interpreter and a translator. Don't they sound cool, interpretation and translation? However, you can only find jobs in these fields and cannot change to a different field. Half of my friends went back to Vietnam. The salary was extremely low. After taxes, the full-time salary is barely more than what a student can earn through heavy part-time work. (Phuong, 27, female, university student)

5.3. Access to Japanese Universities: Choices and Challenges

While students at vocational schools can use the credit transfer (*hennyū*) system to enroll in universities, some students choose to apply as freshmen. Each pathway comes with distinct requirements and opportunities, catering to students at different stages of their academic journey. For some, starting anew is seen as "the true form of study" and a way to fully experience university life (Phuong), while for others, it reflects a lack of awareness about the *hennyū* system altogether (Chi). Living in Japan allows students to bypass the firewall of information controlled by study-abroad agencies, giving them access to broader and more detailed knowledge about the higher education pathways available.

This information gap is not coincidental but reflects the structural logic of the education-migration industry, in which study-abroad agencies, language schools, and vocational schools construct a streamlined package for profit. Since university education is not included in this "standard package," students are seldom informed about alternative routes like *hennyū* until they begin the process of navigating higher education themselves. My informants uniformly reported that they had not heard of the credit transfer system until they were already preparing their university applications. This lack of information also reflects a broader institutional failure to recognize that access to accurate and timely information is a critical dimension of educational permeability.

Between the two options to obtain a university education, the credit transfer pathway is significantly more popular among informants who have attempted to take the university entrance exam from a language school but failed to do so. Quy and Quyen, both 21, recalled how they concealed their plans to apply to university from their language school, knowing it prioritized pushing students toward partnered vocational schools—institutions Quyen described as being at the "bottom of the ranking [system]." After their failed entrance attempts, they enrolled in a vocational school affiliated with their preferred university, hoping to transfer there later via *hennyū*. Starting from scratch as new students felt like a waste of their time and the resources they had already invested. Similarly, Thinh, 23, who had also failed to enter university directly, saw the *hennyū* system as a more efficient pathway. For Quang and Long, the possibility of condensing their post-secondary education into four years rather than six made the credit transfer route especially appealing.

Still, this pathway is far from accessible. While *hennyū* does not require EJU scores, it does demand language proficiency (typically JLPT N2 or higher), a GPA of at least 3.0 out of 4.0 in a vocational school, and a field of study at the vocational school that aligns closely with the student's desired major at the university. This requirement reflects a form of organizational linkage—a key component of institutional permeability—designed to ensure that students are academically prepared to enter university in their third year, where peers have already developed subject-specific expertise. Currently, these linkages exist outside the framework of the education-migration industry.

Perhaps most importantly, in the process of credit transfer, students must obtain a nomination letter from their vocational school—a document that only a few students receive each year. Quang and Long were two of just five students selected for nomination, thanks to both strong academic records and active extracurricular involvement. In this context, the nomination letter acts as a form of institutional endorsement, signalling the vocational school's confidence in a student's academic readiness and aligning with the receiving university's expectations. While Bernhard's (2019) concept of institutional linkage refers to formal arrangements between vocational schools and universities to facilitate transitions, this practice

indicates that organizational linkage is not only structural but also evokes relational trust-based practices between institutions. Universities treat these students as a form of liability, as their academic performance may influence the future availability of credit transfer "slots" allocated to their vocational school. A poor performance by transferred students could damage the trust between institutions, leading universities to reduce or reconsider future credit transfer admissions from that school. Therefore, the selective nomination system can also limit permeability by introducing subjective or discretionary elements into an already competitive and complicated process. In the end, students' access to the *hennyū* system is largely merit-based, requiring them to demonstrate their deservedness through high levels of motivation and academic performance. This system reinforces the idea that only the most dedicated and academically capable students can transition from vocational education to university, further shaping the narrative of educational mobility as an individual achievement rather than a structural opportunity, at least in the case of international students.

To sum up, this section has explored the role of study-abroad agencies in shaping Vietnamese students' educational trajectories and the challenges in accessing universities. The next section examines the different types of vocational schools and their roles in facilitating university transitions, highlighting both their supportive functions and the limitations that may hinder students' academic progression.

6. Typologies of Vocational Schools and the Dimensions of Institutional Permeability

Drawing from interview data, this section identifies three distinct types of vocational schools in Japan, based on their varied practices in supporting international students' transitions to university: (a) vocation-oriented, (b) further education (*shingaku*)-oriented, and (c) a hybrid form of both. Using Bernhard's (2019) concept of institutional permeability, these school types are analysed through their provision (or absence) of (a) access opportunities, (b) recognition of prior learning, (c) institutionalized linkages, and (d) support for heterogeneous student needs.

6.1. Typical Vocational Training Schools

These vocational schools focus primarily on providing practical, job-oriented skills to help students transition directly into the labour market—typical vocational schools, as per the definition of the MEXT. They offer programs in fields such as business administration, translation, hospitality, and other specialized areas that cater to students' needs for job hunting upon graduation. For many international students, these schools are attractive because they provide short and direct pathways to the Japanese labour market, compared to four years of university (Le, 2022). They also have relatively low admission requirements. With decreasing Japanese student populations, these schools aggressively advertise themselves to language school graduates by evolving into international student-oriented vocational schools (*ryūgakusei-muke senmongakko*; see Le, 2022). Popular among international students for their relatively low admission requirements and clear employment pathways, they align closely with the goals of the education-migration industry, providing students with visa sponsorship and job-ready credentials.

Access to higher education in these institutions is structurally limited. Vocation-specialized schools often highlight their high job placement rates as a key marketing strategy to attract students. This emphasis influences the behaviour of teachers, who are pressured to maintain strong job placement statistics,

resulting in a preference for students who engage in job-hunting activities over those aspiring to higher education. Students interested in pursuing further education frequently report receiving inadequate information and support, as many teachers lack sufficient knowledge about higher education pathways for international students. Additionally, unequal treatment between students seeking employment and those pursuing higher education creates further obstacles. For example, students who take days off to attend job-hunting activities can do so freely if proof is provided, whereas those attending open campus events or academic entrance exams often face attendance penalties that may impact their future visa renewals. This imbalance in support leads to feelings of isolation and exclusion for students focused on academic advancement, such as Thinh, who felt out of place and unsupported among job-seeking peers. Another informant, Phuong, shared her feelings of betrayal, having been initially promised support for further education by the school, only to be later discouraged from taking entrance exams—a discouragement suspected to stem from concerns that failed attempts would negatively reflect on teachers' performance evaluations and, potentially, their earnings:

> The teachers did not recommend advancing to university. They promised to support me when I applied, but then discouraged me from doing so….One teacher takes care of one class. If the students pass their entrance exam to university, [there is] no problem. But if they fail, the performance of the class [is] affected. My teacher introduced me to some universities…but they are extremely low-ranking ones, like, everyone can be accepted there. There is no value in joining a school like that.

In summary, vocation-oriented schools largely fail to meet the prerequisites of institutional permeability. While they offer accessible entryways into education and legal residence in Japan, they provide limited access to a university education. These institutions have little reason or obligations to guide students through the university application process, leaving many without access to essential information or academic consultation. Instead, the institutional focus remains on employment outcomes, fostering an organizational culture where aspirations for further education are often discouraged. As such, these schools function as barriers to education permeability, reinforcing a rigid vocational education-to-labour pipeline that marginalizes students with academic aspirations.

6.2. Hybrid Vocational Schools

The second type of vocational school in Japan is a hybrid type, balancing vocational training with university-preparatory opportunities. Besides providing industry-oriented skills, such institutions offer *shingaku* (further education) courses that support students preparing for university entrance. For students interested in pursuing further education, these schools act as a bridge, facilitating a smoother transition through credit transfer, particularly to the affiliated university. Students benefit from targeted academic support, such as EJU preparation, guidance on entrance exams, and counselling on academic pathways. This dual focus allows students to keep their options open, balancing the pursuit of immediate vocational opportunities with longer-term educational goals. These schools serve as key "permeability bridges" (Dörffer & Bernhard, 2025), supporting students with heterogeneous needs.

Although the post-graduation pathways differ among students, hybrid vocational schools make efforts to prepare students for further education through their learning organization and pedagogy. For instance, in Quy and Quyen's school, once they expressed to their teacher their aspirations to advance to university,

they were placed in a *shingaku*-specialized program designed to support their goals. A typical school day was intensive, starting at 9 AM and ending at 7 PM. During the morning and afternoon sessions, students took major-specific courses tailored to their fields of study. In Quyen's case, as an international aviation major, all morning classes were conducted in English, with afternoon sessions focusing more deeply on her specialized subject. Evenings were reserved for Japanese language education, where students develop essential skills such as essay writing to meet the requirements for credit transfer. While the workload can be demanding, students like Mai find value in the rigor of these programs; for example, the repetitive schedule of morning-to-late-night classes helped her develop discipline and diligence as a student, which increased her readiness mentally and academically for future university education. Similarly, in Quang and Long's school, students benefit from the presence of *shingaku*-class-appointed teachers who provide focused guidance. These teachers can help students improve their academic abilities and Japanese proficiency, ensuring they are well-prepared for the challenging transition to further education.

These institutions actively facilitate students' transition to universities by integrating multiple support mechanisms. They offer comprehensive information and counselling services, ensuring that students are well-informed about their academic options. Additionally, they provide specialized courses designed to prepare students for higher education, along with strong teacher support to guide them through the process.

A key characteristic of hybrid vocational schools is their institutional affiliations. Many are directly affiliated with universities, while others establish formal partnerships with local universities, enabling their students to transition smoothly through recommendation-based admissions rather than standardized entrance exams and catering to students who aspire to further their education through the *hennyū* (credit transfer) system. Because these schools benefit from their students' academic progression, they foster an organizational culture that prioritizes further education, actively encouraging students to continue their studies beyond vocational training.

In summary, hybrid vocational schools exhibit moderate to high institutional permeability by balancing vocational training with structured further education support. They offer access opportunities and maintain institutional linkages with universities. Support for students' diverse needs is present in the form of information and counseling, adapted pedagogy, and a supportive organizational culture. While these schools foster academic aspiration, access to resources like nomination letters and *shingaku* programs can be selective, making permeability conditional rather than guaranteed. Still, they represent a meaningful step toward more inclusive educational mobility for international students.

6.3. Purely Shingaku*-Oriented Schools With Specialization in Further Education*

The last type of vocational school is the purely *shingaku*-oriented school. Among my informants, three students—Chi, Thinh, and Hung—studied at such university-prep schools. These schools offer university-preparatory courses that operate under vocational school status but primarily serve students aspiring to enter further education. These vocational schools in Japan operate as de facto *bekka* (university-preparatory) programs, despite not being officially classified as such under Japanese law. According to Article 91 of the School Education Act of 1947, only universities are legally permitted to establish *bekka* programs (Agency for Cultural Affairs, 2023). However, these institutions circumvent this regulation by adopting the status of vocational schools, likely because it is administratively easier to

establish a private vocational school compared to a university. This status also allows them to provide students with the necessary legal status to stay in Japan as regular students.

To comply with government regulations, these schools still implement a formal credit-based curriculum, requiring students to take courses other than university-prep courses in order to graduate. However, based on my informants' experiences, these courses are often perceived as superficial and primarily exist to fulfill legal educational requirements. My informants described them as unchallenging, with lenient grading and minimal academic rigor. The primary focus of these institutions remains university preparation, rather than vocational training, making them functionally equivalent to *bekka* programs despite their official designation as vocational schools. Students attending these schools typically do not have job prospects after graduation because purely *shingaku*-oriented vocational schools do not offer a substantive major field of study. As a result, their graduates are not granted the status of "specialist" required by immigration policies to secure an employment visa in Japan.

Shingaku-oriented schools are highly competitive and specialize in offering extensive courses designed to prepare students for Japanese university entrance exams, using their intense pedagogy as a way to create an intensive organizational culture. Their programs focus on EJU preparation, demanding Japanese language training, and other subjects necessary for admissions. For the students, the rigorous academic environment and focused preparation through consultation and intensive curricula represent a clear pathway to achieving their educational aspirations. Hung, one of my informants, initially aimed to enter Waseda University but later failed the entrance exam and secured admission to his second choice, Chuo University—both prestigious higher education institutes in Tokyo. Hung reflected on the role of vocational education in his journey to a top-tier university:

> My first choice was Waseda University. If I had chosen Chuo University from the beginning, I could have passed the exam already [following graduation from a language school]. The reason I enrolled in a university prep course was so that I could pass the entrance exam to Waseda University. I know that the name of the school will greatly influence the job-hunting process. (Hung, 23, male, university student)

Whereas the *shingaku*-oriented schools fulfil many criteria of institutional permeability, such as highly designed pedagogy and consultation, their rigorous entry eligibility requirements present institutional barriers, which many students struggle to meet. Thinh said that he had to submit his intermediate N2 Japanese proficiency just to apply for his university-prep vocational school, which is sufficient for the admission process in many universities. This was still relatively easy compared to Hung's entrance exam to his prestigious *shingaku* school, which comprised a Japanese test (upper intermediate to advanced level), an essay on globalization, an EJU-like exam to test their knowledge on society or economics, a math test, and finally an interview with the school officials. Despite these challenges, this type of school is particularly attractive to ambitious students like Hung, who aim to secure admission into higher-ranking universities.

The rigorous admission and intensive curriculum create a strongly academic organizational culture for *shingaku*-oriented schools; however, it is occasionally exclusionary. Hung's school offered specialized courses designed specifically to prepare students for admission to Waseda and Keio Universities—the two top private universities in Japan—but these courses were exclusively taught by Chinese teachers and only accessible to Chinese students. Hung recalled feeling frustrated: "I could afford those classes, but no one

was teaching. I felt powerless, it was something out of my control." The limited pathways from vocational education to universities for Vietnamese students in Japan can be attributed to a combination of low student demand and the resulting scarcity of educational opportunities designed to facilitate this transition. Hung's story reveals the double-edged nature of these schools: While they are academically rigorous and goal-oriented, they operate under market forces and ethnolinguistic segmentation, limiting equity within even high-permeability spaces.

In summary, *shingaku*-oriented schools exhibit high academic permeability in practice, though they are constrained by institutional ambiguity. They provide intensive preparation for university admissions, thus ensuring strong learning and pedagogical practices, as well as tailored information and counselling for students with academic goals. However, access opportunities remain limited by high entry barriers and the absence of formal articulation agreements. These schools operate outside established institutional linkages, relying instead on students' ability to succeed through standardized exams. While the organizational culture is supportive of higher education, barriers emerge through informal segregation, as seen in ethnolinguistic inequalities in access to elite preparation courses.

7. Conclusion and Limitations

This study explored how Vietnamese international students in Japan navigate the transition from vocational education to university, and how Japanese vocational schools facilitate—or fail to facilitate—this process. Guided by the dual frameworks of institutional permeability (Bernhard, 2018, 2019) and the education-migration industry (Baas, 2019; Liu-Farrer & Tran, 2019), the research addressed two central questions: How students experience this transition and how institutional structures shape their pathways.

The findings show that students' educational mobility is shaped by structural constraints and informational inequalities embedded within the education-migration industry. Study-abroad agencies promote a dominant narrative that presents the language school—vocational school—employment trajectory as the standardized route, capitalizing on the demand for attainable overseas education. While this pathway appears to promise educational mobility, it often limits students' access to universities by obscuring alternative routes and reinforcing a commodified, labour-oriented model of international education.

Meanwhile, institutional permeability is unevenly distributed across different types of vocational schools and is actively structured through organizational practices. Standard vocation-oriented schools primarily focus on career preparation, providing industry-specific skills with little emphasis on university pathways. These institutions often lack the incentives or resources to guide students toward further education, leaving them to navigate the process independently. On the other hand, hybrid vocational schools with strong formal and relational organizational linkages serve as key but conditional permeability bridges. Additionally, some vocational schools strictly focus on further education, acting as de facto university-prep schools instead of vocational training. These schools enable academic advancement, but only for those who already meet high academic thresholds. Bernhard's (2018, 2019) framework enables us to see that educational mobility for international students is not a neutral process, but one mediated by variable levels of information and institutional cooperation. Permeability is not simply present or absent—it is negotiated, stratified, and often contingent upon students' academic performance and persistence within implicit institutional logics of functionality.

By combining these two conceptual lenses, the study shows how permeability is not simply a technical or administrative matter, but a product of the education-migration industry, commercial interests, and institutional cultures. It highlights the stratified nature of international student mobility in Japan and the need for more transparent and equitable access to academic progression routes. In this context, future research should continue to explore the educational trajectories of international students, particularly those from developing economies, to further understand the factors that enable them to break through the barriers and successfully transition from vocational training to university education. This would not only contribute to a deeper understanding of educational mobility but also inform policies and practices that could help facilitate similar pathways for other international students in Japan and beyond.

This research has several limitations. This research was initially designed to explore individual perceptions of opportunities, which led to limited discussion on institutional structures and practices. Future research should incorporate interviews with school administrators and teachers to deepen understanding of institutional logics of functionality. Second, the relatively small sample size and number of vocational schools represented may limit generalizability. A larger number of informants could reveal that the variations between these school types indeed reflect institutional differences rather than idiosyncratic differences between individual vocational school organizations. Finally, the study focuses exclusively on Vietnamese students, whose cultural and socio-economic contexts may not represent all international students in Japan. Future studies that include a wider range of nationalities would help validate these findings and extend their relevance. Nonetheless, Bernhard's (2018, 2019) concept of institutional permeability remains a valuable framework for analysing educational mobility and guiding policy responses aimed at fostering more inclusive international student pathways.

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Conflict of Interests

The author declares no conflict of interests.

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ARTICLE

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Secondary Vocational Schools as Pathways to Higher Education in China

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Abstract

Over the past decade, the proportion of graduates from upper secondary vocational schools who have progressed to higher education (HE) has increased significantly in China. This study adopts a multiple case study methodology to provide an in-depth examination of the under-researched role vocational schools play in HE progression. Drawing on interview data, relevant policy documents, and administrative records, our findings reveal that vocational schools have actively promoted the "HE progression" trend. This role serves not only as a strategy for organizational survival—addressing challenges related to resource dependence and the pressure of institutional isomorphism—but also as a means of establishing organizational legitimacy. To improve HE admission rates, the schools in our case studies have implemented similar efficiency mechanisms in response to environmental pressures. These include enhancing the delivery of integrated-education programs with symbolic quality control during the transfer process, adopting classification-based student management systems that differ in form but are similar in substance, and establishing systems characterized by strong "examination-oriented" features.

Keywords

assimilation pressure; China; pathways to higher education; resource dependence; secondary vocational schools

1. Introduction

In recent years, expanding college access for graduates of initial vocational education and training (VET) has received increasing attention from UNESCO and other international bodies (Field & Guez, 2018, p. 7). It has also been a key strategy for many countries to enhance the attractiveness of initial VET (European Centre for the Development of Vocational Training, 2014). In China, the government has gradually promoted structural reform of the VET system by issuing a series of significant policies and regulations, including a substantial expansion of college access for students from upper secondary vocational schools (very few lower secondary vocational schools exist in China; for details, see J. Li et al., 2024). At the same time, vocational schools have taken proactive steps to help students pursue HE.

Current research on vocational students' access to higher education (HE) in China has primarily focused on macro-level policy supply and micro-level educational choices, while meso-level organizational behaviour has been rarely discussed. The macro perspective examines how the government, as a policymaker, shapes HE opportunities and pathways for vocational students through institutional reforms, power distribution, and resource allocation. Relevant literature has mainly used the admission system of higher vocational education as a lens to describe institutional changes and their impact on vocational students' access to HE (e.g., Jiang, 2021; Wu & Yang, 2020; for a literature review, see Dai, 2018), but has seldom investigated how government-led reforms influence the behaviour of vocational schools.

The micro perspective focuses on individual students' aspirations for HE and their outcomes, as well as the factors that influence them. Contrary to a 2007 study that found vocational students were more inclined to seek stable employment (Xu et al., 2007), multiple surveys conducted since 2016 consistently show that these students now generally have strong aspirations for further education (Gao, 2015; J. Li, 2021; Liu, 2022; Shi & Liang, 2018; Tian, 2022; X. Zhu et al., 2017) and a nationwide boom in "HE progression" has emerged (Y. Wang & Hu, 2018; Y. Wang et al., 2019). Large-scale empirical studies have found that students' decisions to pursue HE are influenced by a range of factors, including personal attributes, family background, the quality of career education provided by schools, and their understanding and acceptance of policies related to HE and employment (Z. Li & Yang, 2023). Additionally, research has confirmed that parents of vocational students tend to have high educational expectations (W. Zhang & Liu, 2020; Zhou & Zhang, 2018). However, limited attention has been given to how vocational schools respond to the growing demand for HE from students and their families.

In fact, research on how vocational schools help students progress to HE is not only almost absent in the Chinese context, but it has not received due attention worldwide either. For example, a recent literature review on vocational school education shows that existing research focuses on the school-to-work transition (Fogarty et al., 2024). While the expansion of vocational students' college access in China can be largely attributed to government policy and students' and parents' strong aspirations, vocational schools, as the organizations directly educating these juvenile students, have played a crucial role. China's VET system has been undergoing structural reforms since the beginning of the 21st century—and whether vocational schools have embraced these changes has had a critical impact on their survival and development. For example, if vocational schools do not agree with government reforms, they may fail to implement policies properly or implement them in a flexible manner, thus affecting the effectiveness of policies; or if vocational schools do not pay attention to students' desires, but instead guide students to employment, students' behavior and results will inevitably be

affected. Therefore, truly and fully understanding the transformation of vocational students' HE opportunities cannot be separated from the meso-level perspective.

To address the literature gap in this significant and under-researched area, this study employs a multi-case comparative research method to explore the attitudes and actions of Chinese vocational schools toward students' expectations for HE, and to explain the social dynamics that shape organizational behaviour. Drawing on empirical data and emerging theoretical insights, this article introduces perspectives from organizational sociology—particularly resource dependence theory and new institutionalism—for theoretical dialogue.

Resource dependence theory posits that organizations are primarily concerned with survival and must obtain resources from their environment to sustain themselves and achieve success (Pfeffer & Salancik, 1978). This framework helps explain why vocational schools adjust their structures to adapt to external conditions. New institutionalism theory, on the other hand, emphasizes that organizations operate under "institutional pressures," and that certain decisions and organizational designs may not be entirely "rational" but are shaped by external forces of assimilation. This assimilation enables organizations to gain "legitimacy" and survive within a broader institutional environment (Meyer & Rowan, 1977). Assimilation pressures can be categorized into three types: coercive pressure (e.g., from government policies), mimetic pressure (e.g., from peer institutions), and normative pressure (e.g., from professional associations; see DiMaggio & Powell, 1983). This theoretical lens offers valuable insights into how Chinese vocational schools alter their organizational behaviours and develop strategies to support students' progression to HE under the influence of these various pressures.

2. Policy Background

2.1. National Reforms: Reshape the VET System and Expand College Access

VET has traditionally been a weaker component of the national education system of China. China introduced fundamental reforms in the VET system early in the 21st century, with a vision to improve the recognition of VET as serving regional economic development, industrial system upgrading, and promoting the construction of a strong country in education. The reforms closely related to vocational students' college access are as follows: First, the educational function of vocational schools was required to provide institutional support for HE progression, which shows a political mechanism at play in the change of organizational behavior. As a grassroots organization in the VET system, vocational schools have the triple functions of providing technical skills education, nursing education, and HE preparation (Tian, 2021). Among them, the function of HE preparation was even restricted in the early days. For example, Article 7 of the *Notice on the Compilation and Submission of the 2006 Enrollment Plan for General HE by School and Major* (Ministry of Education & National Development and Reform Commission, 2006), required that "the scale of secondary VET graduates to be recruited by vocational colleges shall not exceed 5% of the graduates of vocational schools in the province in that year." Even when comprehensively deploying how to build a modern VET system with Chinese characteristics and world-class standards in 2014, the government still stated that "the employment-oriented operation of secondary VET will be adhered," as indicated by article 5 of the fourth part of the *Plan for the Construction of a Modern VET System (2014–2020)* (Ministry of Education et al., 2014). However, the document *Opinions on Promoting the High-Quality Development of Modern Vocational Education*,

pointed out that secondary VET should "focus on providing students with a solid technical skills foundation and a qualified cultural foundation for higher VET" (General Office of the CPC Central Committee & General Office of the State Council, 2021, Article 5), which for the first time clarified at the institutional level that the function of vocational schools should shift to a focus on both employment and further education.

Second, an integrated VET system was established (see Figure 1) and helped students progress to undergraduate programs, which became the focus of vocational schools' tutoring strategy. In the past, the highest level of VET was junior college vocational education, which lasted for three years and could only award the Da-Zhuan diploma (just a certificate proving education experience); this means that there is no degree for these graduates. Moreover, the admission and enrollment in vocational colleges were included in the national unified college entrance examination (commonly known as the *Gaokao* system) and admission for HE institutions. This exam-based enrollment was placed after completing the final announcements of undergraduate education in the admission batch, leading to the widespread perception in society that VET belongs to low-level education (Ministry of Education, 2022). This was commonly seen as the next option after a student's unsuccessful enrollment in an undergraduate admission process. Vocational colleges with normally low entry barriers, which also admit academic high school graduates and mature students with work experience, are the main destination for vocational students to further their education. If a student wants to obtain an undergraduate diploma and a bachelor's degree, they need to pass what is known as the "Da-Zhuan-to-undergraduate examination" and enter an undergraduate program to study for two years after entering a vocational college.

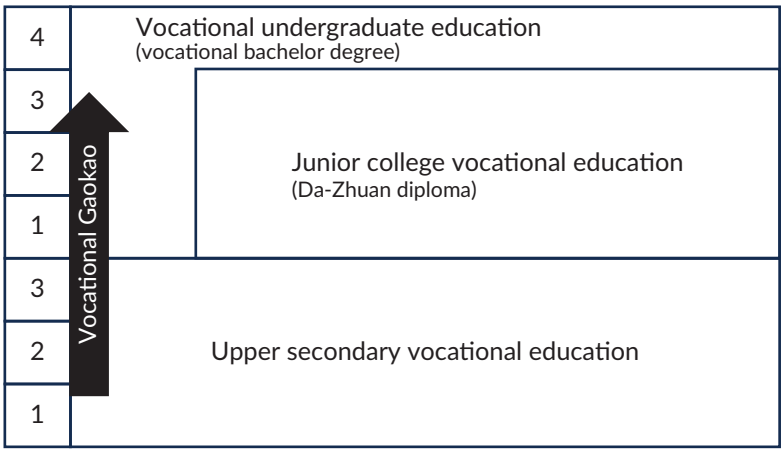

Figure 1. A modern VET system in China.

In order to effectively improve the status of VET, the document *Decision of the State Council on Accelerating the Development of Modern Vocational Education* first proposed "exploring the development of vocational undergraduate education" (State Council, 2014, Article 5). With the release of the *National Vocational Education Reform Implementation Plan* (State Council, 2019, also known as the "20 Articles on Vocational Education"), the Ministry of Education approved the establishment of the first batch of 15 vocational undergraduate universities with a four-year school system, awarding undergraduate diploma and vocational bachelor's degree. In 2024, there were 51 vocational undergraduate universities in China (Ministry of Education, 2024b). The documents *Opinions on Promoting the High-quality Development of Modern Vocational Education* clearly stated that by 2025, "the enrollment scale of vocational undergraduate education shall not be less than 10% of the enrollment scale of higher VET" (General Office of the CPC Central Committee &

General Office of the State Council, 2021, Article 3). Moreover, the Vocational Education Law of the People's Republic of China, revised in 2022, further reserved development space for setting up undergraduate vocational education majors in general universities and vocational colleges in the future (Ministry of Education, 2022). It can be seen that the HE destinations of vocational students have expanded from junior college education programs to various undergraduate education programs.

Third, the reform of a classified college examination and admission system for higher vocational education—tailored to the characteristics of VET—was implemented. This reform opened multiple pathways for vocational students to access HE and led to vocational schools developing differentiated attitudes toward these various channels. Previously, vocational students could only access HE opportunities (primarily in vocational colleges) by taking the *Gaokao*, which is open to all high school graduates and emphasizes academic assessment. Although vocational students are permitted (though not encouraged) to directly enter undergraduate programs with excellent *Gaokao* scores, the exam's subjects, content, and difficulty are not aligned with the secondary VET curriculum.

For instance, the breadth and depth of the core *Gaokao* subjects—Chinese, mathematics, and English—far exceed what is covered in regular vocational school instruction. Additionally, optional *Gaokao* subjects such as physics, biology, chemistry, and history are generally not included in the standard vocational school curriculum (see S. Wang et al., 2024, pp. 170–172). As a result, vocational graduates face significant disadvantages when taking the *Gaokao*.

To align with the characteristics of a VET system, China has gradually separated the college examination and admission systems for higher vocational education from the traditional *Gaokao* system. In 2013, the document *Guiding Opinions on Actively Promoting the Reform of the Examination and Admission System for Higher Vocational Education* (Ministry of Education, 2013, Part 2) proposed six pathways to higher vocational education: (a) admission based on the *Gaokao*; (b) independent admission by vocational colleges, (c) comprehensive evaluation admission by vocational colleges; (d) counterpart admission for secondary vocational school graduates with an emphasis on skills; (e) the "3+2" or five-year integrated education model; (f) and exam-exempt admission for top-skilled talent (see Table 1).

Through diverse provincial reform initiatives, a basic framework of "six modes and twelve types" has gradually taken shape, though not all types apply to every vocational student (J. Chen, 2019). The "20 Articles on Vocational Education" called for the establishment of a "vocational *Gaokao*" system designed to operate in parallel with the traditional *Gaokao* and characterized by a focus on "cultural knowledge + vocational skills." At this stage, the various pathways for vocational students to enter HE have been formally integrated into this independent "vocational *Gaokao*" system.

It is worth noting that, to alleviate employment pressure and address the shortage of highly skilled talent, China launched a large-scale expansion initiative for higher VET in 2019, aiming to increase enrollment by 1 million. This expansion continued through 2020–2021, adding another 2 million enrollments. The initiative targeted recent and past graduates of all types of high schools, as well as non-traditional groups such as veterans, unemployed workers, migrant workers, new-type professional farmers, and employees from various industries.

To achieve this ambitious goal, the government removed quota restrictions on vocational colleges enrolling secondary vocational graduates starting in 2019. This policy shift effectively opened the doors to HE for vocational students (J. Li, 2021). As a result, China's gross enrollment rate in HE exceeded 50% for the first time, marking a transition from the massification to the universalization stage of HE (Trow, 2000).

In 2022, the HE admission rate for secondary vocational graduates nationwide reached 59.21%, with 11 provinces—including Beijing and Shandong—exceeding 70%. Of these admitted students, 63.75% entered through the provincial unified "vocational *Gaokao*," 14.72% through "3+2" and "3+4" integrated-education channels, 14.24% through five-year integrated education, and 7.29% through other pathways (China National Academy of Educational Sciences, 2023, p. 18).

2.2. Shandong's Reforms: Spring Gaokao and Diversified Pathways Into HE

China's VET system operates under a provincially coordinated management framework, with the central government encouraging pilot provinces to independently explore new regional models for VET reform while following the national reform direction. Shandong province in eastern China was the first province to launch a pilot reform of the "vocational *Gaokao*" system, and the first province to establish the "National VET Innovation and Development Highland" in 2020. Since 2009, Shandong has selected some vocational colleges to pilot independent admission schemes. Starting in 2012, Shandong has introduced the "skills-based *Gaokao*" test, which is commonly known as the Spring Gaokao because it is held in spring, while the traditional *Gaokao* is held in summer. Spring *Gaokao* primarily targets secondary vocational graduates and is characterized by a combination of "knowledge + skills." In 2013, the province began piloting a "3+4" secondary-to-bachelor integrated-education program and improved the post-lower-secondary-education five-year higher vocational education system. Starting from 2018, the Spring *Gaokao* became the main channel for selecting technical and skilled talents. Designed in 2020, Shandong formally implemented its local version of the "vocational Gaokao" system, which integrated the Spring *Gaokao* channel and other pathways in 2022 (see Table 1). In 2024, a revised Shandong Province Vocational Education Regulation codified these reform outcomes into law and provided a "Shandong model" for advancing the construction of a modern VET system in China.

Shandong has massively expanded college access for vocational students through the joint effort of continuous policy optimization. There has been an increased enrollment quota for vocational undergraduate programs, as well as vocational schools providing HE tutoring. According to official statistics (Shandong Provincial Department of Education, 2024), in 2023, 239,606 secondary vocational graduates reported post-graduation placements, with 187,216 continuing their education and 21,273 advancing to undergraduate programs (p. 131). In some cities, the proportion of students entering HE was even higher: For example, Qingdao, the provincial capital, reached 86.4% (p. 10).

Table 1. Diversified pathways to HE in Shandong province.

Pathway	HE destination	HE admission basis
Provincial unified Spring *Gaokao*	Vocational undergraduate education; junior college vocational education	Scores of two parts of the Spring *Gaokao*: "cultural knowledge" (including Chinese, mathematics, and English); "vocational skills" (including "professional knowledge" and "skills testing")
Vocational college's independent admission	Junior college vocational education	Admission is based on two tests: (a) a cultural quality test designed by vocational colleges and (b) a professional skills test (previously organized by vocational colleges and replaced by the "skills testing" portion of the Spring *Gaokao* in 2022).
Vocational college's comprehensive evaluation admission	Junior college vocational education	Admission is based on scores of the Spring/Summer *Gaokao*, or scores from the academic proficiency test in a vocational school or general high school, combined with vocational aptitude test results and a reference to comprehensive evaluation information. This route no longer applies to vocational students as of 2020.
Top skilled talent admission with exam-exemption	Vocational undergraduate education; junior college vocational education	Admission is based on significant achievements in professional skills competitions: third prize or higher in the National Vocational Skills Competition, or first prize in the Provincial Vocational Skills Competition. Talents need to take the "cultural knowledge" portion of the Spring *Gaokao* (the "vocational skills" part is exempted), and the HE admission cutoff is very low.
"3+4" secondary-to-bachelor integrated-education program	Undergraduate program	Admission is based on: (a) "3+4" or "3+2" integrated-education programs (after studying in a vocational school for 3 years, students enter a cooperative vocational undergraduate program or junior college vocational education program to study for two or four years); and (b) transfer examination, which consists of the "cultural knowledge" portion of the Spring *Gaokao* and professional tests designed by the collaborating undergraduate program ("3+4"), or of cultural quality test and professional skills test set by the collaborating vocational colleges ("3+2'').
"3+2" secondary-to-Da-Zhuan integrated-education program	Junior college vocational education	
Five-year integrated education program	Junior college vocational education	Vocational colleges directly recruit lower secondary school graduates and provide them with five years of full-time education. They do not study in secondary vocational schools and do not have transfer examination.
Vocational college's open admission	Junior college vocational education	Score normally above 150 points in the Spring/Summer *Gaokao*.

3. Research Methodology

This study is dedicated to answering the two questions: Why do vocational schools that used to focus on employment generally shift to emphasizing further education? And how do vocational schools help students progress to HE? Our qualitative research orientation is quite consistent with this study. In qualitative research, researchers go deep into social phenomena and can construct contextualized meaning and interpretations through personal experience (X. Chen, 2000). Through the analysis of typical cases, we can gain an in-depth and detailed understanding of the research questions; conclusions derived from multiple cases rather than a single case are often considered more convincing (Yin, 2011).

3.1. Case Selection

In selecting specific cases, this study primarily follows the principle of key case sampling to enable logical generalization and maximize the applicability of findings to other contexts (Marshall & Rossman, 2010). At the same time, the study considers sample diversity in order to identify important common patterns by comparing differences in the tutoring strategies adopted by vocational schools (Marshall & Rossman, 2010). In addition to research objectives, the sample size in a multi-case comparative study depends on several complex factors, including data accessibility, funding, and time constraints.

Ultimately, three public secondary specialized schools—A, B, and C—were selected. These schools represent the most common type of secondary VET institution in China (J. Li et al., 2024, p. 51) and are located in and directly governed by three different administrative districts of City X in Shandong Province.

In addition to Shandong being a representative province for China's VET reform, the selected schools—accessible to the research team—also share essential characteristics of key cases. Like many areas in Shandong, City X and its administrative districts prioritize alignment with provincial policies and actively promote the implementation of the "vocational *Gaokao*" system. For instance, the implementation plans for VET innovation issued in 2020 by the two districts where Schools A and B are located explicitly emphasized strengthening policy guidance on the "Vocational *Gaokao*" and directed vocational schools to support students in progressing to HE.

As shown in Table 2, the selected schools generally had high HE admission rates but low undergraduate admission rates. An exception occurred in 2022: School B's relatively low HE admission rate was attributed—according to the school—to the impact of the Covid-19 pandemic, during which many students felt unprepared and opted not to take the Spring *Gaokao*. Its higher undergraduate admission rate can be explained by its location in the central urban area of City X, where students typically have stronger academic foundations and some parents may arrange additional ("shadow") education.

Overall, the selection of these three schools provides a strong basis for exploring the organizational role of vocational schools in supporting students' progression to HE. There are still obvious differences in the undergraduate admission rates and the characterization of student management models. Among them, School C has a unique student management model, whose HE and undergraduate admission rates have been among the best for many years. Paying attention to these inter-school differences and their trends can help us better understand the logic of organizational behavior and extract important common patterns from the comparison of diversity. However, it should be noted that this article focuses on the commonality of organizational motivations and behaviors rather than on individuality. In other words, we focus on exploring the collective transformation of vocational schools' education model. Therefore, more differences in detailed dimensions of different vocational schools and the causes are not within the scope of this article.

3.2. Data Collection and Analysis

To comprehensively collect relevant information, we conducted face-to-face semi-structured interviews with 13 organizational members in 2024. Since this study not only attempts to describe the phenomenon of case-study schools helping students enter HE, but also explores the social mechanisms that shape

organizational attitudes and behaviors, purposeful sampling is used as the basic principle when recruiting interviewees. We mainly look for decision makers in the school's bureaucratic management and leaders in charge of specific HE tutoring work. As key experts, they can provide information on practical operations and the design, concept, and driving factors of HE progression policies or reforms. The interviewees were composed of four school leaders (SL), five heads of functional departments (HoFD), including the Academic Affairs Office, the Admission and Employment Office, the School-Enterprise Cooperation Office, and the School Office, and four heads of academic departments (HoAD), referring to the specific teaching units responsible for educating students in various majors. The interviews were conducted following general research ethics, with the informed consent of the respondents and respecting the respondents. Transcribed interview records were labelled according to school, order of interview, identity of interviewee, and interview date. For example, "A1-SL-0612" indicates the first interviewee from School A, who is a vice principal, with the interview conducted on June 12.

We also collected diverse public and internal text materials, including school strategic plans, school education quality annual reports, admissions brochures, HE tutoring work summaries, etc. These documents help understand the actual operation of the case school's HE tutoring strategy, and complement or cross-verify with the interview data to jointly support the formation of research findings.

Thematic analysis, which is good at identifying, analyzing, and interpreting patterns or themes that emerge from the data (Naeem et al., 2023), was employed to scientifically analyze the rich first-hand data obtained. We first took the inductive reasoning path rooted in the data, namely letting the data "speak," integrating and grouping paragraphs of relevant texts, and organizing the topics by integrating repeated views into consistent categories. Since the data show that there are multiple reasons for vocational schools emphasizing further education, and the strategies to help students progress to HE are multi-level, we use the selected theories to analyze and explain the deep structure implied in the data when reintegrating and abstracting the classified themes. In order to ensure the accuracy of the phenomenon interpretation, the members of the research team cross-checked the original data and its interpretation and reached a consensus.

Table 2. HE admission stats of schools from our case studies (2021–2023).

	2021			2022			2023		
	Number of graduates	HE admission rate (%)		Number of Graduates	HE admission rate (%)		Number of graduates	HE admission rate (%)	
		Overall	Under-graduate		Overall	Under-graduate		Overall	Under-graduate
A	637	87.9	7.4	486	93.2	12.6	816	90.8	7.8
B	947	85.2	16.9	1049	67.5	12.4	1263	92.8	15.1
C	1549	96	23.0	1664	97	22.1	1678	99	16.1

4. Research Findings

4.1. Organizational Motivation for Emphasizing Further Learning: "Primarily to Meet Parental Demand"

A large number of vocational schools in China have recognized the importance of the HE preparation function early on, and now this function has become the dominant one. This can be seen from the 2024 admission brochures of the three selected schools. Except for School B, which still has a small number of employment-oriented school-enterprise cooperation enrollment plans (12.0% of the total enrollment), the other two schools only enroll students into the integrated-education programs and Vocational Gaokao programs, both of which emphasize further education. Moreover, the graduation destination of the school-enterprise cooperation program has been described as "flexible choice of entering HE or employment," which also points out the prospect of continuing education. However, the collective adjustment of the educational function of vocational schools does not only come from the compulsory isomorphic pressure of government policies, but is more of an adaptive change that organizations proactively make in order to obtain resources for survival and development when facing environmental changes.

First, the homogeneous demands of the parent group constitute the core driving force that pushes vocational schools to change their educational goal. When asked why schools prioritize further learning, interviewees consistently emphasized that the reason was "primary to meet parental demand." Parents are the main decision makers in the educational choices of their children, whose needs produce external control of the organization. Parents generally have HE expectation due to concerns about their children's personal growth and employment prospects: "Children are still young and not yet mature enough. They should stay in school for a few more years before entering society" (A1-SL-0612); "Employers now have higher educational requirements and rarely hire secondary vocational graduates"(B1-SL-0703). In other words, parents regard further education as a core strategy to avoid "premature socialization risks" and enhance intergenerational mobility opportunities, and their cognition resonates with labor market signals. As investigated by School C in 2023, there are very few professional positions for enterprises to recruit vocational students. Besides, parents often perceive their children's progression to HE—especially to undergraduate programs—as a source of pride and social recognition. As one interviewee remarked, it gives families a sense of "face" (C3-SL-1111), reflecting the cultural emphasis on academic credentials in China (G. Wang, 2024).

Second, the general HE desire of students has strengthened the adjustment of the educational goals of vocational schools. As members of the organization, students' common values and behavior patterns obviously strengthen schools' determination to transform. Under the combined influence of parental expectations, market signals, and personal aspirations, vocational students overwhelmingly gave up on employment. Interviewees from School C indicated that students "already consider further learning to be crucial and don't need guidance from school," and that "many students aspire to pursue higher levels of credentials" (C1-HoFD-0619). Findings from the 2018 Shandong Secondary Vocational Education Survey indicate that 93.67% of students expressed a strong desire for HE, with 69.29% specifically aiming to enter undergraduate programs. Additionally, 86% of respondents cited "personal interest in learning" as their primary motivation for taking the Spring *Gaokao* (Fan, 2020, p. 54).

Third, the potential survival crisis has pushed vocational schools to emphasize HE preparation, especially preparing for undergraduate programs, as a competitive advantage. Secondary VET has long occupied half of China's high school education, but the number of enrollments has been declining since 2010 (Ma & Shi, 2020; Y. Wang et al., 2019). Especially for some schools that are lacking in internship and training equipment and dual-qualified teachers, it is even more difficult to attract students by emphasizing employment. Many district and county vocational schools with average resources have formed an education model with a good undergraduate admission rate as the core competitiveness (Tian, 2022). Moreover, as China has recently accelerated the pace of reform in exploring the integration of secondary vocational and academic education and building comprehensive high schools, the government began to clearly advocate the establishment of "few but higher-quality" vocational schools (Huai, 2024). Under the pressure of survival, how to attract students has become more urgent for vocational schools. The model that emphasizes HE, which not only meets the needs of parents and students but also is praised by the government, is undoubtedly the most effective strategic choice. Due to excellent HE admission rates, schools from our case studies have even attracted students from outside their administrative districts and even from other cities in Shandong.

Finally, the strategic adjustment of focusing on HE has been embedded with multiple legitimacy mechanisms. Although mainly serving the organizations' sustainable development, helping students receive HE is also regarded as a social responsibility that schools should bear. Interviewees pointed out: "This is our job. It is for the good of the children, with a sense of responsibility, and for the reputation of the school" (C2-HoAD-0619); "At least from the perspective of being responsible for students, the 'Spring Gaokao' is a good channel for pursuing HE" (B4-SL-1112). By fulfilling its social responsibilities, the organization has gained recognition and spiritual support from parents and students, improved the school's social reputation, and thus helped consolidate the legitimacy of the organization. At the same time, although there are no clear assessment indicators, financial subsidies or material rewards for the school's HE preparation work, the government "verbally praised at various meetings" (C1-HoFD-0619), or invited the schools to publicize their experiences throughout the city. In other words, this strategic adjustment not only met the demands of families but also met the new direction of secondary VET development advocated by the government. The praise from the governmental authority, in turn, strengthened the organization's determination to change.

4.2. Providing Integrated-Education Programs With Symbolic Quality Control: "No One Has Failed to Meet the Transition Standards"

Developing integrated-education programs for cooperation between vocational schools and HE institutions has been one of the core measures of China's efforts to expand college access for vocational students. Under the governmental authorization, the schools from our case studies have all launched the "3+2" secondary-to-Da-Zhuan integrated-education program at an early stage. For instance, School A began offering this program in 2002. Notably, in 2014, School C pioneered a "3+4" secondary-to-bachelor integrated-education program in the digital media technology application major, which was described as "making your university dream come true." The class initially enrolled 43 students and has maintained an annual intake of 40 students in recent years. In 2024, all three schools were selected to pilot the "joint five-year higher vocational education" programs to replace the "3+2" programs, namely after studying in the school for five consecutive years (divided into three years of secondary VET stage and two years of higher VET stage), students can directly obtain a Da-Zhuan diploma, no longer need to enter vocational colleges.

The enrollment quotas of the "five-year" program accounted for 34.9%, 25.6%, and 46.4% at Schools A, B, and C, respectively. Among them, schools A and C explicitly stated that graduates from these programs could still pursue undergraduate education through the Da-Zhuan-to-undergraduate examination, which strengthened their narrative of further education prospects.

As a government-created image project aimed at promoting college access, integrated-education programs implement a low-threshold—or even "zero-threshold"—transfer mechanism when determining the eligibility of students moving from secondary VET to higher VET. In the "3+2" programs, students are not required to take the unified entrance examination organized by the province or vocational colleges. Instead, they participate in a comprehensive "transfer examination" after being deemed qualified through a process assessment. Vocational schools generally adopt a strategy of "symbolic assessment" to relax quality control. The process assessment, which evaluates students' daily academic and behavioural performance, typically only screens out those who violate behavioural discipline. The transfer examination serves as a qualification exam and allows for two attempts. With school-provided tutoring, students generally pass without difficulty.

Even in the more rigorous "3+4" programs—where students must take the Spring *Gaokao* to transfer—students at School C have achieved full transfer success, thanks to the school's "targeted tutoring": "No one has failed to meet the standards so far" (C2-HoAD-1111). This symbolic approach to technical quality control has been tacitly accepted by the government, reflecting a kind of "collusion" between governmental bodies and schools, and highlighting the organizational logic of survival under external pressures.

In contrast to the commonly relaxed transfer requirements, there are notable differences in the admission mechanisms of the "3+2" and "3+4" programs. The former accommodates a large number of students (accounting for between one-quarter and nearly half of total enrollment quotas at the three schools in 2024) and operates with an almost "zero-threshold" admission policy to ensure the sustainable operation of vocational schools. The latter, however, enrolls far fewer students (only 2.1% at School C in 2024) and maintains a "high-threshold" admission policy to preserve the selectivity and "elite" status of bachelor's degree programs.

As is common in most provinces and cities, vocational school pathways in City X include both independent admission and admission through the city-wide high school entrance examination (commonly referred to as *Zhongkao*). The government mandates that all integrated-education programs admit students solely through *Zhongkao*, following a "preference-based, score-first" admissions policy that prioritizes applicants with higher exam scores. In 2024, the admission threshold for "3+2" programs was not only significantly lower than that for "3+4" programs, but was often even lower than that for "vocational *Gaokao*" programs. At School C—renowned for its strong performance in HE preparation—the minimum cutoff score for "vocational *Gaokao*" programs exceeded that of the "3+2" programs by over 100 points.

It is not difficult to see that the design purpose of the admission mechanism for the integrated-education programs is essentially the same as the transfer mechanism, that is, both highly serve the needs of the organization. Vocational schools differentiated two integrated-education programs and their admission standards to attract students at different levels, so as to meet their diversified development needs. Moreover, the admission threshold of the "3+2" programs has formed a significant "institutional low-lying land" compared to the "vocational *Gaokao*" program, further demonstrating the government and schools'

intention to support the expansion of HE opportunities. This gradient design is essentially a concrete manifestation of the resource dependence theory: in a field where competition for students is intensifying, schools absorb marginal student groups through fictitious thresholds to expand the organization's resource pool.

4.3. "Primarily Focused on the 'Spring Gaokao*'" and the Diversion and Stratified Management of Students*

Since its introduction in 2012, the provincially unified Spring Gaokao pathway has gradually become a key focus of vocational schools' HE preparation strategy. Among the multiple pathways to HE, the route of top-skilled talent admission with exam-exemption opens to only a small number of students. Open admissions serve as a fallback option, resembling the open admission policies of American community colleges. Vocational college's comprehensive evaluation for admission was mainly designed for general high school students. The selectivity level for vocational colleges' independent admission is generally lower than that of the Spring *Gaokao*. Notably, before 2022, the independent admission pathway allocated a large number of enrollment slots, with many vocational colleges setting exceptionally low admission scores, making entry requirements almost nominal. Since the formal implementation of the "vocational Gaokao" system consisting of various pathways in 2022, not only are general high school graduates unable to continue to take the Spring *Gaokao*, but the number of independent admission quotas for vocational colleges has been significantly reduced. In addition, the Spring *Gaokao* is considered more authoritative, credible, and legitimate than the independent selection tools of vocational colleges, so "some good vocational colleges no longer enroll students through independent admission" (A2-HoFD-0612). More importantly, the Spring *Gaokao* provides a new path to undergraduate programs, which symbolizes high academic qualifications, and is less difficult than the traditional *Gaokao*, thus being sought after by secondary vocational students, parents, and schools.

The most typical manifestation of case-study schools' emphasis on the Spring *Gaokao* is the diversion and stratified management of students aiming at increasing the undergraduate admission rate. But there are apparent variations in management models across the schools. School B, since 2013, has established dedicated Spring *Gaokao* classes. Starting in 2016, the school tracked the number of students achieving the required scores for undergraduate admission each year. The scale of the Spring *Gaokao* classes has gradually expanded, from being initially offered by just one department to now being available in all five departments and over 20 majors. The school used to select students for the Spring *Gaokao* class based on internal exam scores, but starting in 2024, the selection standard shifted to a unified *Zhongkao* score. Students with lower scores are redirected to the school-enterprise cooperation classes. Within the Spring *Gaokao* class, School B implements further stratified management in the final year of study. Based on the results of mock Spring *Gaokao* and monthly tests, students have been classified into two groups: "key targets" (those predicted to be able to enter undergraduate programs) and "marginal students" (those who, with additional tutoring, are expected to have a chance of gaining undergraduate admission).

Unlike School B, which isolates students into HE and non-HE zones through separate class arrangements (Tian, 2022), School C, with the highest undergraduate admission rate, implements an "all student progress to HE" approach. Previously, School C only offered higher vocational education departments for integrated-education programs and skills-cultivation departments focused on employment. Since 2016, due

to nearly all students opting for further education, the school cancelled its "skills-cultivation" departments and began offering Spring *Gaokao* classes in all majors, which attracted a large number of students to enroll. School C not only selects students for the Spring Gaokao classes based on their *Zhongkao* scores, but also implements stratified management within each class, dividing students into three categories: "undergraduate candidates," "marginal students," and "falling behind students." Starting from the first year, the school dynamically adjusts student classifications based on academic performance and provides differentiated tutoring. By the third year, "falling behind students" who are struggling and unlikely to be admitted to undergraduate programs are guided to participate in the vocational colleges' independent admission route, which occurs before the Spring *Gaokao*. This helps to redirect them, avoiding any negative impact on the Spring Gaokao class's learning atmosphere, and allowing teachers to focus on helping "undergraduate candidates" and particularly "marginal students" preparing for undergraduate admission.

Compared with Schools B and C, School A, with a lower undergraduate admission rate, has also undergone changes in student management, but its management of undergraduate progression is relatively loose. Previously, the school offered three types of cultivation programs in each major: "3+2" class, Spring Gaokao class, and skills cultivation class (focus on employment). Among them, "the admission score of the Spring *Gaokao* class is higher than that of the '3+2' class, and the students with the worst grades go to the skills cultivation classes" (A4-HoFD-1129). Due to increased student enrollment, insufficient teachers and facilities, skills cultivation classes were abolished in 2018. Unlike schools B and C, School A's Spring *Gaokao* classes don't have a strict selection mechanism for entry, and, hence, nearly one-third of students in these classes lack the intention to pursue undergraduate studies. These students are unwilling to accept a high-intensity study schedule, which prevents the school from arranging evening study sessions, weekend remedial classes, or intensive collective tutoring for Spring *Gaokao*, as are done in schools B and C. The school leaders intend to improve the school conditions as soon as possible, and imitate School B to set up separate classes for students who aspire to attend undergraduate programs to increase its undergraduate admission rate, thus confirming the mimetic isomorphism mechanism--when a certain type of school model is constructed as a "successful model," competitors will actively copy its symbolic characteristics to reduce uncertainty risks.

It is important to note that although School A's management of HE preparation is relatively relaxed, in the third year, the school assigns its most excellent teachers to students, and implements a "target student" management system similar to schools B and C. Based on students' regular exam performance and their willingness, the school selects a group of students who are likely to gain undergraduate admission as "target students" and provides them with specialized tutoring. Each Spring *Gaokao* class has about 10% of students identified as "target students." If selected students fail to adhere to discipline or show a lack of motivation to study, they may lose their "target student" status. However, School A doesn't further classify the target students based on their high or low likelihood of gaining undergraduate admission. In addition, School A "required teachers not to refuse students' questions about homework at any time" (A3-HoFD-0612) to respond to students' learning needs in a timely manner.

The differences in the forms of the student management models of the three schools reflect the different organizational orientations in constructing the boundaries of HE management (Lamont & Molnár, 2002). While School B constructs basic boundaries through physical space isolation, School C uses a dynamic labeling system to implement cognitive boundaries and School A superimposes label symbols on the basis of

the boundaries of the time dimension. It is worth noting that despite the different forms, the essence of the three student management models is the same, that is, they all adopt an efficiency-oriented classification operation mechanism, which reflects the institutionalized classification of students by educational organizations. Moreover, the schools from our case studies successfully transformed specific student groups into performance capital for the organization to maintain HE progression performance through organizational technologies, reflecting the opportunism of organizational behavior (Williamson, 1975).

4.4. Systematic Spring Gaokao *Tutoring and "Low Entry, High Exit"*

Under the intertwined influence of policy regulations, family demands and organizational survival logic, the schools from our case studies actively explored effective HE tutoring strategies and integrated them into an institutionalized system. After years of exploration, schools B and C have established relatively mature Spring *Gaokao* tutoring systems, developing the Spring *Gaokao* "One-Two-Three-Four-Five" work plan and the Spring *Gaokao* "One-Two-Three-Five" teaching management mode, respectively. Although School A's tutoring system is less developed, it has a mature approach to building a high-quality teaching team to support HE progression. Overall, due to the similar environmental pressures they face, the three schools have many common features in their tutoring strategies, which are mainly reflected in the following aspects.

First, the schools from our case studies work on enriching teaching research centered around the Spring *Gaokao*, so as to "enhance teachers' ability to prepare students for the exam" (A1-SL-1121). The teaching research system, which focuses on summarizing teaching experiences, identifying teaching issues, and researching teaching methods, is a characteristic feature of China's educational management and quality assurance system (Y. Zhu, 2024), and thus serves as a crucial support for curriculum reforms in vocational schools. Initially, School B organized teaching research within each department, but in order to collectively improve the teaching quality aligned with the Spring *Gaokao* and eliminate individual teachers' cognitive biases through standardization of knowledge, the school established a school-level teaching research group for Chinese, mathematics, and English, and regularly conducts unified activities.

The schools from our case studies urged teachers to internalize the knowledge framework of the Spring *Gaokao* into teaching habitus through teaching research activities. On one hand, through collective course preparation, optimizing teaching designs, and in-depth study of exam standards, teaching methods, and test-taking strategies, the schools comprehensively advance research on teaching for the Spring *Gaokao*. On the other hand, through sharing typical experiences, expert guidance and specialized meetings, the schools engage in diagnostic and corrective measures for exam-related teaching, effectively enhancing the precision of instruction. For example, during year 3, School C's three non-integrated-education departments not only hold weekly teaching research meetings, but also conduct exam analysis meetings after each monthly exam. In these meetings, each teacher representative has been required to analyze the issues students faced in the exam from multiple perspectives and propose the next steps for teaching plans. It is not difficult to see that the organizational design of teaching research activities not only ensures that teachers' teaching moves towards predetermined goals through timely research, information feedback and adjustments, but also strengthens the autonomy of HE guidance by defining teachers' cognitive boundaries (Lamont & Molnár, 2002).

Second, in the final year of study, the schools implement a "sea of questions" strategy and concentrated skills cultivation to improve students' "test-taking" abilities. Similar to general high schools, vocational schools arrange for non-integrated-education and non-employment-oriented students to complete all knowledge and skills learning in the first two years, with the third year dedicated to preparing for the Spring *Gaokao*. Since the government has established a composite assessment mechanism of academics and skills in the Spring *Gaokao*, vocational schools have developed an "ambidextrous capability" to cope with the comprehensive requirements (Tushman & O'Reilly, 1996). This is reflected in the practice of the schools from our case studies, which emphasizes both skill cultivation and cultural course preparation. At the same time, the school's teaching arrangements based on examination requirements and student characteristics reflect the presence of the logic of efficiency.

To be specific, given that students generally have lower motivation but that certain knowledge areas (including cultural courses and professional theory courses) account for a larger proportion of the Spring *Gaokao*, the schools use the typical "sea of questions" strategy (C2-HoAD-0619), which is commonly employed in general high schools. Students engage in three rounds of review focused on exam topics, practicing a large volume of exercises on exam-related content, and taking monthly exams, midterm and final exams, as well as a provincial "mock Spring *Gaokao*" to enhance their understanding and mastery of key contents of the Spring *Gaokao* and identify gaps in their knowledge. In contrast, the frequency of skills-based testing practice is lower. However, once Shandong province releases the exam modules of certain majors, the schools organize targeted and concentrated skills-intensive training lasting one to two months. After the "skills testing" portion of the Spring *Gaokao* is completed, students then focus exclusively on knowledge-based tests. This arrangement has a dual function: It internalizes cultural knowledge through intensive examination training and makes up for the insufficient cultural capital stock of vocational students; meanwhile, it utilizes the time difference between skill tests and knowledge tests to build a segmented control mechanism and reduce the organizational management risks brought about by students' cognitive load.

Third, a variety of incentive measures have been introduced to motivate both teachers' tutoring efforts and students' learning efforts. Schools from our case studies generally offer awards, honors, and performance-based incentives to teachers who excel in teaching year 3 students and HE tutoring. As an interviewee from School A noted: "Awards and honors have a significant impact on teachers' professional title evaluations, thus playing an important role in motivating teachers" (A2-HoFD-0612). When calculating teachers' workloads, contributions to Spring *Gaokao* tutoring are factored in. To encourage students to enjoy studying for the Spring *Gaokao*, the schools from our case studies also used incentives in the form of both spiritual and material rewards. For example, at School C, students are subject to a "thousand-point evaluation system" starting from the first year. This system allows students to earn extra points each time they ask a teacher a question. The results of this assessment are used for selecting outstanding students, evaluating applications for the National Scholarship, and the eligibility to join the Communist Youth League.

Recognizing the influence that peers have on important outcomes such as academic performance and educational trajectories (Barrios-Fernández, 2023; Sacerdote, 2011), the schools from our case studies consistently emphasize the role of peer motivation and mutual support. Common measures include inviting high-achieving current students and alumni to share HE preparation experiences, and encouraging students to form study groups where they can motivate and supervise each other. School C, for example, observed that, "for motivated and diligent students, mutual help plays a significant role" (C2-HoAD-0619). They also

noted that if a student misbehaves and causes the group to face collective punishment, it is likely that the student will find it difficult to be accepted back into the group. It can be seen that in order to achieve the goal of increasing the undergraduate admission rate, the incentive mechanism of case-study schools presents a coupling of formal systems and informal mobilization.

The teaching research activities around the Spring *Gaokao*, the students' "exam preparation" training, and the organizational practice of teachers and students being included in the multi-incentive system, show that the construction of the HE tutoring system in the schools from our case studies is driven by the efficiency mechanism. This mechanism has a positive impact on the organizational performance and reputation. For example, in 2023, 538 students from School C took the Spring *Gaokao*, with 50.2% of students successfully qualifying for undergraduate programs (compared to the provincial average of 30%). Due to the predominantly disadvantaged background and weak academic foundation of vocational students, School B describes its tutoring achievement as achieving the "low entry, high exit" goal. The outstanding results of the promotion to undergraduate programs and the narrative of "low entry and high exit" responded to the expectations of the institutional environment, making the schools from our case studies gain higher recognition and legitimacy in society. This process confirms the core proposition of institutional theory: organizational behavior is a strategic competition for legitimacy resources rather than a simple pursuit of efficiency (DiMaggio, 1988).

5. Conclusion

Our study found that the educational expectations of the key resource-dependent stakeholders—namely, parents and students—have long reshaped the survival strategies of vocational schools. All three schools from our case studies exhibited a convergent evolution: strengthening the function of further education while weakening the focus on employment. This confirms that, amid intensified admission competition, schools seek social legitimacy through institutional isomorphism. Thus, many vocational schools are not merely supporters of government policies; rather, they have become active promoters of the "HE progression" boom, aligning with their organizational interests and reinforcing their legitimacy.

To improve HE admission rates, especially undergraduate admission rates, the schools from our case studies implemented homogenized efficiency mechanisms to respond to external pressures. On one hand, the widely adopted integrated-education programs are embedded in a normative commitment sanctioned by the government (as an educational advancement pathway) and reinforced by a cultural-cognitive template rooted in credentialism (the "university dream" narrative). This alignment is supported by regulatory rules—specifically, low-threshold transfer examinations—thereby constructing institutional linkages across educational levels. On the other hand, schools actively reform their educational and instructional practices to reframe their organizational identity as preparatory institutions feeding into HE. This is reflected in their adoption of classification-based student management systems (varying in form but similar in substance) and tutoring systems characterized by strong "examination-oriented" features.

This transformation in organizational identity not only addresses the efficiency demands posed by technological and resource-related challenges but also meets the legitimacy requirements of the institutional environment. It reveals the distinctive logic of organizational adaptation in the ongoing reform of secondary VET in contemporary China.

Although the universality and representativeness of the findings may be limited by the small-scale nature of the case study approach, the research nonetheless provides valuable insights and implications for understanding vocational schools' role in enhancing HE access—both in China and globally. One of the core objectives of China's VET development is to promote social mobility (J. Zhang et al., 2020). As in many countries (Eini et al., 2023), vocational students in China predominantly come from disadvantaged backgrounds, with over 70% from rural or low-income urban families (Gao, 2015; Ministry of Education, 2024a). With the introduction of multiple pathways to HE, China's vocational schools have transformed from being a "broken ladder" that offered limited mobility (Xiong, 2015) to an "elevator" that effectively delivers HE opportunities.

Moreover, feedback from the schools from our case studies indicates that actively managed HE tutoring not only fosters institutional development but also cultivates a study culture (Van Houtte, 2006), enhancing students' academic learning, skill development, and personal growth. However, challenges remain. In Shandong, most undergraduate placements are provided by private universities, which charge significantly higher tuition fees. As a result, some students forgo admission due to financial constraints. Many public universities are still reluctant to recruit vocational graduates. Affordable undergraduate admission opportunities, therefore, remain scarce.

Considering that vocational students are often a "hidden disadvantaged" group during the transition from VET to HE (Brunken & Delly, 2011), the expansion of HE opportunities must be supported by proactive government regulation. Countries aiming to improve college access for vocational students can learn from China's approach, adopting robust policy measures to broaden HE pathways and strengthening institutional support for HE preparation within vocational schools.

At the same time, the role of vocational schools—as organizations that directly influence students' HE aspirations and outcomes—must not be overlooked. For example, in some Israeli vocational schools, teachers hold low academic expectations for their students and even discourage them from pursuing HE (Barak & Shoshana, 2022). Similarly, while secondary education in Finland may formally or informally prepare students for HE (Haltia et al., 2022), the learning culture in vocational schools remains weak in countries like Finland, Belgium, Sweden, and Greece (Barak & Shoshana, 2022).

To effectively expand HE opportunities, vocational schools should prioritize their role in further education, actively shift teachers' perceptions, cultivate a strong culture of academic aspiration, and provide effective HE tutoring and guidance.

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Conflict of Interests

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ARTICLE

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Study or Work? The Impact of Social Background and Unemployment Rates on the Decision of Vocational High School Graduates in Austria

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Abstract

Vocational high schools (BHS) constitute a popular school type in Austria and are particularly appealing to students from lower socio-economic backgrounds. These five-year schools provide an alternative pathway to a general higher education entrance qualification, combining academic schooling with the "safety net" of school-based vocational training. Although BHS represent an important route into higher education, with approximately half of graduates entering higher education within three years, the other half do not, with many opting to enter the labour market directly. Drawing on rational action theory, this study examines the relationship between students' social backgrounds (measured by parental education level), labour market prospects following graduation from BHS, and higher education enrolment. We analyse the further educational and labour market pathways of the entire 2016/17 cohort of Austrian BHS graduates, using unique data that combines several high-quality administrative registers. Descriptive analysis shows that transition rates to higher education vary considerably according to parental education. We employ logistic regression models to demonstrate that higher regional unemployment rates for the particular vocational qualification of BHS are associated with increased transition rates to higher education. In contrast with the assumptions of the "diversion thesis," findings indicate that this effect does not vary according to the education of students' parents. Consequently, BHS graduates with lower levels of parental education are equally likely to be deterred from pursuing higher education by the prospect of employment as those with higher parental education.

Keywords

educational transitions; first-generation students; higher education access; intergenerational inequality; labour market; opportunity costs; register data; vocational education

1. Introduction

The structure of national school systems can have implications for the number and social composition of students pursuing higher education (HE). Most countries provide a single "royal road" through the school system to HE. Nevertheless, an increasing number of countries upgrade vocational education and training (VET) tracks or offer alternative pathways into HE, specifically addressing students from less privileged social backgrounds (Bernhard, 2017; Murdoch et al., 2017). Austria's education system offers several VET tracks at the upper secondary level, including apprenticeships, intermediate schools of vocational education, and vocational high schools (*Berufsbildende Höhere Schulen*, henceforth BHS). BHS, which are the focus of this article, prepare students for direct labour market entry while also granting full eligibility for access to HE. This dual focus of BHS creates a unique tension. For many students, the promise of an immediately available job can overshadow the prospect of pursuing HE, leading to challenges in realising the inclusive aims of these institutions. It is therefore important to investigate the conditions under which BHS graduates actually enter HE.

As BHS graduates possess qualifications demanded by the labour market, labour market prospects may play a significant role in this decision-making process. Previous research has demonstrated that transition rates to HE increase during economic downturns (e.g., B. T. Long, 2014; Mandl & Haag, 2025; Witteveen, 2021). High school graduates who grew up in regions with limited employment prospects tend to exhibit higher transition rates (e.g., Hartung & Weßling, 2025; Meschi et al., 2019). The extant literature has focused on the general student population and general (youth) unemployment rates. The present study contributes to the literature by focusing on a group that is structurally positioned between the labour market and HE. The ambivalent role of BHS in preparing students for both the labour market and HE in Austria raises the following research question: How do qualification-specific regional unemployment rates impact the probability of transitioning to HE among BHS graduates?

In early tracking systems, which are known to reinforce existing social stratification (Terrin & Triventi, 2023), options of social mobility within an education system, such as BHS in Austria, are particularly important for students from less privileged backgrounds and have the potential to reduce social inequalities (Schindler, 2017). Consequently, understanding the Austrian case and how BHS serve as a vocational pathway to HE is of high relevance for other countries, as it offers valuable insights for other differentiated education systems, in which widening access to HE for students from vocational backgrounds remains an ongoing challenge. In this context, it is essential to understand the selectivity of the transition from BHS to HE and the factors that prevent BHS graduates from entering HE. We investigate whether working-class students are more likely to be diverted by good labour market prospects than their counterparts from the upper service class (R. Becker & Hecken, 2009), as this could explain different transition rates to HE. The most important social background variable for educational transitions is the educational level of the parents (Bukodi et al., 2021). We aim to investigate whether the impact of qualification-specific regional unemployment rates on the likelihood of transitioning to HE varies by parental education.

The article is structured as follows: The next section provides a brief introduction to the Austrian education system, followed by the underpinning theoretical background with a focus on rational action theories and a review of recent studies. Then we provide an overview of the high-quality administrative registers on educational and labour market careers used in this study, and the analytic strategy. The empirical results,

consisting of descriptive statistics and logistic regressions, are then presented and discussed. The article concludes with implications of the findings for policy and practice.

2. Institutional Context: The Austrian Education System and Access to HE

In the Austrian education system, the first between-school tracking is ability-based and takes place at the age of 10. Given sufficient educational success in primary school, students can choose between the lower cycle of academic secondary school (AHS) and compulsory secondary school. The second between-school tracking occurs for upper secondary school at the age of 14 and is based on a combination of ability and vocational interests. The upper secondary level is characterised by a high degree of diversity with a wide range of school types. These include the upper cycle of AHS and several competing options (Lassnigg, 2011) for vocational education and training, encompassing apprenticeships (2–4 years), vocational middle schools (1–4 years), and/or BHS (5 years). While the distinction between VET and academic education at the upper secondary level is generally clear in most educational systems (Schmees et al., 2025), this is not the case for BHS in Austria. They combine VET in fields such as business, engineering, tourism, and pre-school pedagogy and end with a general HE entrance qualification (*Matura*). The main types of BHS (e.g., business, engineering) are relatively widespread across Austria, predominantly teaching skills applicable to all regions. However, certain schools with specific focuses are linked to the local industries, e.g., viticulture and fruit growing (Klosterneuburg, wine area) and weapon and security technology (Ferlach, gun manufacturing site). Among Austrian 9th graders (age 15), 35% attend a BHS, 29% attend an AHS, and 36% attend other schools (Statistik Austria, 2024, p. 29). In comparison to the upper track of AHS, which have a dropout rate of 22%, the dropout rates at BHS are comparatively high, with one-third of students dropping out (Statistik Austria, 2024, p. 63). Figure 1 depicts the main pathways from the lower secondary level to HE. Empirically, a considerable proportion of students who attended compulsory secondary school subsequently enrol in BHS, thereby keeping the opportunity for later access to HE open (Statistik Austria, 2024, p. 55).

Austrian HE consists of (public) universities, which represent the largest sector, universities of applied sciences, university colleges of teacher education, and a small sector of private universities. Individuals with a general entrance qualification, such as the *Matura*, can enter any field of study at these institutions, irrespective of the vocational orientation of their prior school. While in some fields of study, such as medicine, psychology, and veterinary medicine, prospective students are confronted with selective admission procedures, in many other fields, access is unrestricted, or admission procedures are not or only mildly selective (Haag et al., 2020). However, these admission procedures are identical for all prospective students and are independent of any prior access qualification. Except for the small sector of private universities, at which 5% of entrants in Austria enrol (Zucha et al., 2024, p. 18), tuition fees are comparatively low, with a maximum of EUR 727 per academic year for EU students.

With a vast majority of AHS graduates entering HE (Statistik Austria, 2024, p. 65) and a vast majority of other (non-BHS) VET graduates entering the labour market (Statistik Austria, 2024, p. 115), the BHS-specific combination of academic and vocational qualifications leaves the decision on subsequent pathways to their graduates. Thus, the role of the BHS as a gateway to HE is ambivalent. On one hand, BHS represent a popular alternative pathway to HE, offering a distinctive option alongside the more traditional route via AHS. Almost four out of ten students entering HE in Austria graduated from a BHS (Zucha et al., 2024, p. 31). In contrast to Switzerland, for example, where the legitimacy of upper-secondary specialised schools has been contested

and their graduates only have access to universities of applied sciences (Esposito et al., 2019), in Austria, full access to all HE sectors for BHS graduates is undisputed. This is also reflected in the fact that BHS graduates are not less successful in HE than graduates from AHS (Thaler, 2025).

On the other hand, BHS provide good labour market prospects and wage levels comparable to those of individuals with a bachelor's degree (OECD, 2024, p. 114). Historically, BHS fulfilled—and still partly fulfil—a coexisting function within the Austrian education system, similar to the later introduced universities of applied sciences (Graf, 2013, p. 131). While BHS are initial vocational education and training (iVET), these schools are, nevertheless, considered a short-term tertiary education according to the ISCED level classification. More specifically, the first three years of BHS are classified as ISCED level 3, while the fourth and fifth years, as well as the *Matura*, are classified as ISCED level 5 (Federal Ministry of Education, Science and Research, 2022).

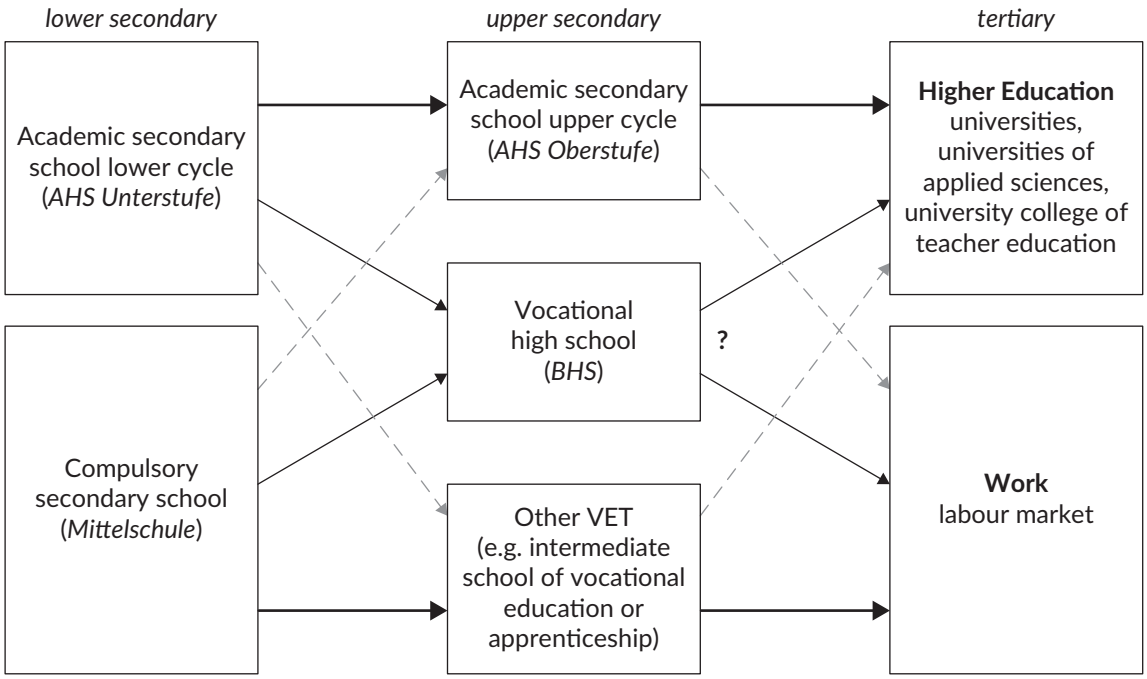

Figure 1. Main pathways through secondary and tertiary levels in the Austrian education system (schematic visualization). Note: The question mark indicates the focus and research question of this article.

3. Theoretical Considerations and Literature Review

3.1. Opportunity Costs in Educational Decisions

Rational action theories provide a robust framework for explaining educational decision-making, particularly in transition phases such as the decision to pursue HE or enter the labour market. These theories conceptualise individuals as actors who make decisions by assessing the expected utility of available options, based on subjective evaluations of costs, benefits, and probability of success (G. S. Becker, 1993; Boudon, 1974; Breen & Goldthorpe, 1997). These decisions are shaped by subjective rationality and situated within broader structural contexts. The theoretical model proposed by Hillmert and Jacob (2003) places a particular emphasis on opportunity costs. In the context of our study, this implies that individuals completing BHS

assess whether pursuing a university degree offers greater long-term benefits than entering the labour market, based on financial considerations, time investment, and perceived chances of success. Building on this framework, we incorporate regional unemployment rates as an additional factor. Higher unemployment may reduce the perceived opportunity costs of studying, making HE more attractive.

3.2. Labour Market Prospects and HE

In accordance with the rational action approach, adverse labour market conditions are anticipated to result in an increasing number of individuals pursuing HE, due to the reduction in opportunity costs. The "discouraged worker thesis" posits that students may elect to pursue HE if no viable alternatives are available. Several studies have shown increased enrolment rates during periods of economic downturn, particularly during the recession around 2008, in various countries, including the US (B. T. Long, 2014; Taylor & Rampino, 2014), the UK (Clark, 2011), Canada (Alessandrini, 2018), Denmark (Sievertsen, 2016), and Germany and Sweden (Witteveen, 2021). Students at both the lower (Weßling et al., 2023) and upper (Hartung & Weßling, 2025) secondary levels are more likely to prolong their general school careers in socio-economically deprived regions in Germany, where labour market alternatives are worse. In Austria, enrolment numbers increased during the financial crisis of 2008 (Eichmann & Nowak, 2020) and in the initial year of the Covid-19 pandemic (Mandl & Haag, 2025).

During periods of economic prosperity and in regions with good labour market chances, the opportunity costs of staying in education increase, as individuals perceive higher immediate returns from entering the labour market. The prospect of earning competitive wages or securing stable employment outweighs the perceived benefits of continuing education (G. S. Becker, 1993). In Austria, this dynamic could play a significant role in shaping the decisions of BHS graduates, as these schools combine general and vocational education. The strong labour market demand for many skills of BHS graduates can create an environment in which students may choose to enter the labour market after *Matura* without pursuing HE.

We expect transition rates to HE to be lower for graduates with favourable labour market prospects. This concerns the differences between AHS and BHS. In countries with a strong linkage between education and occupation and with specific training opportunities for the jobs (DiPrete et al., 2017), upper secondary schools that do not offer specific vocational training have less favourable labour market outcomes. As BHS offer vocational training for specific occupations, graduates are more likely to gain employment and transition to HE at a lower rate than those from AHS (around 50% vs. 85%; Statistik Austria, 2024, p. 65). However, less is known about the role that labour market prospects play in the decision of BHS graduates to pursue HE. Therefore, this study focuses on the differences within this group. It is hypothesised that BHS graduates are more likely to enrol in HE if the regional unemployment rate for their particular vocational qualification is higher (hypothesis 1).

3.3. Social Background and the Effect of Labour Market Prospects on HE

Opportunity costs can provide an explanation for social inequalities in educational decisions through direct and indirect costs associated with pursuing HE. Engelhardt and Lörz (2021), for example, have demonstrated that the change from a student grant to a student loan system in Germany in 1983 deterred students with lower parental education from pursuing HE. In addition to these direct costs, indirect costs such as attractive

opportunities of an early entry into the labour market could divert working-class children from HE (Müller & Pollak, 2007). The "diversion thesis" (Hillmert & Jacob, 2003; Müller & Pollak, 2007) states that students from lower socio-economic backgrounds tend to estimate their prospective educational achievements more negatively and calculate with higher subjectively expected costs. Cost pressure enforces shorter time horizons for calculating the benefits and costs of further education (R. Becker & Hecken, 2009). Thus, children from less educated family backgrounds will typically avoid pursuing academic education to avoid the associated costs, given that suitable labour market alternatives are available (Hillmert & Jacob, 2003). While students from higher socio-economic backgrounds tend to pursue HE regardless of external factors, students from lower socio-economic backgrounds are more responsive to labour market conditions when making educational decisions (Pöyliö, 2020). Consequently, in periods of unfavourable labour market conditions, opportunity costs decline and students from lower socio-economic backgrounds are more likely to enrol in HE. Thus, under this assumption, favourable labour market conditions widen the gap in HE enrolment between individuals from different social backgrounds, whereas unfavourable conditions tend to reduce it. From a social equity perspective, this implies that worse labour market conditions may have a positive effect on HE enrolment.

Most empirical findings support this hypothesis, showing higher HE enrolment rates for students from lower socio-economic backgrounds in times of economic crises (Berggren, 2006; Pöyliö, 2020; Sievertsen, 2016; Tumino & Taylor, 2015). Moreover, Hartung et al. (2022) suggest that students from families with limited socio-economic resources are more aware of regional labour market conditions when evaluating their occupational expectations. In contrast, Alessandrini (2018) finds that high unemployment levels lead to an increase in enrolment rates primarily among students with highly educated parents in Canada. These patterns may partly reflect financial barriers, as students from lower socio-economic backgrounds may be less able to afford the direct and indirect costs of HE. Economic downturns lower educational expectations among this group (Salazar et al., 2020) while strengthening pro-education attitudes among children whose parents hold higher educational degrees (Taylor & Rampino, 2014). Educational transitions may thus involve complex diversion mechanisms. In Germany, in economically disadvantaged regions, students from lower-status families may initially aim for general HE eligibility to avoid the highly competitive apprenticeship market, yet later opt for VET, using their *Abitur* strategically to secure training positions (Hartung & Weßling, 2025).

Although the results concerning the impact of labour market conditions on the relationship between social background and participation in HE are not entirely consistent, the majority of studies support the assumptions of the "diversion thesis." In the context of our research question, this thesis suggests that BHS graduates from lower socio-economic backgrounds are more likely to enrol when unemployment rates are higher, while the decisions of BHS graduates from higher socio-economic backgrounds are less affected by labour market conditions. Therefore, we expect that the positive effect of the qualification-specific regional unemployment rate on the likelihood of enrolling in HE is stronger for BHS graduates whose parents have lower levels of education than for those whose parents have higher levels of education (hypothesis 2).

4. Data, Variables, and Analytic Strategy

4.1. Data and Variables

This study uses data from the Austrian Micro Data Center (AMDC). The AMDC is a research data infrastructure facility of Statistics Austria that enables research on microdata processed in compliance with data protection regulations (Fuchs et al., 2024). For the present study, a novel dataset is created by merging school statistics, HE statistics, educational attainment register, register-based employment labour market statistics, migration statistics, and the monitoring of education and related employment behaviour data on an individual level. The data contains the full cohort of first-time BHS graduates from the academic year 2016–2017, which is a total of 19,933 graduates from 317 BHS schools. Individuals with incomplete information on parental education, who moved abroad (and did not enter HE in Austria) or for whom the research question is not applicable (e.g., graduated from extra-occupational schools or started a non-tertiary education) are excluded from the analysis (see Table 1). After excluding these cases, the valid number of graduates for the analysis is 17,619, and there are no missing values in any variables included in the further analysis.

Table 1. Cases excluded from the analysis.

	Not entering HE	Entering HE	Total
No parental education information	733	599	1,332
Age > 25 years	395	48	443
Moving abroad	124	0	124
Further non-tertiary education	461	106	567
Extra-occupational school	488	89	577
Total cases excluded	1,539	775	2,314
Total cases included	8,308	9,311	17,619
Total cases (included + excluded)	9,847	10,086	19,933

Notes: A person may be excluded for more than one reason; the total number of excluded cases includes each person only once.

A second database used in the analysis was created by Vogtenhuber et al. (2024) and contains regional, qualification-specific labour market data for the general population (aged 15–64) from 2010 to 2021. In Austria, the 84 labour market areas are designated as labour market districts and bear a close resemblance, though not an exact match, to the country's political districts. The available labour market data is differentiated not only regionally, but also by educational level and vocational specialisation. For BHS graduates, data is available for 10 fields of education (based on the ISCED Fields of Education and Training 2013; see Table 2). For further analysis, we merge the unemployment rates with the individual-level data of BHS graduates. Each graduate is assigned the unemployment rate in their field of education in their home district.

The dependent variable is transition to HE in Austria within the first two years following graduation from BHS (direct transition; see Hauschildt et al., 2024, p. 19). In contrast, for students with delayed transition, who typically work prior to entering HE or work during their studies (Zucha et al., 2024, p. 56), the decision-making processes are likely to be different, and therefore an alternative theoretical framework would be required. Hence, delayed transitions are not covered in our analysis.

Table 2. Classification of fields of education.

Variable: Fields of education	ISCED Fields of Education and Training 2013
Education (primarily elementary education)	1 Education
Business	4 Business, administration, and law
Mechanics	715 Mechanics and metal trades 788 Engineering interdisciplinary
Electricity	713 Electricity and energy
Other engineering	711 Chemical engineering and processes 714 Electronics and automation 716 Motor vehicles, ships, and aircrafts
Manufacturing	72 Manufacturing and processing
Construction	73 Architecture and construction
Agriculture	08 Agriculture, forestry, fisheries and veterinary
Services (primarily tourism)	10 Services 712 Environmental protection technology
Other	02 Arts and humanities 03 Social sciences, journalism, and information 05 Natural sciences, mathematics, and statistics 06 Information and communication technologies 09 Health and welfare 9999 Unknown

Note: Classification according to Vogtenhuber et al. (2024).

We operationalise social background using parental education, a commonly used indicator that is closely linked to educational decision-making not only in general (Bukodi et al., 2021), but also under conditions of economic uncertainty, where its relevance tends to increase while the influence of parental income declines (Pöyliö, 2020). This is reflected in several recent studies (e.g., Alessandrini, 2018; Engelhardt & Lörz, 2021; Hillmert & Jacob, 2003; Taylor & Rampino, 2014). The independent variable parental education is coded as a three-categorical variable based on the highest parental degree (lower = compulsory school, apprenticeship, or vocational middle school; medium = general qualification for university entrance; higher = HE or academy). If the education of one parent is unknown, the education of the other parent, if known, is used.

The second explanatory variable of interest is the qualification-specific regional unemployment rate. This refers to the unemployment rate among individuals with a given vocational qualification in each labour market district. According to the national definition in Austria, individuals are considered unemployed if they are registered with the labour market administration, not enrolled in education or training, and immediately available to take up work (Vogtenhuber et al., 2024, p. 17). The unemployment rates we use are calculated by dividing the number of unemployed individuals (according to the national definition) by the sum of unemployed and employed individuals. We use data from 2017, which marks the graduation year for most of the analysed cohort. A high regional unemployment rate for certain qualifications may indicate an oversupply of graduates with these vocational qualifications. Conversely, low unemployment rates can indicate a good matching of qualifications to occupations and thus, good labour market prospects for BHS graduates with this qualification (Vogtenhuber et al., 2024, p. 17). As BHS graduates have a specific

vocational qualification, it would be too simplistic to use the general (youth) unemployment rate of a region. The unemployment rate of the workforce with the same qualification is a more appropriate measure for their labour market prospects.

Several potentially confounding factors are controlled for, including gender, age, and everyday language. As a measurement of academic performance, we use success in the *Matura*. However, no direct measures are available to control for potential regional-level confounders, such as a region's status as a traditional student city, the proportion of university students in the population, or the diversity of available fields of study (Weßling & Bechler, 2019). Regional differences between urban and rural areas can serve as a proxy for variation in educational opportunities, as suggested by structural differences in school accessibility and school types (Federal Ministry of Education, Science and Research, 2024). In Austria, the urbanity of an area is highly correlated with regional study opportunities. The variable place of residence distinguishes between large urban centres (with >100,000 inhabitants and full universities, such as in Vienna, Graz, Linz, Salzburg, Innsbruck and Klagenfurt; SR 101 based on Statistik Austria, 2021), small urban centres (most of which host universities of applied sciences; SR 102 + SR 103), central rural areas (RZ 210 + LR 310), and peripheral rural areas (other RZ and LR).

4.2. Analytic Strategy

To gain insight into the relationships between BHS graduates' enrolment in HE, their labour market prospects, and several covariates, descriptive statistics are presented in Section 5.1. These include boxplots to show how HE enrolment rates and the main explanatory variable, the qualification-specific regional unemployment rate, differ by field of education and labour market area.

We estimate logistic regression models with enrolment in HE as the binary dependent variable. We first present results from a baseline model including parental education and control variables. In a second step, we introduce the qualification-specific regional unemployment rate. All results are reported as average marginal effects (AMEs), which represent the average change in the probability of enrolment in HE associated with a one-unit increase in continuous variables or the average difference between categories for categorical variables. AMEs have the advantage of being directly interpretable as effect measures, unlike log odds and odds ratios, and facilitate comparisons across models and groups (Mood, 2010). They are also easier to interpret because they are expressed on the probability scale of the outcome (J. S. Long & Mustillo, 2021). As our data is clustered by labour market district and field of education, we compute clustered standard errors (Abadie et al., 2023).

In the next step, we include an interaction to test whether the negative effect of regional unemployment rates on transitions into HE varies by parental education. However, interaction coefficients of logistic models can not be interpreted straightforwardly (Mize, 2019). To test whether there is a relevant interaction effect, we compare the fit of the models with and without the interaction effect by the following criteria (Best & Wolf, 2015). The McFadden pseudo-R^2 indicates the improvement of the fitted model relative to a model containing only the intercept. The Bayesian Information Criterion (BIC) is used to compare models, with lower values indicating a better fit. Finally, a likelihood ratio test assesses whether the more complex model fits significantly better than the less complex model. Furthermore, we report conditional AMEs and graphically present the interaction between the categorical variable parental education and the continuous variable qualification-specific regional unemployment rate as a predicted probability plot (Mize, 2019).

We fitted the models in R (version 4.1.3; R Core Team, 2022), using the "margins" (Leeper et al., 2024) and the "marginaleffects" (Arel-Bundock et al., 2024) packages to compute AMEs and the "sandwich" package (Zieleis et al., 2024) to estimate clustered standard errors.

5. Empirical Findings

5.1. Descriptive Statistics

In total, 53% of BHS graduates enrol in HE within two years after graduation (Table 3). Less than half of BHS graduates have parents with a lower educational degree (9,135 of a total of 17,619 graduates), while approximately one quarter each have parents with medium or HE. HE entry rates vary by parental education, ranging from 44% among BHS graduates with parents with lower education to 68% for those with highly educated parents. In line with the literature, enrolment rates are higher among women than men (Statistik Austria, 2024, p. 67), higher among graduates with other everyday language (= mostly immigrants) in comparison to German speakers (Neumeyer & Will, 2024), higher among graduates with a higher level of success in the *Matura*, and higher among those living in more urban areas (Weßling & Bechler, 2019).

Table 3. Descriptive statistics of the 2016–2017 BHS graduates (row percentages).

	Not entering HE	Entering HE	Total
Parental education			
Lower	5,088 (56%)	4,047 (44%)	9,135
Medium	1,878 (43%)	2,444 (57%)	4,322
Higher	1,342 (32%)	2,820 (68%)	4,162
Gender			
Male	4,055 (50%)	4,040 (50%)	8,095
Female	4,253 (45%)	5,271 (55%)	9,524
Everyday language			
German	7,608 (47%)	8,428 (53%)	16,036
Other	700 (44%)	883 (56%)	1,583
Success in the *Matura*			
Passed	6,462 (54%)	5,598 (46%)	12,060
Good success	1,204 (37%)	2,019 (63%)	3,223
With distinction	642 (27%)	1,694 (73%)	2,336
Place of residence			
Large urban centres	1,812 (35%)	3,360 (65%)	5,172
Small urban centres	911 (44%)	1,175 (56%)	2,086
Central rural areas	1,792 (49%)	1,862 (51%)	3,654
Peripheral rural areas	3,793 (57%)	2,914 (43%)	6,707
Age (mean/median/min/max)	19.64/19.49/17.87/24.97	19.52/19.40/17.84/24.27	19.57/19.44/17.84/24.97
Total	8,308 (47%)	9,311 (53%)	17,619

Boxplots illustrate the differences in HE enrolment (Figure 2) and unemployment rates (Figure 3) by field of education and labour market district. The HE enrolment rates of BHS graduates vary greatly by field of education. The median enrolment rates by district exceed 50% in business, tourism, other engineering, and the "other fields" category, while they are approximately 37.5% or less in education, electricity, and mechanics (Figure 2). However, substantial regional disparities in HE participation persist, highlighting uneven access to HE across districts. For instance, in agriculture, the enrolment rate in the district at the 75th percentile is approximately 25 percentage points higher than at the 25th percentile. In other fields of education, this interquartile range is much smaller, with, for example, approximately 10 percentage points in electricity.

Qualification-specific regional unemployment rates also vary widely between and within fields of education (Figure 3). Median district-level unemployment ranges from 2% in agriculture, education, electricity, and other engineering to over 4% in construction. The lowest unemployment rate among the population with a BHS qualification is 0.25%, while the highest is observed in a single district in the field of construction, reaching almost 15%.

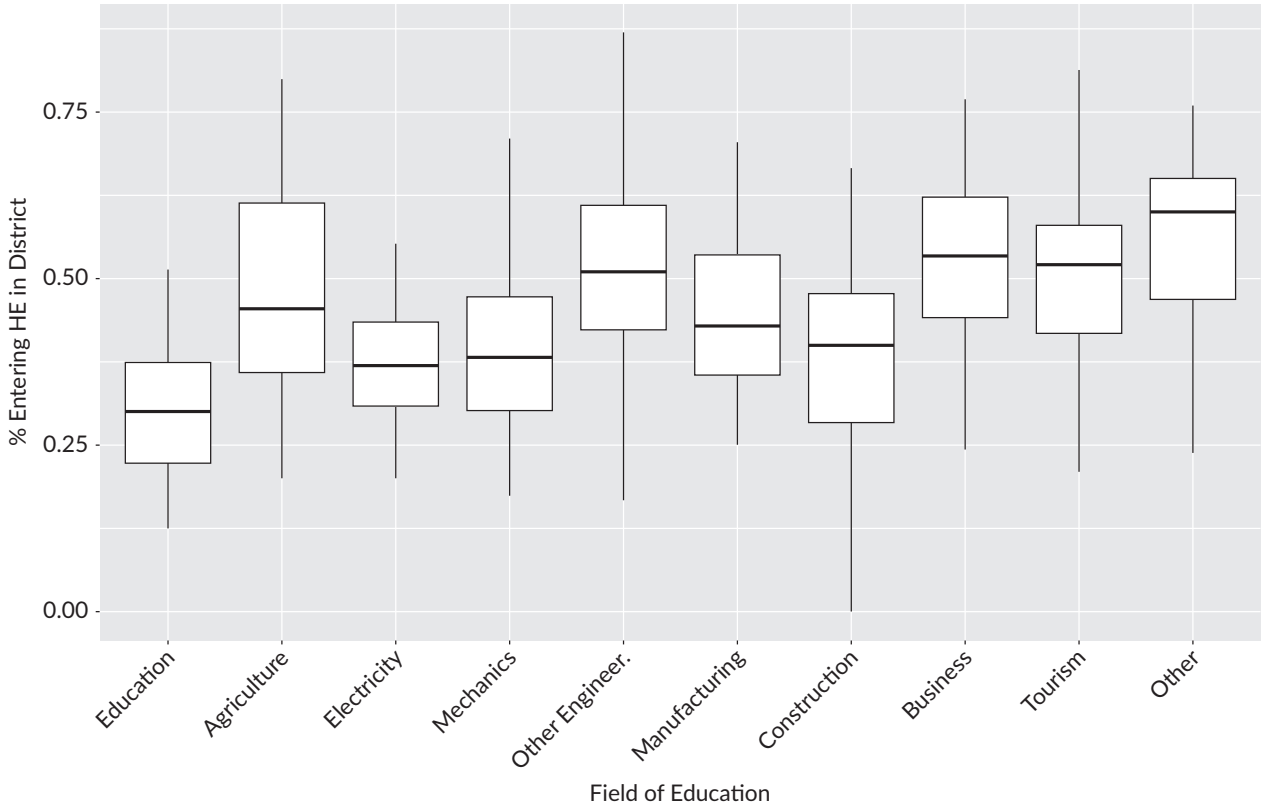

Figure 2. District-specific HE enrolment rates of 2016–2017 BHS graduates by field of education. Notes: The box represents the interquartile range (IQR; 75th percentile minus the 25th percentile), with the line inside the box indicating the median. Whiskers extend to the smallest and largest values within 1.5 times the IQR from the lower and upper quartiles. Outliers beyond this range are excluded for data protection reasons. For data protection reasons, only districts with more than 10 graduates in the respective fields are included in this boxplot.

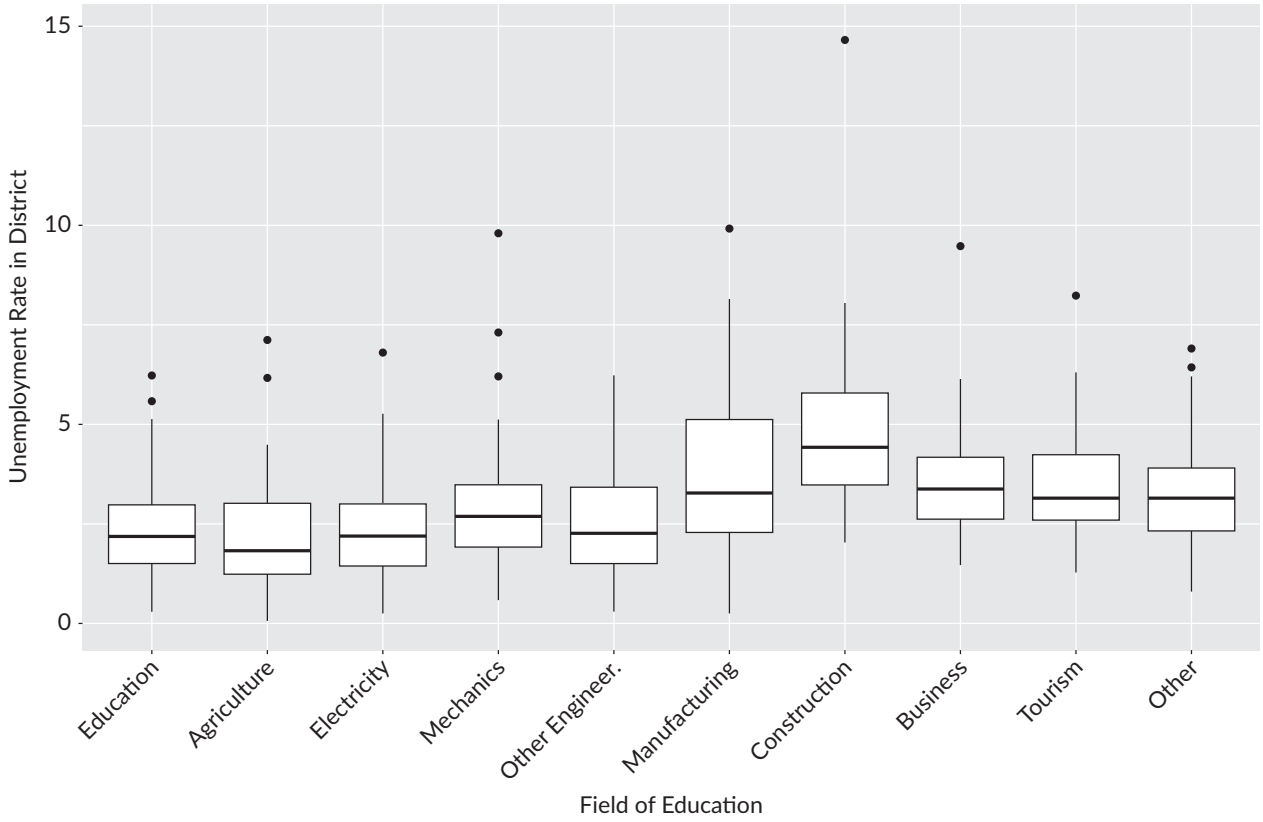

Figure 3. District-specific unemployment rates in 2017 among the population aged 15–64 years by field of education. Notes: The box represents the interquartile range (IQR; 75th percentile minus the 25th percentile), with the line inside the box indicating the median. Whiskers extend to the smallest and largest values within 1.5 times the IQR from the lower and upper quartiles.

5.2. Logistic Regression

Table 4 presents three logistic regression models predicting enrolment in HE. Model (1) shows that parental education and most control variables have a significant effect on entering HE. The likelihood of entering HE increases by 19 percentage points for BHS graduates whose parents have a HE degree and by 10 percentage points for those with parents with *Matura* when compared to BHS graduates whose parents do not have *Matura*. Other variables with a strong impact on enrolling in HE are *success in the Matura* and living in rural areas (place of residence).

To test if the probability of enrolling in HE is higher for vocational qualifications with higher regional unemployment rates, we include the qualification-specific regional unemployment rates in model (2). This considerably improves the model fit (McFadden R^2, BIC, LR test), and the coefficient of the variable is statistically significant ($p < 0.001$). A one percentage point increase in the regional unemployment rate for a given qualification is associated with a 2.5 percentage point higher likelihood of a BHS graduate enrolling in HE. This finding supports hypothesis 1.

The next step investigates whether the effect of regional unemployment rates on HE enrolment differs by parental education by including an interaction term between qualification-specific regional unemployment

Table 4. Logistic regression models on enrolling in HE for BHS graduates.

	Model (1)	Model (2)	Model (3)
Parental education (Ref.: without *Matura*)			
Matura	0.098 (0.010)***	0.093 (0.009)***	0.094 (0.009)***
HE degree	0.190 (0.010)***	0.188 (0.009)***	0.187 (0.010)***
Gender (Ref.: male)			
Female	0.064 (0.010)***	0.062 (0.009)***	0.062 (0.009)***
Age	−0.040 (0.010)***	−0.040 (0.010)***	−0.040 (0.010)***
Everyday language (Ref.: German)			
Other	0.049 (0.014)***	0.020 (0.017)	0.021 (0.017)
Success in the *Matura* (Ref.: passed)			
Good success	0.143 (0.010)***	0.144 (0.010)***	0.144 (0.010)***
With distinction	0.232 (0.011)***	0.232 (0.011)***	0.233 (0.011)***
Place of residence (Ref.: large urban centres)			
Small urban centres	−0.069 (0.022)***	−0.026 (0.018)	−0.026 (0.018)
Central rural areas	−0.129 (0.020)***	−0.085 (0.016)***	−0.085 (0.016)***
Peripheral rural areas	−0.191 (0.020)***	−0.139 (0.017)***	−0.139 (0.017)***
Qualification-specific regional unemployment rate		0.025 (0.005)***	0.025 (0.005)***
Interaction: parental education × qualification-specific regional unemployment rate			See Table 5 and Figure 4
McFadden R2	0.077	0.083	0.083
BIC	22,594	22,454	22,472
LR-Test (p-value)		0.00***	0.35
N	17,619	17,619	17,619

Notes: Presented are AMEs; clustered S.E. in parentheses; significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

rates and parental education in the logistic regression models. However, the fit of model (3) does not improve compared to model (2): McFadden Pseudo R^2 remains stable, the BIC increases (indicating worse fit), and the likelihood ratio test is not statistically significant. Furthermore, changes of the AMEs are only present in the trailing decimal places. This finding indicates that qualification-specific regional unemployment rates are similarly important for students' decisions on entering HE, irrespective of parental education.

Table 5 shows the interaction effects as conditional AMEs. The first part of the table shows the CAMEs of the regional unemployment rates specific to the level of qualification for the three categories of parental education. These are 0.025 for graduates whose parents do not have a *Matura* qualification, 0.026 for those whose parents have a *Matura* qualification, and 0.034 for those whose parents have a HE degree. The effect of the unemployment rate is significant for all parental education groups. Nonetheless, there is little variation between the groups, suggesting that the interaction effect is negligible.

A comparison of the effects of parental education on specific levels of qualification-specific regional unemployment rates reveals only slight variations in these effects. Regardless of whether the rate is 2%, 3.5% or 5% (these values present approximately the median and the median +/− one standard deviation), graduates whose parents have a *Matura* are 9.4 to 10 percentage points more likely to enter HE than those whose parents do not have a *Matura*. For graduates whose parents have a HE degree, this contrast is between 18.8 and 21.5 percentage points. Again, the statistical significance of the coefficients indicates that the effect of parental education is important at all unemployment levels, and the small differences indicate that the interaction effect is negligible.

Table 5. Conditional AMEs for model (3).

Effect	Group	Conditional AME
Effect of qualification-specific regional unemployment rate for parental education:	without *Matura*	0.025 (0.006)***
	with *Matura*	0.026 (0.005)***
	with HE degree	0.034 (0.006)***
Effect of parental education *Matura* (Ref.: without *Matura*) at unemployment level:	2%	0.094 (0.012)***
	3.5%	0.098 (0.010)***
	5%	0.100 (0.013)***
Effect of parental education HE degree (Ref.: without *Matura*) at unemployment level:	2%	0.188 (0.013)***
	3.5%	0.203 (0.010)***
	5%	0.215 (0.013)***

Notes: Presented are conditional AMEs; clustered S.E. in parentheses; significance level: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Figure 4 illustrates this finding in more detail. It shows the enrolment probability in HE predicted by model (3) by the combination of parental education and qualification-specific regional unemployment rates. At an unemployment rate of 5%, for example, the predicted probability of entering HE is 47% for BHS graduates whose parents have no *Matura*, 57% for BHS graduates whose parents have *Matura* and 68% for BHS graduates whose parents have a HE degree. For all three groups, the predicted probability of enrolling in HE increases almost linearly with the qualification-specific regional unemployment rate. For BHS graduates whose parents do not have *Matura*, for example, the predicted probability of attending HE is 41% at an unemployment rate of 2.5% for their qualification and 54%, for an unemployment rate of 7.5%, resulting in an increase of 13 percentage points. The slope from 2.5% to 7.5% unemployment rate is nearly identical to the slope of those with parents with a *Matura* (51% to 64% = +13 percentage points) and those with a HE degree (60% to 75% = +15 percentage points). The three lines are almost parallel, thereby visually indicating that the positive effect of the unemployment rate on the likelihood of entering HE does not differ by parental education. Therefore, we reject hypothesis 2.

Despite some concerns regarding the use of linear probability models for analysing binary outcome variables, such as predicted values below zero, heteroscedasticity, and non-normally distributed residuals, they are a popular alternative to logistic regression analysis (Best & Wolf, 2015). This is due to their more straightforward interpretation, especially when interaction effects are taken into account. Robustness checks with linear probability models instead of logistic regression models yield very similar results, indicating robust findings. The models presented do not suffer from multicollinearity or influential outliers.

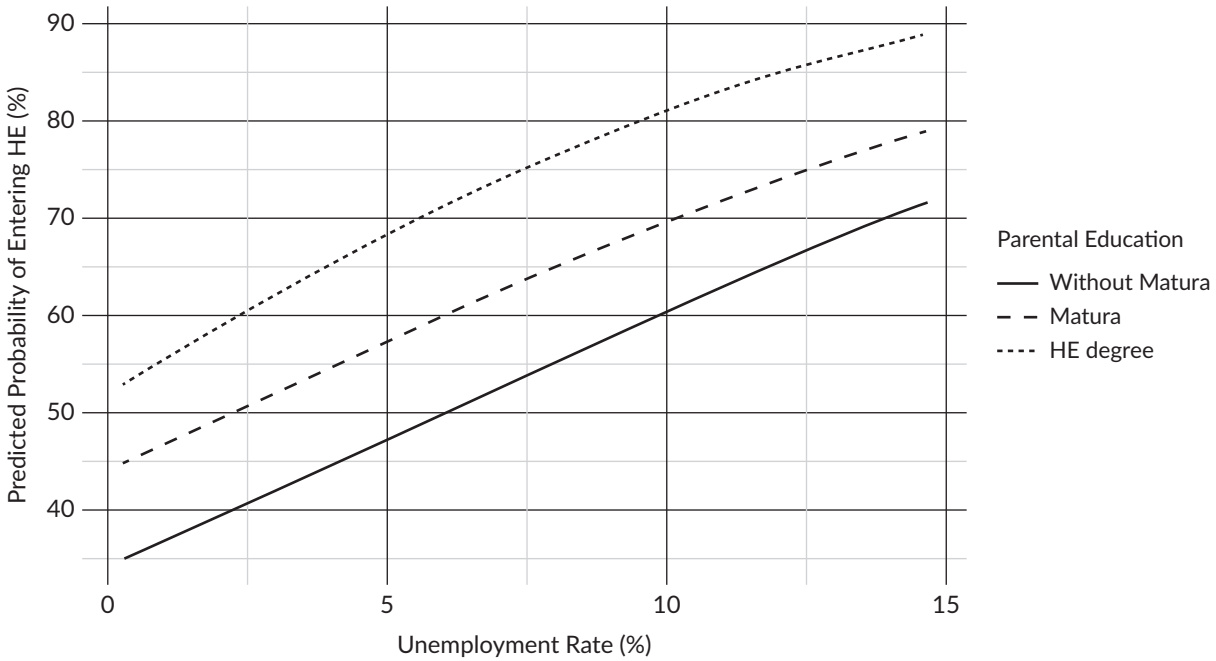

Figure 4. Probability of BHS graduates entering HE by qualification-specific regional unemployment rate and parental education: Interaction effect. Notes: Predicted values calculated by model (3).

6. Discussion

Our findings confirm that qualification-specific regional unemployment rates significantly influence the decision of BHS graduates to pursue HE. Graduates facing difficult labour market prospects with their educational qualification in their home region are more likely to enrol in HE. This empirical pattern is theoretically consistent with rational action theories, which posit that reduced opportunity costs increase the likelihood of educational investment (e.g., Hillmert & Jacob, 2003). However, regarding opportunity structures, our analysis is limited to the qualification-specific regional unemployment rates. Characteristics such as gender and parental education are controlled for, but expected lifetime income or the probability of graduating from HE could not be included due to data limitations. Future research could further explore whether forgoing HE in favour of immediate employment has lasting effects on career development and social mobility. Another limitation of our study is that its perspective is focused purely on the labour market, excluding most non-labour market-related factors that influence enrolment in HE (except for the control variables).

Our analysis shows a discernible impact of parental education on the transition of BHS graduates to HE in Austria. However, once this obstacle has been overcome, the chances of success in HE (Posch et al., 2021) and the chances of success of HE graduates entering the labour market (Binder, 2024) are rather similar, regardless of parental education. One possible explanation for the strong social origin effect on HE enrolment among BHS graduates could be their labour market prospects. Nevertheless, our analysis suggests that, while qualification-specific regional unemployment rates are a crucial factor, they do not exacerbate the social disparities observed in HE enrolment. Both BHS graduates with high and low parental education are similarly influenced by the labour market demand for their qualifications when deciding whether to enter HE. This finding is theoretically interesting, as it challenges the "diversion thesis" (R. Becker

& Hecken, 2009; Müller & Pollak, 2007), which posits that graduates from less educated backgrounds are more likely to be diverted from further academic education because they evaluate costs and benefits more pessimistically and apply shorter time horizons in their decision making.

Focusing on BHS graduates and qualification-specific regional unemployment rates, the present study adds another perspective on the interaction between social origin and labour market perspectives, which has been focused mainly on economic cycles thus far (Alessandrini, 2018; Berggren, 2006; Sievertsen, 2016; Tumino & Taylor, 2015). However, unobserved characteristics of graduates that vary by parental education may conceal significant differences. In particular, it is unclear how students select themselves into BHS and whether the mechanisms by which they do so differ according to their parents' level of education. The fact that BHS graduates are selected based on their choice of BHS and dropout rates during their schooling may influence their subsequent transition into HE and how easily they are deterred by the labour market. The strong effects of parental education may be attributed to other mechanisms. These include unobserved variation in academic performance beyond our three-category measure of *Matura* success, motives of status maintenance, varying degrees of risk aversion (e.g., Breen & Goldthorpe, 1997), and mechanisms related to cultural capital and habitus (Bourdieu & Passeron, 1990). Such mechanisms, which have been repeatedly confirmed (e.g., Puzić et al., 2022), are crucial to consider when striving for greater social equality regarding access to HE. At this point, the effect of different labour market prospects can be considered to be negligible, at least for BHS graduates in Austria.

Future research should investigate how current findings can be applied to other national contexts through comparative studies. Institutional frameworks, such as Austria's study grant system for adults returning to education and the role of vocational qualifications as a "safety net" when dropping out of HE (Scholten & Tieben, 2017; Zucha et al., 2024, p. 127), may shape not only access and dropout patterns in HE but also influence students' motivations for enrolling. In this context, it would be valuable to explore whether individuals whose decision is driven by reduced opportunity costs differ in academic outcomes from those motivated intrinsically. So far, findings on the effect of economic cycles on the dropout rates of students who otherwise would not enter HE are mixed (Bičáková et al., 2021; Reiling & Strøm, 2015).

7. Conclusion

In the pursuit of making access to HE more inclusive, vocational schools can play a significant role (e.g., Bernhard, 2017). In this regard, Austria is an interesting example in which BHS constitute an established gateway to HE, occupying an intermediate position between the dual apprenticeship system, which typically leads directly into the labour market, and AHS, after which most graduates pursue HE. BHS occupy a somewhat ambivalent position in Austria in the context of HE, as they offer a combination of vocational and general education, with graduates enjoying favourable labour market prospects as well as access to all HE sectors. The objective of this study was to investigate the impact of labour market perspectives, particularly the qualification-specific regional unemployment rates, on the decision of BHS graduates to pursue HE. Recent studies have shown that the likelihood of enrolling in HE is higher during economic downturns and for those from economically deprived regions (e.g., Hartung & Weßling, 2025; Meschi et al., 2019; Sievertsen, 2016; Witteveen, 2021). The present study contributes to the literature by focusing on secondary school graduates with vocational qualifications (BHS) and the specific labour markets for their qualification, thus highlighting the importance of the field of education. Our findings indicate that

immediate labour market opportunities exert a considerable influence on the decision of BHS graduates to pursue HE.

While BHS are an important pathway for many students with parents without an academic background, parental education is a crucial factor for entering HE among BHS graduates, with those whose parents have a lower level of education entering HE with a lower probability. The "diversion thesis" suggests that the deterring effect of the labour market could be an explanation for the lower transition rates of BHS graduates from lower socio-economic backgrounds (e.g., R. Becker & Hecken, 2009; Müller & Pollak, 2007). However, the findings of this study illustrate that for BHS graduates, the effect of good labour market perspectives is consistent across parental education levels.

From a systemic perspective, this sensitivity of BHS graduates to labour market prospects has important implications. If the skills acquired at a BHS are urgently required by the labour market, they can be deployed immediately with higher remuneration. Conversely, if there is no immediate demand for such skills, the BHS *Matura* provides the opportunity to attain a higher qualification, thereby reducing the risk of a high number of unemployed BHS graduates. However, this should not distract from the necessity of setting policy goals and taking action in reaching these goals regarding HE participation and social equity. This can be achieved by finding a balance between the potential divergence of goals, such as the enhancement of tertiary attainment rates in a nation and meeting immediate labour market demand for skilled workers. Should a greater number of students be desired, this objective could be realised through the implementation of early academic orientation at BHS and the enhancement of communication regarding the long-term benefits of tertiary education. From an institutional perspective, the flexibility of BHS graduates is advantageous for employers, but makes it difficult for HE institutions to plan their resources. In the case of Austria, funding of public universities and universities of applied sciences is directly related to the number of students. As changes in labour market conditions affect enrolment decisions, HE institutions face uncertainty regarding the number of BHS graduates who will enter tertiary education in the following year. This uncertainty is particularly relevant in disciplines without entrance examinations, which is the case for many degree programmes at Austrian public universities. From an individual perspective, having the possibility to choose between two viable options is a valuable resource for those who manage to graduate from a BHS.

Many of these implications may also be relevant to policymakers in other countries that have or are planning to introduce routes into HE for vocationally trained students. Our analysis showed that access to HE is not just a question of formal qualifications but is significantly influenced by contextual opportunity structures. In particular, favourable labour market conditions may lead vocationally qualified graduates to choose not to pursue HE, even when access is fully granted. While the ideal transition rate from such schools to HE depends on the specific education and vocational training systems of each country, Austrian BHS serve as an example of schools that prepare their graduates well for both HE and direct entry into the labour market. The design and evaluation of such transition pathways must take into account that labour market prospects influence the likelihood of enrolment in HE. Hence, in order to meet both the labour market demands and the qualification requirements of HE institutions, it is crucial to find the right balance between general and vocational education in schools such as BHS.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

The data used in this article are register-based microdata provided by Statistics Austria and accessed through the Austrian Micro Data Center (AMDC). Due to legal and privacy restrictions, these data are not publicly available. The AMDC provides microdata for accredited research institutions via remote access. More information about the AMDC and access conditions can be found in Fuchs et al. (2024) and on the website of Statistics Austria: https://www.statistik.at/en/services/tools/services/center-for-science/austrian-micro-data-center-amdc (last accessed on 25.6.2025). Information about the database on unemployment rates by district and field of education can be found in Vogtenhuber et al. (2024). Requests for access to this database should be directed to the authors of the aforementioned report.

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The AI tools DeepL and ChatGPT were used to implement improvements in grammar and style.

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Vocational Pathways to Higher Education: Real or False Chances?

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Abstract

In this study, we examine whether vocational pathways to a higher education entrance certificate (HEEC) via upper secondary vocational schools lead to wages in the first five years of the occupational career that are comparable to the wages achieved after following the "royal roads" in general education, which lead directly to HEEC. We derive hypotheses on wage differences and the reasons for these differences from classical labour market theories such as human capital theory and labour queue theory, which we test using the German NEPS-SC6-ADIAB study with 1,256 male and 1,197 female employees. Applying multilevel regression analyses and Kitagawa-Blinder-Oaxaca decomposition analyses, we find that graduates from direct pathways earn between 12% (men) and 18% (women) higher wages than graduates from vocational pathways to HEEC. For both men and women, these lower wage levels for the members of the latter group are first of all due to the lower level of their further educational attainments (vocational training/university [of applied science] degree) and school-related competencies. Furthermore, female graduates from vocational pathways are more likely to be overqualified for their jobs and have less access to better-paying "closed" occupations than graduates from direct pathways. We conclude that vocational pathways to HEEC cannot fully compensate for disadvantages in labour market opportunities that arise due to an early stratified educational system, and the extent to which they can be compensated is not the same for men and women.

Keywords

occupational career; returns to education; upper secondary education; vocational schools

1. Introduction

There is some evidence that the earlier general education academic tracks—which lead directly to a higher education entrance certificate (HEEC)—are separated from non-academic tracks, the larger the differences

between graduates from different tracks in labour market returns (Bol & van de Werfhorst, 2013; Brunello & Cecci, 2007; van de Werfhorst, 2021). However, early stratified systems often open up in upper secondary education and offer vocational pathways to HEEC via vocational schools at the upper secondary level (European Commission, 2017). Students who leave lower secondary education with a qualification below the HEEC level are thus given a "second chance" to obtain a HEEC and improve their future labour market opportunities. The results of Dustmann et al. (2017) indicate that vocational pathways may help to compensate for the disadvantages of early stratification and therefore represent a "real" (and not a "false") second chance (Inbar, 1995).

In many countries, both vocational and academic educational pathways lead to HEEC. Although educational systems differ between countries, professional pathways have in common that they provide vocational knowledge, whereas academic pathways do not. A look at the international findings shows heterogenous results (for England see Capsada-Munsech & Boliver, 2021; for England and Denmark see Birkelund et al., 2021; for Finland see Heiskala et al., 2021; for Germany see Schuchart & Schimke, 2019). Against this background, in this article, we systematically compare the labour market returns of direct and vocational pathways to HEEC by examining differences in hourly wage returns to different pathways. Although recently, scholars have paid more attention to the returns of different pathways to HEEC, most of the relevant studies compare graduates with a HEEC from different pathways with graduates without a HEEC (for Great Britain see Birkelund et al., 2021; Capsada-Munsech & Boliver, 2021; Heiskala et al., 2021; Sullivan et al., 2018). Therefore, findings mostly indicate that achieving a HEEC is more rewarding than foregoing it. Only a few studies compare different pathways to obtaining a HEEC (Capsada-Munsech & Boliver, 2021; Heiskala et al., 2021; Schuchart & Schimke, 2019), and it remains unclear whether they have an impact on earnings—and, if so, to what extent.

Graduates from vocational pathways to a HEEC are less likely to enter higher education (for the case of Germany see Spangenberg & Quast, 2023) and, if they do, they are more likely to drop out before graduation (for Germany see Müller & Schneider, 2013; for Italy see Cannistrà et al., 2022). However, studies that use characteristics of further educational attainment such as a higher education degree as an explanatory variable (Capsada-Munsech & Boliver, 2021; Heiskala et al., 2021) do not identify whether the existence or non-existence of a higher education degree explains income differences between graduates from direct and vocational pathways to HEEC. By applying Kitagawa-Blinder-Oaxaca decomposition analyses, we aim to examine the extent to which differences between graduates from vocational and academic pathways to HEEC can be accounted for by further educational attainment.

Finally, even if controlling for selectivity and further educational attainment, wage differences between graduates from different pathways seem still to exist (for the case of women see Capsada-Munsech & Boliver, 2021; Heiskala et al., 2021; Schuchart & Schimke, 2019) and have not been explained by recent studies. Therefore, we aim to go beyond this and consider further explanatory factors, namely two signalling mechanisms: We suggest that the risk of overqualification and the access to highly attractive occupations can vary by pathway to HEEC, keeping selectivity characteristics and further educational attainment constant.

We use the example of Germany, where the educational system is an "archetype" (Schindler, 2017) of an early stratified system at the lower secondary level I (see Figure 1). After primary school, pupils are sorted into academic tracks leading directly to the HEEC (*Abitur*)—for example, at a *Gymnasium*—and non-academic

tracks, which do not lead directly to the HEEC—for example at a *Realschule*/*Hauptschule*. However, the non-academic tracks are not a dead end, and after graduation, pupils can, for instance, enter upper secondary education at a vocationally-oriented school, choosing a two-year (e.g., *Fachoberschule*) or a three-year (e.g., *berufliches Gymnasium*) "alternative" pathway to the HEEC (*Abitur* or *Fachhochschulreife*; see Figure 1 and, for a more detailed description, Section 2.1). Our study focuses on the general question of the extent to which the disadvantages of early stratification can be compensated for by offering vocational pathways to obtaining a HEEC.

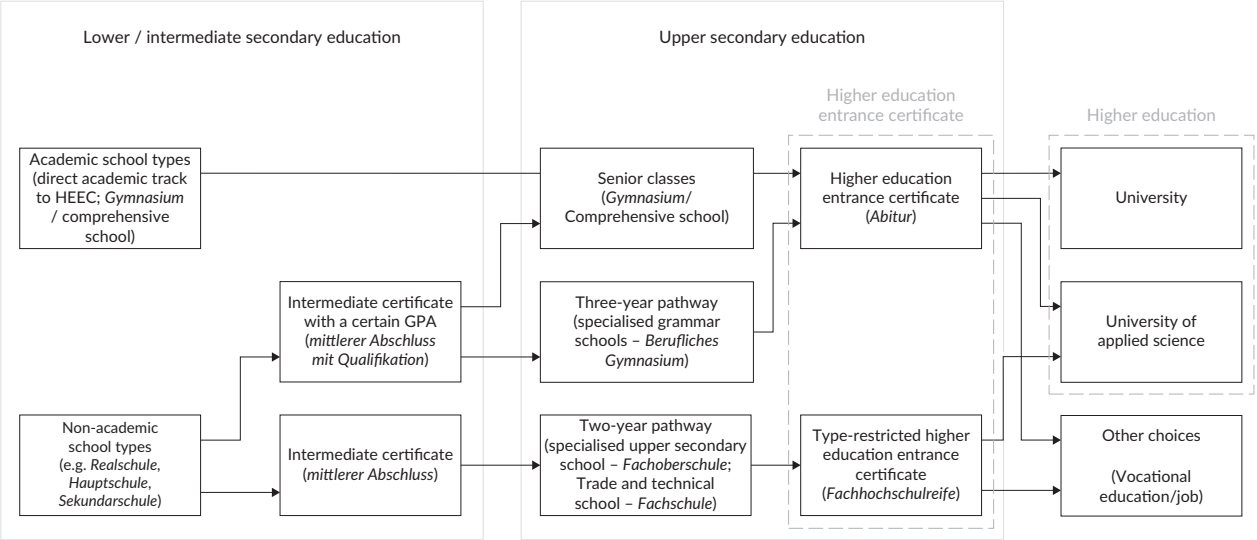

Figure 1. Pathways to the higher education entrance certificate. Notes: For ease of understanding, this is a simplified presentation and some Federal states may deviate from it; not all possible pathways are depicted here; three-year and two-year pathways are referred to as "alternative pathways to HEEC."

2. Empirical and Theoretical Background

2.1. Direct and Alternative Pathways to HEEC in Germany

In Germany, alternative pathways to the HEEC (*Abitur* and *Fachhochschulreife*) at vocationally-oriented upper secondary schools are of utmost importance. In 2022, 13% of all HEECs were awarded in three-year vocational pathways to higher education, 25% in two-year vocational pathways to higher education, and 62% in direct (general education) pathways to higher education, mostly at Gymnasium and Gesamtschule (Statistisches Bundesamt, 2023a, 2023b). In the following, we focus on alternative pathways at vocationally-oriented schools, where the majority of programmes that lead to a HEEC teach general knowledge as well as basic vocational knowledge. Only a small minority of the programmes award a HEEC in addition to a vocational qualification.

Pupils who graduate from non-academic school types in intermediate secondary education with a certain grade-point average can follow a three-year pathway at a vocationally-oriented school that leads to a general HEEC for universities and universities of applied sciences (see Figure 1). Graduates with the same qualification but a lower grade-point average can follow a two-year pathway at a vocationally-oriented school that leads to a HEEC for a university of applied sciences. Subsequently, both groups can enter higher

education or take a VET (vocational education and training) course. To ensure nationwide recognition of both a general HEEC and a HEEC to study at a university of applied sciences, there are various agreements between the ministers of education and cultural affairs of the federal states on the general curricular requirements (Kultusministerkonferenz, 2001, 2006). However, there are qualitative differences between the different pathways to the HEEC. The curricular requirements for a HEEC in direct academic and three-year alternative pathways to a general HEEC are comparable, and students have to take central exams at the end of the programme. Nevertheless, performance studies show clear differences in mathematics, sciences, and English in favour of the direct academic pathway (e.g., Leucht et al., 2016). Pathways to eligibility in a university of applied sciences take two years, of which a considerable part must be devoted to practical work, and there are no central exams (Schuchart, 2013). Graduates from these pathways show weaker academic performance than graduates from both academic and three-year alternative pathways (Schuchart & Schimke, 2019).

2.2. Empirical Research

Previous research has repeatedly shown that the higher the level of educational attainment, the better the returns (Heckman et al., 2016; Manzoni et al., 2014; OECD, 2014). Regarding school types in upper secondary education, Capsada-Munsech and Boliver (2021) find differences in favour of academic school types compared to vocational school types in weekly income among 25-year-old adults in raw models without covariates. The results of Heiskala et al. (2021) support this finding for the probability of being employed in the service class between 30-year-old graduates from different upper secondary tracks (for Denmark see Birkelund et al., 2021; for Germany see Schuchart & Schimke, 2019).

2.3. Theoretical Explanations of Wage Gaps Between Graduates From Different Pathways to a HEEC

Some attention has been devoted to a systematic explanation of the impact that horizontal characteristics have on labour market outcomes. Gerber and Cheung (2008) highlight four mediating mechanisms: Institutions may be successful, to a different extent, in (a) increasing the productivity of their students (human capital), (b) endowing them with social capital, (c) signalling better productivity to employers (signalling effects), and (d) attracting more able students (selectivity). Selectivity is of great importance, as pupils choose the pathway to the HEEC after lower secondary education based on their performance, interests, and career aspirations. However, in this article, we are interested in the effects that are generated by characteristics of the vocational pathways themselves and, for this reason, we treat selectivity as a methodological problem and not as an *explanans*. Against the background of the predominantly public character of the German educational system, we assume that social capital built up in upper secondary education is of negligible significance for labour market returns. In the following, we focus on the remaining mechanisms productivity and signalling.

2.3.1. Productivity

Education acquired within the pathways to a HEEC can be understood as human capital because it leads to skills and competences relevant to future professional productivity, and this is associated with income (Becker, 1975; Mincer, 1958, 1974). There are reasons to assume that graduates from different pathways to the HEEC differ in their relevant characteristics even if selectivity is held constant. One of the most important reasons for this is further educational attainment: Graduates from vocational pathways to a HEEC

are less likely to enter higher education than graduates from direct pathways to a HEEC (Spangenberg & Quast, 2023). This is particularly true for graduates from two-year vocational schools, of whom only about 50% enter higher education, compared to about 80% that come from specialised grammar schools and direct pathways. There may be a number of reasons for this; for example, graduates from two-year pathways acquire less knowledge than graduates from other pathways due to the shorter length of their course. Furthermore, the level of academic performance is lower among students of vocational pathways to a HEEC compared to students of direct pathways to higher education (Leucht et al., 2016; Rahn & Fuhrmann, 2023), and the former may feel academically less prepared to enter higher education. Students of vocational pathways to a HEEC receive less encouragement and support from their teachers to achieve a university degree instead of a vocational training qualification (Bittmann & Schindler, 2021; Dörffer & Bernhard, 2025; Schuchart, 2019, 2025) and they are less motivated to enter higher education (Schuchart & Schimke, 2022). Furthermore, even if graduates from vocational pathways enter higher education, they are more likely to drop out than graduates from direct pathways (Cannistrà et al., 2022; Herbaut, 2022; Müller & Schneider, 2013). Finally, two-year vocational schools lead to eligibility into universities of applied sciences and thus to a limited range of high-status professions.

2.3.2. Signalling

Thurow (1975) argues that wages are not paid for individual productivity but for jobs. Employees must be trained on the job to achieve the productivity required for their job. It is assumed that the higher the level of academic and vocational education achieved, the higher the degree of trainability and the lower the training costs for the employer. Other education-related characteristics such as the pathway via which the qualification was achieved can also serve as a signal. Two mechanisms can be derived from signalling theory that may be relevant for wage differences between the different pathways to a HEEC.

2.3.2.1. Access to Attractive ("Closed") Jobs

Employers rank applicants according to their educational (and other) characteristics in a labour queue, which they match to a queue of vacant jobs in which the best job with the highest requirements and the highest rewards is at the top. Access to advantageous jobs depends not only on an applicant's qualifications but also on the supply of applicants with the same qualifications. Education is, therefore, a "positional good" (Hirsch, 1977; Ultee, 1980), because an applicant's position in the labour queue is pivotal. If there are many applicants with the same academic and vocational qualification—a situation to which the establishment of vocational pathways to a HEEC has contributed (Schindler, 2017)—more differentiated signals of trainability, such as the pathway to a HEEC, are taken into consideration in the choice of suitable candidates.

Labour queues can be reduced by setting qualification requirements that exclude all candidates who are not adequately qualified (van de Werfhorst, 2011, p. 543; see also Bol & Weeden, 2015; Weeden, 2002). This so-called "occupational closure" is associated with higher earnings, job security, and career options than less closed occupations (Bol & Weeden, 2015; Giesecke et al., 2020; Weeden, 2002). These assumptions are derived from closure theory, and we use them within the framework of labour-queue theory. According to Giesecke et al. (2020, p. 164), it is particularly employees at the beginning of their career who benefit from the exclusion of competitors from closed occupations. Employers have to assess which applicants are best trained to fill a vacant position effectively and efficiently (Giesecke et al., 2020). If two or more equally

qualified candidates apply for a position, applicants are ranked by employers in a queue according to their assumed future performance (Sørensen, 1983). Even given the same educational qualifications, employers could expect less productivity from graduates from vocational pathways to a HEEC because their level of academic performance is lower than that of graduates from grammar school (Leucht et al., 2016), and because pathways from vocational schools do not have the same prestige as direct pathways.

2.3.2.2. Overqualification

A mechanism that also results from the assumption of "education as a positional good" is that employers always prefer applicants with the highest level of schooling over applicants with lower levels, even if a lower level of education would be sufficient (Thurow, 1975; van de Werfhorst, 2011). The selection of high performers who can deal with unfamiliar tasks is particularly important in light of the assumption that wages are paid for jobs and not for individuals. Hence, some applicants have to do jobs for which they are overqualified, and this is associated with a wage penalty in comparison with employees who are more closely matched to their jobs (see Kracke et al., 2018; Leuven & Oosterbeek, 2011).

2.4. Summary and Research Hypotheses

2.4.1. Income Differences According to Pathway

There are reasons to assume that graduates from different pathways to HEEC differ in characteristics relevant to the labour market. First of all, performance requirements are less demanding in two-year pathways than in the other pathways, and individuals may be less motivated to achieve higher levels of further educational attainment (for instance, a university degree instead of a vocational training qualification). Furthermore, since the duration of schooling is shorter for the two-year pathway than for both the three-year pathway and the direct pathway, they acquire fewer cognitive skills than graduates from these other programmes. Direct academic as well as three-year pathways formally have the same academic requirements and lead to the same qualification in the same amount of time (Kultusministerkonferenz, 2001, 2006), whereas two-year pathways lead to eligibility for universities of applied sciences and thus to a limited range of high-status professions. Therefore, classical human capital theory would conclude that there are no differences in initial wages between graduates from three-year alternative and direct academic pathways but lower wages for graduates from two-year pathways (hypothesis 1). However, job competition theory suggests that graduates from direct pathways who apply for a job may signal higher trainability or better future performance than graduates from three-year alternative pathways for the following reasons: They have already performed better than others in primary school and, compared to graduates from alternative pathways, their academic performance level is higher (Leucht et al., 2016). Compared to the three-year alternative pathway, the two-year pathway leads not only to a reduced range of occupational options but also signals lower trainability or future performance for the reasons mentioned above. Therefore, job candidates should be positioned differently in the labour queue according to their pathway to HEEC, and hypothesis 2 is therefore that wages at the beginning of an individual's career should be highest for graduates from an academic pathway, lower for graduates from the three-year alternative pathway, and lowest for graduates from the two-year alternative pathway to HEEC.

2.4.2. Explanations for Income Differences According to Pathway

Following human capital theory, differences in overall educational attainment and school-related cognitive skills should explain differences at the beginning of a career (hypothesis 3). According to job competition theory, higher levels of further educational attainment signal better trainability. This theory additionally predicts that wage differences between graduates from different pathways to a HEEC could at least partly be explained by the fact that access to closed and highly attractive occupations should vary according to the pathway (hypothesis 4). Furthermore, since graduates with formally equal qualifications from different pathways are placed in the labour queue in a hierarchy, the risk of overqualification may be systematically related to the pathway to HEEC, and this could explain wage differences (hypothesis 5).

3. Methods

3.1. Data

3.1.1. Survey Information

The data used in this article are a combined set from the Institute for Employment Research (IAB) and the Leibniz Institute for Educational Trajectories (LIfBi), and they are referred to by the abbreviation NEPS-SC6-ADIAB (Bachbauer et al., 2022). They combine individual longitudinal administrative data from contributions to unemployment insurance since 1975 and diverse information on dependent employees including gross earnings with survey data from the German National Educational Panel Study (NEPS; see Antoni et al., 2018a, 2018b). The NEPS is a representative panel survey of Germany inhabitants born between 1944 and 1986 (Blossfeld et al., 2011). One major advantage of this combined dataset is the income data from the administrative source, which are more reliable than self-reports in surveys (Antoni et al., 2019).

3.1.2. Sample Selection

The education system in East and West Germany has been harmonised since 1990. We restricted the data to observations from 1992 onwards since administrative data for respondents working in East Germany were only available from that year on. After combining the administrative and survey datasets and further restricting them to individuals with a HEEC, our sample consists of 1,256 male and 1,197 female employees. Since the impact of educational characteristics on wages is strongest at the beginning of an individual's career (Manzoni et al., 2014), we focus on wages in the first five years after labour market entry. This final restriction results in a total number of person-month observations of 42,742 male and 39,448 female employees between 1992 and 2018.

3.2. Variables

Table A1 in the Supplementary File includes detailed information on the operationalisation of all the variables and sample distributions. Table A2 in the Supplementary File shows the distribution of independent variables in the subsamples of men and women according to their pathway to a HEEC.

3.2.1. Dependent Variables

The respondents' earnings in the administrative dataset are reported on an annual basis, but the measurement itself is a daily wage (a so-called *Tagesentgelt*). To connect the two data sources without gaps, the data are compiled on a monthly basis. Additionally, we used the NEPS survey information on contractually agreed working hours per week to construct the hourly wages and calculated the natural logarithm afterwards.

3.2.2. Independent Variables

Our central independent variable is the educational pathway to HEEC (see also Figure 1). This information is taken from the NEPS, where educational biographies are captured in detail. We differentiate between respondents who graduated from (a) direct academic, (b) three-year vocational, and (c) two-year vocational pathways.

3.2.2.1. Attainment and Indicators of School-Related Skills

Information on further professional qualifications is based on the highest value of the CASMIN classification (Braun & Müller, 1997). We distinguish between those with a vocational training qualification, those with a degree from a university of applied sciences, and those with a university degree (Figure 1).

As further school-related characteristics, we use the self-reported final grades on the HEEC and from the highest educational attainment. School-related cognitive skills represent another source of productivity, trainability, or future performance influenced by schooling (Anghel & Balart, 2017; Hanushek et al., 2015). We use a total of six variables that focus on different performance indicators (Fuß et al., 2016). These are mathematical, scientific, and reading competences, as well as reading speed, receptive vocabulary, and ICT literacy.

3.2.2.2. Access to Closed Occupations

The measurement of "closed occupations" that indicates good working conditions is based on external data from the BIBB/BAuA Employment Surveys (1991–1992, 1998–1999, 2006, 2012, 2018), which are representative cross-sectional surveys covering all German employees who are at least 15 years old and work at least 10 hours a week (for an overview see Rohrbach-Schmidt & Hall, 2020). This database is used to calculate the proportion of employees in a certain occupational group who have the same qualifications. Unfortunately, the classification of these occupational groups is not the same in all the surveys between 1991–1992 and 2018. In order to achieve compatibility between the datasets, we had to use the lowest common denominator of the KldB 1992 at its 2-digit level (the KldB 1992 differentiates between occupations on a four-digit level (Statistisches Bundesamt, 1992). As a result, information on the proportion of employees with a certain qualification is provided for 70 occupational groups. To ensure complete matching to the historical time of the processed NEPS-SC6-ADIAB source, data on the time between the BIBB/BauA Employment Surveys is obtained by linear extrapolation.

3.2.2.3. Overqualification

The measurement of overqualification is based on a combination of objective measurements and indirect self-assessments. With this approach, we aimed to overcome the drawbacks that arise if either only one measurement or the other is used and to combine their advantages (Hartog, 2000, p. 132; Kracke et al., 2018). Self-assessments compare information from formal qualifications with the subjective assessment of the qualification required to perform the job (Verhaest & Omey, 2006), whereas objective measurements use the requirement level of the job performed, which is coded in the fifth digit of the KldB 2010 (Federal Employment Agency, 2011). If the formal qualification exceeds the requirements to perform the job, the employee is considered overqualified. By combining the two measurements, we obtain three categories with corresponding information (adequate qualification, under and overqualification) and a fourth category for which the two indicators did not match (for a comparable operationalisation see Reichelt & Vicari, 2014; Schimke, 2023).

3.2.2.4. Selectivity Indicators

Selectivity is of great importance for access to a pathway to a HEEC: On average, the most able students (in terms of cognitive and non-cognitive presuppositions and skills) are admitted to the academic track after primary school. Less able students are selected for non-academic school types; if they graduate with an intermediate certificate, and depending on their GPA, they can follow one of the vocational pathways into a HEEC (see Figure 1). Therefore, differences in cognitive and non-cognitive prerequisites regulate the selection into different pathways to a HEEC in upper secondary education, and these differences have an impact on labour market returns (Hanushek et al., 2015).

Since ability was not measured before the choice of an educational pathway, we use variables that are considered to be rather stable over an individual's lifespan (Asendorpf & van Aken, 2003; Roberts & DelVecchio, 2000) and that influence the selection into different school types after primary school as well as the choice of pathway to HEEC in secondary school. These include basic cognitive skills (perceptual speed and reasoning), which are part of the performance assessment in the NEPS (cf. Fuß et al., 2016). Furthermore, personal characteristics such as the highest international socio-economic index of occupational status (HISEI; Ganzeboom & Treiman, 2003) as well as the migration background (respondent and/or parents were not born in Germany) are considered (Buchholz & Schier, 2015; Leucht et al., 2016).

3.2.3. Other Control Variables

In order to prevent the effects of pathways to HEEC from being biased by relevant self-selection decisions or job episode characteristics, we added various control variables to our analyses. The Magnitude Prestige Score of the professional qualification obtained is taken into account as well as labour market experience in months (simple and squared), the number of employment episodes, the occupational job sectors (according to the KldB 2010; see Federal Employment Agency, 2011), and company size. Furthermore, we control for periodic effects by including year dummies in our analyses. We also use firm size as a characteristic of labour market segmentation as it is closely linked to working conditions, wages, and job security (Doeringer & Piore, 1971; Sengenberger, 1987). Large companies tend to have more stable structures, higher wages, and better internal career advancement opportunities than small companies.

3.3. Strategy Analysis

For some of the above theoretical explanations, there are gender differences. Women benefit less than men from higher qualifications, even if they are better qualified (Becker, 1991; Magnusson, 2016; Reshid, 2019). Furthermore, women have less access to closed occupations with attractive working conditions than men (Bol & Weeden, 2015, p. 368) and they are more likely than men to accept overqualification (Addison et al., 2020; Reshid, 2019). It is beyond the scope of this article to test gender differences. However, treating gender merely as a control variable may result in a distorted representation of the effects of different pathways to HEEC on wages. We therefore take gender differences into account by separating the data for males and females into two different samples. All the statistical procedures described in the following were applied to each sample separately.

3.3.1. Multiple Imputation of Missing Data

Item non-response is a problem in all kinds of surveys. Since the missing mechanism of our data is at least MAR (missing at random), multiple imputation is an appropriate technique to deal with these incomplete data in order to avoid inefficient and biased estimations (Rubin, 1987; van Buuren, 2012). Variables were imputed separately for males and females using a fully conditional specification approach and 50 cycles in each sample (see, e.g., van Buuren et al., 2006). An overview of the imputation models and the proportion of missing values for each variable considered can be found in the Supplementary File, Table A3.

3.3.2. Testing Procedures

In our dataset, job episodes are nested in individuals. To test our hypotheses, we have to consider this multilevel structure for all the analyses described in this section. We proceed in several steps. First, we calculate multilevel linear regression models (random intercept models). These analyses are divided into three parts. The first model is bivariate and includes the educational pathways only. With this model, we test hypothesis 1 and 2. In a second model, we only consider selectivity indicators. In a third model, we add our explanatory variables. By calculating this model, our principal aim is to investigate whether our explanatory variables are associated with wages.

In order to test hypotheses 3–5 (whether individual explanatory variables significantly contribute to explaining wage differences by pathways to a HEEC), Kitagawa-Blinder-Oaxaca decompositions are performed separately for each pair of dual comparisons involving the three educational pathways (Blinder, 1973; Oaxaca, 1973) that proved to be significant in the first regression model. These analyses decompose the differences in log wages and split them into an explained part (the result of different endowments) and an unexplained part using the regression coefficients from one pathway as reference. These analyses are calculated using the *oaxaca* module in Stata (Jann, 2008). The nested data structure is taken into account by multilevel model specifications.

4. Results

4.1. Differences Between Pathways

We start with a model for women (Table 1, M1). Women who graduated from direct academic pathways earn 18 percentage points (Calculated by $e^{\beta} - 1$; the percentage points therefore differ slightly from the coefficients in Table 1) more at the beginning of their career than women who graduated from three-year vocational pathways. There are no significant differences between women who graduated from different vocational pathways, despite the one-year difference in the duration of the pathways. The results for men are slightly different (M4). Men who graduated from direct academic pathways earn 12 percentage points more at the beginning of their careers than men who graduated from three-year vocational pathways. Again, there are no significant differences between graduates from three-year or two-year pathways to HEEC. For both men and women, neither the lower wages for women with HEEC from a two-year alternative pathway compared to the other pathways as predicted by human capital theory (hypothesis 1) nor the hierarchical differences predicted by job competition theory (hypothesis 2) could therefore be confirmed fully.

In Models 2 and 5 (Table 1), we look at the effect of selectivity indicators on wages. Due to our sample, which only includes persons who have graduated from pathways to a HEEC, they are of lesser importance for wages. Models 3 and 6 are used to calculate the impact of the various mechanisms discussed in Section 2.2 on wages. For men and women, the wage differences between graduates from vocational and direct pathways to a HEEC are fully explained. Educational attainment is strongly related to wages for both men and women. The higher the level of further educational attainment, the more it is associated with higher wages. Mathematical competence has an additional effect on wages for men. Overqualification leads to a wage penalty of 15 percentage points for women, but it has no significant effect on wages for men. For women, a one-unit increase in the proportion of employees with the same qualification as an indicator for closed occupations is associated with wages that are 40 percentage points higher. However, for men, this proportion has no effect on wages.

4.2. Decomposition Analyses

M1 (Table 1) shows that for women, there is no substantial wage gap between the different vocational pathways. We therefore focus here on the decomposition of wage differences between the direct academic pathway and each of the two vocational pathways (Figures 2a and 2b). Explanations for wage differences can be given for 69% and 96% of these differences, respectively.

Further educational attainment explains a considerable share of the wage gap (19% in Figure 2a and even 49% in Figure 2b). This is exclusively due to the pronounced pathway-specific higher education rates (Supplementary File, Table A4): 57% of graduates from the direct, 40% of graduates from the three-year and only 24% of graduates from the two-year pathway obtained a higher education degree (see Supplementary File, Table A2, university and university of applied sciences). Indicators of school-related skills account for about 20% of the wage differences. In all, hypothesis 3 can be confirmed for both comparisons (Figures 2a and 2b). Access to closed jobs explains 7% (Figure 2a) and 10% (Figure 2b) of the wage differences between graduates from different pathways. This confirms hypothesis 4 for women. The contribution of

Table 1. Random-intercept models for the beginning of occupational careers.

Dependent variable: Log-transformed hourly wages	Women						Men					
	M1		M2		M3		M4		M5		M6	
	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.
Educational path, Ref.: Three-year alternative pathway												
Direct direct pathway	0.181 ***	(0.041)	0.164 ***	(0.042)	0.062	(0.043)	0.116 ***	(0.043)	0.122 **	(0.043)	−0.015	(0.045)
Two-year alternative pathway	0.027	(0.050)	0.044	(0.051)	0.005	(0.049)	−0.090	(0.047)	−0.082	(0.047)	−0.068	(0.049)
Selectivity chartacteristics												
General cognitive skills												
Perceptual speed			0.001	(0.003)	−0.006	(0.003)			−0.009 **	(0.003)	−0.023 ***	(0.004)
Reasoning			0.017	(0.011)	−0.000	(0.011)			0.042 **	(0.014)	0.017	(0.014)
Demographics												
Migration background (1 = *yes*)			0.010	(0.048)	0.015	(0.045)			0.028	(0.049)	0.035	(0.052)
Highest ISEI of parents			0.003 **	(0.001)	0.001	(0.001)			0.001	(0.001)	0.001	(0.001)
Further educational attainment												
Educational attainment, Ref.: Vocational training												
Degree from university of applied sciences					0.148 **	(0.050)					0.239 ***	(0.052)
University degree					0.206 ***	(0.047)					0.315 ***	(0.054)

Table 1. (Cont.) Random-intercept models for the beginning of occupational careers.

Dependent variable: Log-transformed hourly wages	Women						Men					
	M1		M2		M3		M4		M5		M6	
	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.
Indicators of school-related skills												
Final grades												
Highest gen. educational qualification					−0.034	(0.036)					−0.003	(0.043)
Highest voc. educational qualification					−0.006	(0.031)					−0.042	(0.045)
Cognitive skills												
Mathematical competence					0.046	(0.024)					0.066 *	(0.027)
Scientific competence					−0.031	(0.025)					0.017	(0.024)
Reading competence					−0.002	(0.019)					0.025	(0.021)
Reading speed					0.000	(0.003)					0.004	(0.003)
Receptive vocabulary					0.004	(0.004)					0.004	(0.005)
ICT literacy					0.031	(0.026)					−0.041	(0.026)
Variables indicating signaling-mechanisms												
Job matching, Ref.: Adequately employed												
Overqualified					−0.154 *	(0.078)					−0.039	(0.070)
Underqualified					0.023	(0.125)					0.411	(1.298)
Access to closed occupations					0.401 ***	(0.105)					0.026	(0.073)
$N_{individual\text{-}months}$	39,448		39,448		39,448		42,742		42,742		42,742	
$N_{individualss}$	1,197		1,197		1,197		1,256		1,256		1,256	

Notes: * $p < 0.05$; * $p < 0.01$; *** $p < 0.001$; calculations based on multiple imputed datasets ($M = 50$); M2 and M4 were additionally controlled for the highest educational qualification (CASMIN) of the parents; for M3 and M6, further controls were added for period effects by including dummy variables for each year, arbitrary matched, MPS of the obtained professional title, labor market experience (linear & quad.), number of jobs, occupational sector, company size, dummy variable for part-time employment, and dummy variable for West Germany.

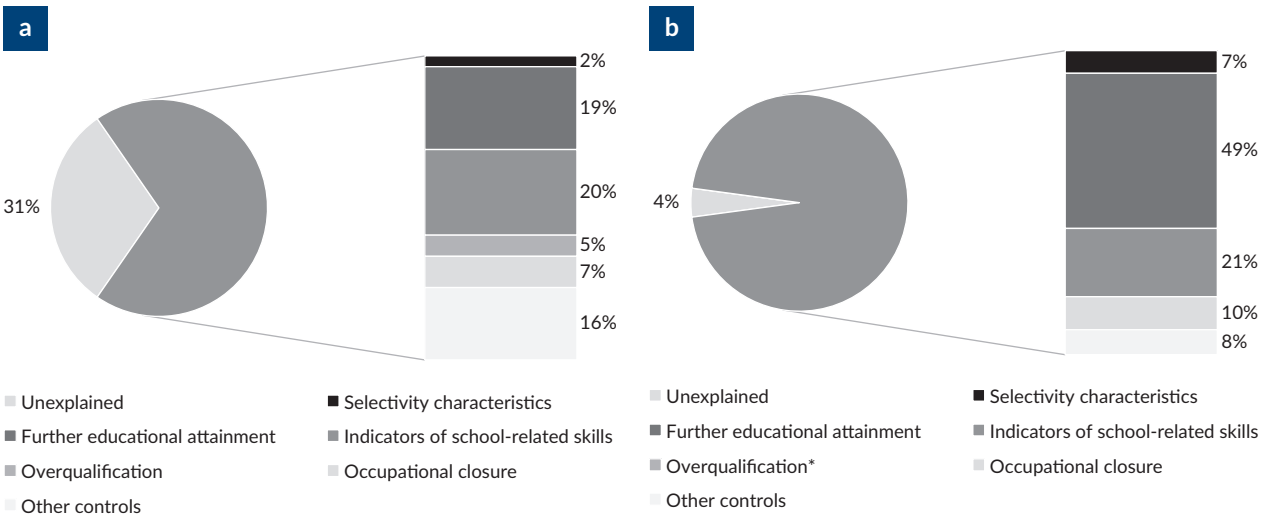

Figure 2. Kitagawa-Oaxaca-Blinder decomposition of wage differentials at the beginning of occupational careers for women: (a) women, direct academic vs. three-year vocational pathway; (b) women, direct academic vs. two-year vocational pathway. Notes: Calculations based on multiple imputed datasets ($M = 50$); detailed results for all variables can be found in the Supplementary File, Table A4; * variables contribution to the explanation of the wage gap is negative.

overqualification to the wage gap is 5% in Figure 2a, but overqualification does not contribute to an explanation of the wage gap between graduates from direct and two-year pathways (Supplementary File, Table A4). Therefore, hypothesis 5 can only be confirmed for the comparison between graduates from direct and three-year vocational pathways.

Since wage differences were observed between male graduates from direct and vocational pathways (Table 1, M4), two decomposition models are performed (Figures 3a and 3b; see also Supplementary File, Table A4, Models 3 and 4). Between 79% and 62% of wage differences can be explained in both models by the characteristics considered. For men, too, the most important explanatory factor is educational attainment and it accounts for 40% and 34% of the gap. Differences in higher education graduation rates are again noteworthy between graduates from different pathways to a HEEC: 75% of graduates from direct pathways, 55% of graduates from three-year vocational pathways, and 42% of graduates from two-year vocational pathways have a higher education degree (Supplementary File, Table A2). Another significant contribution is made by school-related skills, and they again explain about 20% of the wage gap. Hypothesis 3 is therefore supported.

Access to closed occupations explains 1% of the wage gap between graduates from direct and two-year vocational pathways. However, Table A2 in the Supplementary File shows that graduates from two-year pathways are more likely to work in closed occupations than graduates from direct pathways. The explanation for this finding can only be that these two groups of graduates are in different job segments so that high proportions of employees with the same qualifications are not associated with the same income advantages for graduates from two-year pathways as for leavers from three-year educational pathways. Nevertheless, an increase in the access to closed occupations among graduates from two-year pathways would contribute slightly to closing the wage gap. Hypothesis 4 can therefore only be supported for this comparison, whilst access to closed occupations does not contribute to explaining the wage gap between

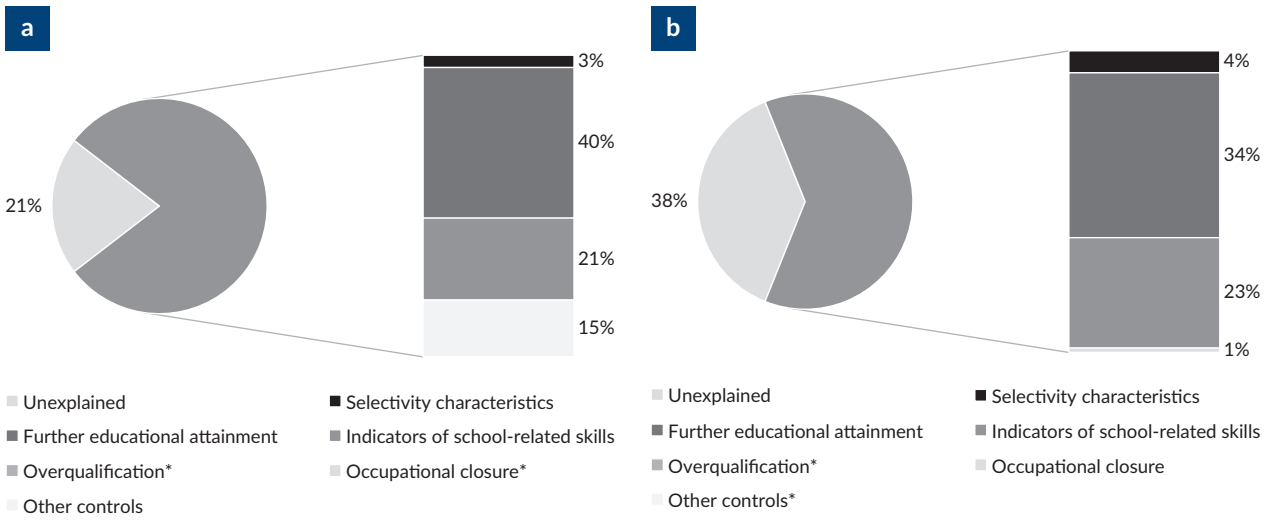

Figure 3. Kitagawa-Oaxaca-Blinder decomposition of wage differentials at the beginning of occupational careers for men: (a) men, direct academic vs. three-year vocational pathway; (b) men, direct academic vs. two-year vocational pathway. Notes: Calculations based on multiple imputed datasets (M = 50); detailed results for all variables can be found in the Supplementary File, Table A4; * variables contribution to the explanation of the wage gap is negative.

graduates from direct and three-year pathways. Overqualification does not contribute to an explanation of the wage gap among men. Therefore, hypothesis 5 cannot be confirmed for men.

5. Summary and Discussion

In this article, we have analysed whether vocational pathways (compared to direct ones) represent a "real" or a "false" second chance (Inbar, 1995) for those who did not take the direct pathway to a HEEC. More precisely, we addressed the question of whether different pathways to a HEEC are associated with different monetary returns and if so, why. The results for the first regression model show significant wage differences for men and women. Graduates from direct pathways to a HEEC have a significantly higher income than graduates from vocational pathways, although there are no differences between graduates from different types of vocational pathway. This finding, in particular, is a somewhat surprising result since the two-year alternative pathway to HEEC is associated with a shorter period of study and eligibility for universities of applied sciences only, which do not offer the most prestigious study programmes. However, the larger curricular share of practical knowledge could turn out to be an important resource, as it brings contacts to the world of employment (Schuchart & Schimke, 2025), which may compensate for the disadvantage of a lower level of general education compared to graduates from three-year alternative pathways early on in individuals' careers. In terms of wages, it therefore does not pay to take the three-year vocational pathway instead of the two-year vocational pathway to a HEEC.

We investigated which mechanisms are related to higher wages for graduates from direct pathways compared to graduates from vocational pathways to the HEEC. The largest share of the wage difference is due to a human capital mechanism, namely further educational attainment (vocational training/university of applied sciences/university) after leaving school and school-related skills. The importance of educational attainment generally supports the findings of studies from different countries (Birkelund et al., 2021;

Sullivan et al., 2018; for higher education see Gerber & Cheung, 2008). Similarly to other studies (Anghel & Balart, 2017; Birkelund et al., 2021; Hanushek et al., 2015), our results show that school-related cognitive skills—in the case of men, mathematical competences—also contribute to an explanation of pathway-specific wages. The mathematical competence measured in NEPS is intended to be realistic, but also to tie in with the PISA measurements (Neumann et al., 2013). It reflects mathematical competence in adulthood, which has developed over the various stages of education and professional requirements. It can be assumed that the acquisition of competences in school forms a basis on which later competences are built and is therefore of particular importance.

Of the remaining mechanisms, overqualification only contributes to an explanation of the wage gap between female graduates from direct and vocational pathways to HEEC. This effect may also be related to self-selection effects (Addison et al., 2020; Reshid, 2019) since women are more likely to accept overqualification for family reasons. However, this should theoretically affect all women and not only those from alternative educational pathways to HEEC. It remains unclear why graduates from three-year pathways are more often overqualified than those from two-year pathways (Supplementary File, Table A2).

We found heterogeneous results for closure. For women, working in more closed occupations is associated with higher wages and graduates from direct academic pathways are more likely to be employed in more closed occupations than graduates from vocational pathways (Supplementary File, Table A2). The effect is substantial. For men, we find that access to closed jobs makes only a minor contribution towards explaining the wage gap between graduates from direct and two-year pathways. Furthermore, although graduates from three-year vocational pathways are more likely to be employed in jobs characterised by closure compared to graduates from direct pathways (Supplementary File, Table A2), this difference does not help to explain the wage gap. This does not correspond to a recent finding by Giesecke et al. (2020) on the relationship between closure and wages in the German labour market. However, unlike us, they used a categorical measurement of closure (Giesecke et al., 2020, p. 168) and a much more heterogeneous dataset including persons without HEEC. Further analyses of occupational closure in our subsample of men showed that occupations characterised by closure were more likely to be found in production professions, which were more likely to be chosen by graduates from vocational pathways than by graduates from direct pathways to HEEC. Therefore, in this subsample of men, jobs characterised by closure meant a greater disadvantage than an advantage in terms of income.

However, we have found an explanatory contribution for other labour market characteristics, namely for firm size, which can be seen as an indicator of labour market segmentation. Although we have not theoretically drawn on segmentation theory (Doeringer & Piore, 1971; Sengenberger, 1987), our findings suggest that wage differences between the direct academic and vocational pathways may partly result from selection into internal labour market segments. Both women and men from direct academic pathways are more likely to work in larger companies, and the detailed decomposition results indicate that this partly explains the wage differences (Supplementary File, Table A4). This could indicate that, all other things being equal, graduates from direct academic pathways have better access to larger companies with favourable internal labour markets.

As already mentioned, our data suffer from some limitations. Bias due to the omission of variables is a (potentially) common problem in all kinds of non-experimental studies, including ours. Since we are particularly interested in wage differentials that depend on educational pathways, the independent variable

of interest is time-constant in the period under review. That makes it impossible to eliminate the problem of time-constant, unobserved heterogeneity by time-demeaning our panel data (see, e.g., Andreß et al., 2013). However, the database does enable us to control for a variety of skill-related variables that are correlated with educational pathways as well as earnings. This should at least reduce the potential bias by a substantial amount. Another issue arises from the cross-sectional measurements of these cognitive and non-cognitive skills. These variables stem from a survey that was conducted while the respondents were already being observed in the labour market. We cannot therefore exclude potential problems from reversed causality, according to which individuals in challenging and thus well-paid employment could be more likely, for example, to have good ICT literacy skills *because* of their jobs and not vice versa. The problem of adequately controlling for selectivity with the longitudinal data used in this study is very likely a reason for the unexplained proportions in the decomposition analyses.

6. Conclusion

The wage differences between graduates from academic and vocational pathways can for both men and women mostly be explained by differences in further educational attainments and school-related skills that have been acquired. In Germany, VET graduates earn less over their entire lifespan than university graduates (Autor:innengruppe Bildungsberichterstattung, 2024). If we only take the income perspective, we come to the conclusion that HEEC graduates should use their HEEC to enter higher education. Our theoretical explanations focused primarily on external selection as a possible reason for wage gaps between graduates of different paths to the HEEC. However, our data is not suitable for distinguishing between external and self-selection. It remains therefore unclear whether graduates from vocational pathways to the HEEC have, for example, a lower expectation of success and therefore enter higher education less often.

In addition to further educational attainment, school-related cognitive skills were important for explaining wage gaps. However, two-year pathways to HEEC do not particularly focus on preparing for higher education (Dörffer & Bernhard, 2025; Schuchart, 2025). The teaching of skills that a person needs in order to be successful in higher education is given less weight in vocational schools than in grammar schools (Dörffer & Bernhard, 2025) and, in these pathways, the intention to study decreases during upper secondary education (Holm et al., 2013; Schuchart & Schimke, 2022). Significant efforts should therefore be made to establish “university readiness” as a clear goal in vocational pathways to a HEEC so that graduates of vocational pathways feel able to meet the requirements of university.

We can thus conclude that vocational pathways to HEEC may well be “real chances,” since they are ways to reduce disadvantages in labour market opportunities that arise due to the early stratification of the educational system. However, the advantages of the “royal road to HEEC” cannot be fully compensated for, and the extent to which it can be compensated for is not the same for every subgroup. Future studies should investigate in more detail the conditions under which students of vocational pathways to the HEEC make their educational decisions for subsequent educational steps.

Conflict of Interests

The author declares no conflict of interests. In this article, editorial decisions were undertaken by Ulf R. Hedetoft (University of Copenhagen, Denmark).

Data Availability

The data used in this article are a combined set from the Institute for Employment Research (IAB) and the Leibniz Institute for Educational Trajectories (LIfBi), and they are referred to by the abbreviation NEPS-SC6-ADIAB (https://doi.org/10.5164/IAB.NEPS-SC6-ADIAB7515.de.en.v1; see also Bachbauer et al., 2022). Due to the sensitivity of the income data, we did not have direct access to them. Instead, the analyses were carried out using a remote data access at the Institute for Employment Research (IAB) by submitting our data management and analyses scripts to the Research Data Centre (FDZ) via the software JoSuA. The results were subsequently reviewed and approved by IAB staff.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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ARTICLE

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Overshadowed By Royal Roads: Vocationally Oriented Middle Schools as Pathways to Higher Education in Switzerland

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Abstract

In Switzerland, four different educational pathways lead to higher education (HE): baccalaureate schools, upper-secondary specialized middle schools, vocational middle schools, and dual vocational education and training (VET) combined with a federal vocational baccalaureate. The four pathways are not equally supported by Swiss education policy: Baccalaureate schools and dual VET plus a federal vocational baccalaureate are politically treated as the two royal roads to HE, while specialized middle schools and vocational middle schools, in this study grouped under the term vocationally oriented middle schools (VOMS), receive only little political attention. This holds true even though VOMS have a high transition rate to HE and are considered to have the potential to bring young women into male-typical HE programs and attract high-achieving youths with a migration background. The study investigates from a governance perspective how (in practices and processes) the conception of the royal roads to HE is constructed and reproduced as well as how this affects the positioning of VOMS as pathways to HE in Switzerland. The study refers to the theoretical framework of the sociology of conventions and the concept of valuation practices. The data basis consists of publicly available documents and qualitative interviews. The findings show that commensurations, categorizations, visualizations, and the interplay between a variety of human and non-human actors reinforce two highly stable and powerful cognitive formats of royal roads to HE. At the same time, these same practices construct an image of VOMS as less significant additional pathways to HE by rendering their qualities and potentials as such pathways comparatively invisible or tabooing them in the service of educational policy interests. With these findings, the present study contributes to the international scholarly discussion on permeability between VET and HE.

Keywords

governance; higher education; invisibilization; policy; power; royal roads; sociology of conventions; upper-secondary; valuation practices; VET; vocationally oriented middle schools

1. Introduction

The Swiss education system today—as a result of a contested historical process of institutionalization and transformation—offers academically high-achieving students four different post-compulsory educational pathways to higher education (HE) at the upper-secondary level (in this study, the term HE, unless explicitly noted, refers to cantonal and federal universities, universities of applied sciences, and universities of teacher education, and does not include tertiary-level professional education): baccalaureate schools, upper-secondary specialized schools (USPS), vocational middle schools (VMS), and apprenticeships that have been complemented with a federal vocational baccalaureate (FVB). Each of these pathways leads to one of three officially recognized university entrance certificates: the general baccalaureate, the specialized baccalaureate, or the FVB (Figure 1). In 2021, 42.7% of young adults acquired one of these three baccalaureate certificates, whereby the proportion of graduates with a general baccalaureate (22.6%) was higher than the share of those with a specialized baccalaureate (3.9%) or vocational baccalaureate (16.2%; see Federal Statistical Office [FSO], 2023a). The attention and support that these four different pathways to HE receive from educational policymakers in Switzerland varies considerably.

With the establishment of the universities of applied sciences and the universities of teacher education, the Swiss education system has, over the past three decades, institutionalized other pathways to HE in addition to the baccalaureate school, which has conventionally been regarded as the royal road to traditional universities (Burger, 2021; Leemann et al., 2022). In 1994, the FVB was introduced, and with it initially a pathway to HE for those with an apprenticeship (Gonon, 1994, 1997). In present-day Switzerland, the FVB, which can be acquired only upon successfully completing vocational education and training (VET), is seen as the royal road to the universities of applied sciences (Gonon, 2013; Meyer, 2016; Swiss Coordination Centre for Research in Education [SCCRE], 2018) and enjoys major support from educational policymakers.

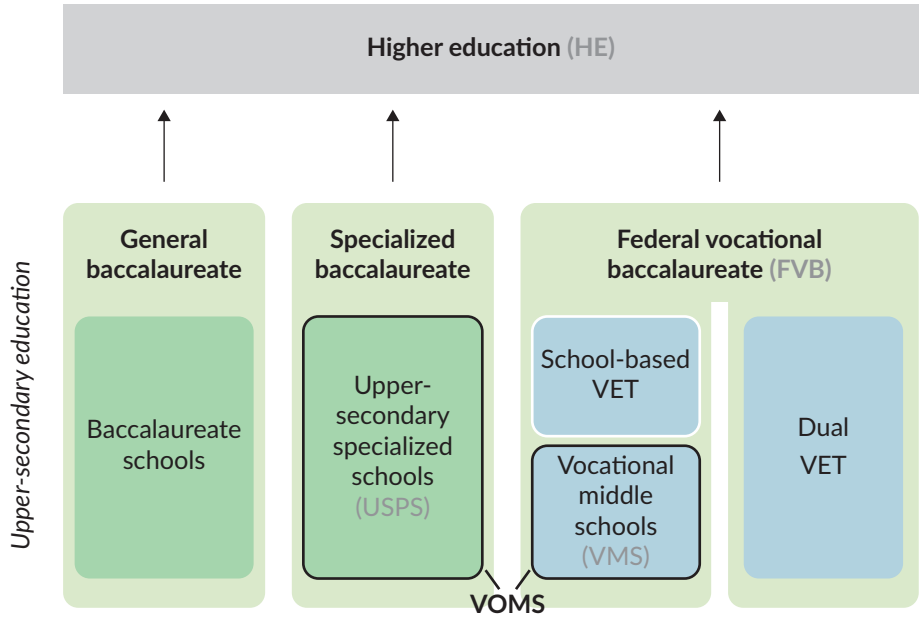

Figure 1. Pathways to HE in the Swiss education system. Source: Author's illustration based on the Swiss Conference of Cantonal Ministers of Education (2023).

As part of the Swiss VET system, the full-time VMS offer young people another pathway to HE, which in German-speaking Switzerland is overshadowed by dual VET (Esposito, 2024, 2023a), where training takes place at two learning venues, in the company and at the vocational school. VMS are frequently criticized. Furthermore, the education policy debate only rarely addresses them as promising pathways to HE (Esposito, 2024, 2023a; Imlig et al., 2021) even though some consider them to have the potential to (a) get more young people into HE than through the dual model (Luethi, 2024), (b) train skilled workers in areas with corresponding demand, (c) bring young women into male-typical HE programs (e.g., IT), and (d) attract more high-achieving youths with a migration background to VET than dual VET, as the selection procedures and criteria for VMS are less susceptible to discriminatory mechanisms than dual VET (Esposito, 2024; Kanton Graubünden, 2024; Seibert et al., 2009).

In the early 2000s, the general educational USPS leading to the specialized baccalaureate were recognized as a third post-compulsory pathway to HE (Leemann & Imdorf, 2019). Like the VMS, the USPS have since their inception been perceived and criticized by advocates of dual VET (especially in German-speaking Switzerland) as competing with the latter and are rarely ever mentioned as a valuable pathway to HE in their own right (Esposito, 2022, 2023b).

As VMS and USPS are subject to similar dynamics of being drawn into question and marginalized in educational policy discourse, this article subsumes these two types of schools into the same category of vocationally oriented middle schools (VOMS) and considers them jointly across the boundaries of general and vocational education (a detailed explanation is provided in Section 2.5).

Summing up, in Switzerland two main pathways to HE are recognized and regulated by educational policy accordingly: the general baccalaureate schools for entry into traditional universities, and dual VET with an FVB for access to universities of applied sciences. In contrast, the VOMS pathways receive hardly any attention. This negligence of VOMS by educational policymakers calls for an explanation in light of the continuously increasing demand for tertiary education (Kriesi & Leemann, 2020) and the growing need for skilled labor with tertiary qualifications in fields such as IT (see, e.g., The Adecco Group, 2023). Additional factors include educational policy efforts to increase the national rate of holders of an FVB (State Secretariat for Education, Research and Innovation [SERI], 2018), statistics that show that school-based VET is more likely to get youths into HE than dual VET (Luethi, 2024), and shifting educational aspirations among parents, who are increasingly encouraging their children to continue school-based education (e.g., Brühwiler et al., 2014).

Internationally, the governance of upper-secondary education pathways to HE shows considerable variation. Many countries face the challenge of balancing academically oriented pathways with vocationally oriented options and ensuring equal recognition and permeability between these tracks. In many European countries, an increasing pluralization of the education and vocational training systems can be observed, with the boundaries between vocational and general education becoming increasingly blurred (Frommberger & Schmees, 2020; Kriesi et al., 2022). For example, Austria has seen a significant strengthening of school-based vocational education. Vocational qualifications acquired at vocational middle and higher schools, which combine elements of both vocational and general education, have gained considerable importance. Today, only a minority of vocational qualifications in Austria are obtained through the traditional dual system. The popularity of school-based vocational qualifications likely stems from their dual benefit: they grant access to both the labor market and HE (Frommberger, 2019). Similarly, Germany has experienced

an increasing pluralization of its vocational education system (Hippach-Schneider, 2018). Switzerland, in contrast, has so far resisted this trend towards convergence. The country maintains a highly distinctive education system, characterized by a clear separation between general education and VET and the currently highest proportion of students enrolled in dual vocational education at the upper-secondary level among all OECD countries (Kriesi et al., 2022). Within this distinctive education system the dominance of two well-established and institutionally supported pathways to HE has evolved: academic baccalaureate schools leading to traditional universities and dual VET complemented by a FVB, providing access to universities of applied sciences. At the same time, and in contrast to other European countries such as Germany, Austria, and Scandinavian countries (Frommberger & Schmees, 2020), hybrid pathways to HE, such as full-time VOMS, which integrate characteristics of general and vocational education, are marginalized in Switzerland.

Against this backdrop, the present study examines, first, from a governance perspective, by what practices and processes the conception of these two royal roads to HE (baccalaureate school and dual VET with an FVB) is constructed, maintained, and reproduced within the governance of upper-secondary education in Switzerland. Based on this, the study, second, investigates how this affects the positioning of VOMS as pathways to HE. To do so, the study draws on the theoretical framework of the sociology of conventions (Boltanski & Thévenot, 2006; Diaz-Bone & de Larquier, 2022) to investigate the positioning of the four pathways to HE along the lines of the concept of valuation practices proposed by Kornberger (2017; commensuration, categorization, visualization, and engagement of a variety of actors) for the analysis of attributions of value.

The present article is organized as follows: Section 2 describes the characteristics of the different pathways to HE and outlines the respective educational policy discourses. Section 3 sketches the sociology of conventions as the theoretical framework for this analysis and Kornberger's (2017) concept of valuation practices. Section 4 describes the data and the methods applied. Section 5 presents the findings and Section 6 the conclusions.

2. Pathways to HE in the Swiss Education System and the Surrounding Discourses

2.1. Baccalaureate Schools as the Royal Road to Traditional Universities

The full-time general baccalaureate schools offer young people with very good school grades a four-year pathway to traditional universities via the general baccalaureate, without the need for additional examinations. Enrollment at a university of applied sciences or a university of teacher education is subject to certain additional requirements (e.g., completing an internship). The rate of transitioning to a cantonal or federal traditional university within 54 months upon completing a general baccalaureate was 79% in 2022, while the rate of transitioning to some form of tertiary education (including universities of applied sciences and universities of teacher education) was overall very high (96%) among the holders of such a certificate (FSO, 2023b). In Switzerland, baccalaureate school is seen as being the royal road to traditional universities (Burger, 2021; Leemann et al., 2022). Over recent decades, there have for various reasons been increasing aspirations among parents and students that the latter attend baccalaureate schools (Abt, 2023; Schneebeli, 2021). At the same time, Switzerland has a fairly low rate (even by international standards) of general baccalaureate graduates (22.6% in 2021; FSO, 2023a). Especially in German-speaking Switzerland, this is the deliberate product of controlled selective access to baccalaureate schools (Hafner et al., 2022; Leemann et al., 2022), which has earned them the reputation of being an elite pathway (Reh & Landolt, 2024).

2.2. Dual VET Combined With the FVB as the Royal Road to Universities of Applied Sciences

Admission to dual VET does not depend on lower-secondary school grades, but on criteria set by the training companies. They decide to whom they will give an apprenticeship contract. As an additional qualification to the federal VET diploma, an FVB can be obtained in two ways: via accompanying training while in dual VET or, the option chosen more often, via after completing VET with a federal VET diploma (SERI, 2022). Holders of an FVB therefore have both successfully completed VET and acquired eligibility to enroll in a university of applied sciences. Upon passing an additional optional exam (*Passerelle Dubs*), they may also gain access to traditional universities (Swiss Conference of Cantonal Ministers of Education, 2023). The FVB is considered a "success story of Swiss educational policy" (Kost et al., 2017). The proportion of VET graduates who have obtained an FVB has hovered around 16% despite substantial efforts (e.g., information and advertising campaigns, easing of requirements for enrollment) by policymakers in the field of VET, the Swiss Confederation, the cantons, and professional organizations to increase this rate and thus to strengthen the vocational "royal road to the universities of applied sciences" (Gonon, 2013, p. 136; SCCRE, 2018, p. 230). As for the goal of transitioning FVB graduates to tertiary education, the rate for 2022 was 80% overall, 61% of whom enrolled in a university of applied sciences (FSO, 2023b).

2.3. VMS as a Marginalized Pathway to Universities of Applied Sciences

As part of the VET system, VMS target pupils with good school grades and provide another pathway to acquire an FVB. VMS are specific four-year full-time school-based VET programs offered in such fields as commerce and IT (German: *Handels & Informatikmittelschulen*; French: *écoles de commerce et d'informatique*; Italian: *scuole di commercio e d'informatica*). VMS are geared towards HE and have a longer internship as an integral part, where apprentices acquire practical skills. These schools are demanding educational programs in that they structurally combine a federal VET diploma (formal qualification for entrance into the labor market) and an FVB and thus target high-achieving youths. In contrast to dual VET, where admission requirements are at the discretion of the training companies, in the case of VMS, these decisions rest with the cantonal educational administration. Even though VMS are subject to the Federal Act on Vocational and Professional Education and Training (Swiss Confederation, 2002) they feature pronounced middle-school characteristics (Cortesi, 2017): They are full-time schools, impart propaedeutic knowledge and thus prepare for HE, have plenty of school vacations, their curriculum has a disciplinary structure, students can enroll in electives, they receive no pay, and so on. Moreover, these schools are often institutionally tied to baccalaureate schools.

The access opportunities to HE are the same for VMS graduates as for those who have completed dual VET and an additional FVB (see Section 2.2). The available statistical data does not permit any statements for Switzerland as a whole on the rate of transitioning to tertiary education upon graduating from a VMS (for an explanation of this see Section 5.1). Imlig et al. (2021) examined VMS in more detail for the canton of Zurich. According to their calculations, approximately 90% (for VMS in the field of commerce) and 91% (for VMS in the field of IT) of the cohort under study had transitioned to tertiary education within four years upon graduation, the majority to a university of applied sciences.

Even though strengthening the FVB is an important goal of Swiss VET policy, VMS, as one possible educational pathway toward acquiring it, have received only little attention and support from educational policymakers, especially in German-speaking Switzerland. On the contrary, the existence of these schools

has been repeatedly questioned by certain actors both past and present. In some cases, even policy measures to restrict VMS have been adopted because they are seen as competing with dual VET (Esposito, 2024), even though these schools accounted for only 2.3% of all upper-secondary certificates in 2022 (as per my own calculations based on data from the FSO, 2023c). Moreover, compared to the dual VET system, VMS are an under-researched topic in Switzerland.

2.4. USPS With Their Specialized Baccalaureate as a Little-Recognized Pathway to HE

USPS (German: *Fachmittelschulen*; French: *écoles de culture générale*; Italian: *scuole specializzate*) are full-time schools of general education attracting youths with good school grades. The selection requirements and processes for USPS differ across the Swiss Cantons. In 2022, USPS accounted for a share of 7.4% of all upper-secondary certificates (as per my own calculations based on data from the FSO, 2023c). By taking the USPS route, young people can obtain a specialized baccalaureate in a specific field within four years and gain access to universities of applied sciences or universities of teacher education. Holders of a specialized baccalaureate can also gain access to traditional universities (as can holders of an FVB) by passing an additional optional exam (*Passerelle Dubs*; Swiss Conference of Cantonal Ministers of Education, 2023). In 2022, a total of 92% of all USPS graduates enrolled in tertiary education (50% of these in a university of applied sciences, 30% in a university of teacher education; FSO, 2023b). Despite this high transition rate, educational policy discourse has hardly ever discussed the potential of this pathway to access HE. Instead, it has repeatedly been questioned in German-speaking Switzerland (especially by advocates of dual VET) and criticized for competing with dual VET (Fleischmann, 2023). Esposito (2022) showed this specifically for enrollment in tertiary education in the health field. From the very beginning, VET advocates adopted a critical view of establishing a pathway to university via the specialized baccalaureate. Hafner (2022) examined the controversial process of institutionalizing the USPS as a pathway to universities of teacher education compared to baccalaureate schools.

2.5. VOMS

The study at hand groups USPS and VMS across the institutional boundaries of general and vocational education into the category of VOMS and considers them together in terms of their role as pathways to HE besides the two royal roads for two reasons: First, the two educational pathways feature a pronounced middle-school character while both also have a *vocationally qualifying* or *vocationally oriented educational mission*. Second, the two pathways are similar in terms of their *marginal relevance*: For one thing, VOMS are of only marginal quantitative significance in upper-secondary education in German-speaking Switzerland. For another, their raison d'être in relation to baccalaureate school and dual VET—which in Switzerland are the two unquestioned pillars of upper-secondary education—has been *criticized* and *questioned* from the vantage of educational policy, and certain educational policy measures have been implemented to *constrain* the number of available places at VOMS.

3. Combining the Sociology of Conventions and the Concept of Valuation Practices as a Theoretical Framework

3.1. Quality as the Result of an Attribution Process

From a functionalist perspective, society and the labor market demand a variety of educational qualifications, which in turn necessitate diverse educational programs, each with distinct characteristics. These characteristics, along with the corresponding qualifications, are assigned different meanings and values. This leads to the question of how the quality and value of educational programs are socially constructed. In contrast to the understanding of quality in common educational policy discourse (Hupka-Brunner et al., 2015), the sociology of conventions framework (Boltanski & Thévenot, 2006; Diaz-Bone & de Larquier, 2022) does not view quality as something that can be determined ontologically, objectively, and universally. In this view, quality is rather the result of processes of attribution by actors on the basis of different orders of worth (quality conventions; for quality conventions in education see Imdorf & Leemann, 2023). Eymard-Duvernay (2012a) has called this process of attribution "valuation." In this context, Favereau (2017) emphasized that quality is the product not only of valuation processes but of devaluation processes as well.

3.2. Valuation Practices

To capture these concrete practices and processes of attributing value, Kornberger (2017) introduced the concept of "valuation practices." Valuation practices are not neutral means of representing a given quality but rather concrete practices and processes that play a situational part in constituting the value of things, people, or, as in the present case, pathways to HE. Following this practice-based perspective directs our analytical attention to the specific everyday activities that constitute the process of evaluation as well as the resulting outcomes, thus "through which valuation practices *x* is constituted as more valuable than *y*" (Kornberger, 2017, p. 1759). This means, that "valuation practices do not merely mirror or bring to the fore pre-existing values, but that valuation practices are actively involved in the constitution of values" (Kornberger, 2017, p. 1759). Kornberger (2017) has proposed four ideal-typical practices of valuation, whereby it is partially difficult to distinguish clearly between these practices or they may take on a hybrid form: (a) commensuration, (b) categorization, (c) visualization, and (d) engagement of a variety of actors. In the following, I will explain the mechanisms involved in these practices.

3.2.1. Commensuration

The mechanism of commensuration renders previously incomparable things comparable by introducing a measure. In the process, individual qualities—for example, qualities of different educational pathways—are ignored in favor of a common dimension—for example, the statistically calculated transition rates—that allows a comparison of the different educational pathways. In the process of commensuration, the respective qualities are translated into quantities through techniques, which frequently involve quantification in numerical form. School rankings are another example of such a commensuration mechanism that simplifies complex, diverse, and difficult-to-evaluate qualities into clear, organized orders (Espeland & Sauder, 2007). The research questions of this study examine the practices and processes through which the conception of the two royal roads to HE—baccalaureate school and dual VET with an FVB—is constructed, maintained, and reproduced. What is important in this regard is that the mechanism of

commensuration exercises power by deciding what counts for the valuation and what does not (Kornberger, 2017). Commensuration is therefore "a double act of highlighting and hiding" (Espeland & Lom, 2015, as cited in Kornberger, 2017, p. 1760).

3.2.2. Categorization

While commensuration breaks down and simplifies its objects (e.g., educational pathways), categorization involves reorganizing them according to externally defined criteria, which create connections between them (Kornberger, 2017). The mechanism of categorization therefore links certain elements (e.g., all educational pathways provide access to HE) while acting as a marker of distinction toward others (e.g., pathways of general education to HE vs. VET pathways to HE). In this way, categorizations "create a space for things to be situated next to each other, to relate to each other, and to differentiate themselves from each other" (Kornberger, 2017, p. 1761). Categorizations have important mediating effects, as the defining of categories represents a "frame-making activity establishing cognitive schemata that guide the distribution of attention" (Espeland & Sauder, 2016, as cited in Kornberger, 2017, p. 1761).

3.2.3. Visualization

Valuation practices are not simply abstract concepts. Instead, they are organized through specific practices, which require a material foundation—concrete technologies and visual tools that facilitate and enhance their functioning. As a result, valuation practices take on tangible, material forms with distinct aesthetic characteristics. These practices include lists, matrices, star ratings, diagrams, and other visual representations (e.g., videos), with their influence partly deriving from this aesthetic aspect (Kornberger, 2017). Visualizations reinforce attributions of value, expand these (spatially), and lend them persuasive power. The visualizations that stem from valuations should not be dismissed as mere illustrations; rather, they combine proof and power to convince others (Kornberger, 2017).

3.2.4. Engagement of a Variety of Actors

Valuation practices are not only driven by human actors in the role of e.g., experts, critics, etc.; non-human actors (e.g., graphs, rankings, digital tools, etc.) also influence and shape the processes of valuation (Kornberger, 2017). Therefore, valuation processes involve several (non-)human actors, which require special attention when investigating the practices through which valuation is constituted. From an analytical perspective, this emphasis on distributed cognition implies that valuation should not be seen as fixed information or judgments about objects. Rather, valuation must be understood as a dynamic process that moves through networks of (a) key actors pursuing their interests and political agendas (e.g., strengthening dual VET, maintaining the predominance of dual VET, fostering the rate of the FVB, preserving the image of an elite pathway to traditional universities, etc.), (b) intermediaries (e.g., career and educational counselors) as human "frame-makers" that are "engaged in constructing others' bounded rationality" (Kornberger, 2017, p. 1760), and (c) non-human actors.

3.3. Valuation Practices as Investments in Forms That Structure the Distribution of Power

Valuation practices must not be misunderstood as being mere abstractions, individual cognitive schemata, or societal norms. Rather, they require a material basis that enables and amplifies their operations (Kornberger,

2017). The concept of valuation practices is therefore closely tied to the sociology of convention's concept of investment in forms (Dodier, 2010; Thévenot, 2011). Investments in forms must be understood as instrumentations of valuation and thus as part of a valuation dispositif (Eymard-Duvernay, 2012b) that actors draw on to produce and ensure equivalence, value, and generalization. In this context, the concept of investment in forms comprises both the process of forming and its results.

From the perspective of the sociology of conventions framework, instrumentations of valuation (and thus the practices of valuation as well) are closely tied to the distribution of power in the situations of negotiation and coordination between various actors. This is because the question of who possesses these instrumentations is essential for the distribution of power, while power from the vantage of the sociology of conventions framework is understood as being distributed and not as a substantive resource or a natural attribute of actors (Diaz-Bone, 2017). With the concept of investments in forms, the sociology of conventions framework has provided a tool that enables us to examine not only how actors are able to temporally, socially, and spatially stabilize and generalize value and forms of coordination (Diaz-Bone, 2018), but also how they expand, stabilize, and intensify in certain situations the reach of power and its effects.

From this, it follows that strategic action can be understood in terms of the actors' abilities to deal with and influence these valuation practices, and that rivalry and competition take place at the level of valuation practices, which can be conceived of as spaces where value conceptions are constructed and contested. In other words, "competition takes place on the level of valuation practices as they exercise the power to categorize and consecrate goods as worthy" (Kornberger, 2017, p. 1766). Against the backdrop of the competitive dynamics between general education and VET described in the introduction as well as in Section 2 and observed within the Swiss VET system in general, the concept of valuation practices embedded in the sociology of conventions framework provides an interesting theoretical approach for examining the subject under study here.

4. Data and Methods

The data on which this article was gathered as part of two research projects funded by the Swiss National Science Foundation (see Funding Section at the end of the article). In pursuit of data and method triangulation (see, e.g., Flick, 2012; Muri, 2014), these projects employed different sources and types of data and methodological approaches to address different aspects of the object under study, densify the interpretive foundation, and thus broaden the opportunities for gaining insights. The analysis is based on educational policy statements (n = 2), websites (n = 5), official statistics and related publicly available documents (n = 5), the official graphic of the Swiss education system, as well as a video (KFMS, 2017). Each of these sources has been selected for its institutional relevance, visibility, and role in shaping the various educational pathways to HE in Switzerland. The sources outline the guiding principles, policies, and frameworks that govern upper-secondary education and the transition to HE, and are therefore essential for understanding how the "royal roads" to HE are constructed and maintained, while other pathways, such as VOMS, are marginalized.

In line with sociology of conventions's methodological aspirations to tap into the actors' internal perspectives, additionally, four guided qualitative interviews were conducted and used to especially give insights into how value is attributed through the mechanisms of visualization and the engagement of a

variety of actors (Sections 5.3 and 5.4). The interviewees were representatives of (a) the Conference of USPS, (b) the Conferences of VMS (one each in the fields of commerce and IT), and (c) a cantonal educational policy administrator. To ensure that personal data is protected, the names and functions of the interviewees have been anonymized. The research proceeded in a circular manner typical of qualitative research, alternating between data collection, analysis, and interpretation. Accordingly, the data basis was not defined conclusively a priori but rather repeatedly complemented and expanded in response to insights gained from the interviews. The data were analyzed against the theoretical backdrop of the sociology of conventions framework and valuation practices by means of a theory-driven qualitative content analysis (Gläser & Laudel, 2010).

5. Results

Starting from the widely differing educational-policy discourses surrounding the various pathways to HE, the present article examines the practices and processes by which baccalaureate school and dual VET combined with an FVB are constructed, maintained, and reproduced as being the royal roads to HE in Switzerland and how this affects the positioning of VOMS as further pathways to HE. In the following, this will be illustrated along the four valuation practices (commensuration, categorization, visualization, and engagement of a variety of actors) introduced by Kornberger (2017) by reference to various examples.

5.1. Commensuration: Spotlighting vs. Tabooing

An indicator that is often employed in educational policy discourse to make statements about the significance of different pathways to HE is their rates of transition to tertiary education as determined by the FSO (Table 1). The transition rate to tertiary education is a statistical metric that exemplifies how the practice of commensuration via the introduction of a "common metric" (Kornberger, 2017, p. 1,763) renders different educational pathways comparable that are actually not comparable in terms of their educational characteristics (e.g., educational objectives, curricula, types of knowledge) by deconstructing (flattening) them and "by the transformation of qualities into quantities" (Espeland & Sauder, 2007, p. 16). In the sense of a "double act of highlighting and hiding" (Espeland & Lom, 2015, as cited in Kornberger, 2017, p. 1760), the practice of commensuration differentially influences the attribution of value to the various pathways (enhancing or inhibiting them).

Table 1. Transition rates to tertiary education within 54 months of acquiring a university entrance certificate (baccalaureate) in 2017.

	Traditional university	University of applied sciences	University of teacher education	Transition rate overall*
General baccalaureate	79%	10%	6%	**96%**
FVB	7%	61%	4%	**80%**
Specialized baccalaureate	5%	50%	30%	**92%**

Note: *The overall transition rate does also include the transition rates to tertiary-level professional education not listed in Table 1. Source: FSO (2023b).

In the sense of governance by numbers, the transition rates to traditional universities upon acquiring the general baccalaureate (79%) and to a university of applied sciences with an FVB (61%) underpin numerically the idea that there exist two royal roads to HE and are employed to legitimize educational-policy decisions in favor of these two pathways. At the same time, the importance of the USPS with a specialized baccalaureate as a pathway to HE is rarely mentioned in policy discussions. Although, as Table 1 shows, it has a 92% overall transition rate, which is higher than the FVB (80%), similar to the general baccalaureate (96%), and leads 50% of specialized baccalaureate holders to a university of applied sciences (compared to 61% for the FVB) and 30% to a university of teacher education. Despite these numerical facts, USPS are rather tabooed in the corresponding education policy discourses (Esposito, 2022; Hafner, 2022).

Another example that shows how the practice of commensuration stabilizes and reinforces the two royal roads compared to the VOMS is the percentages calculated for the various university entrance certificates as pathways to each type of university. Figure 2 illustrates that the relative strength of the various pathways is made comparable across the various types of universities.

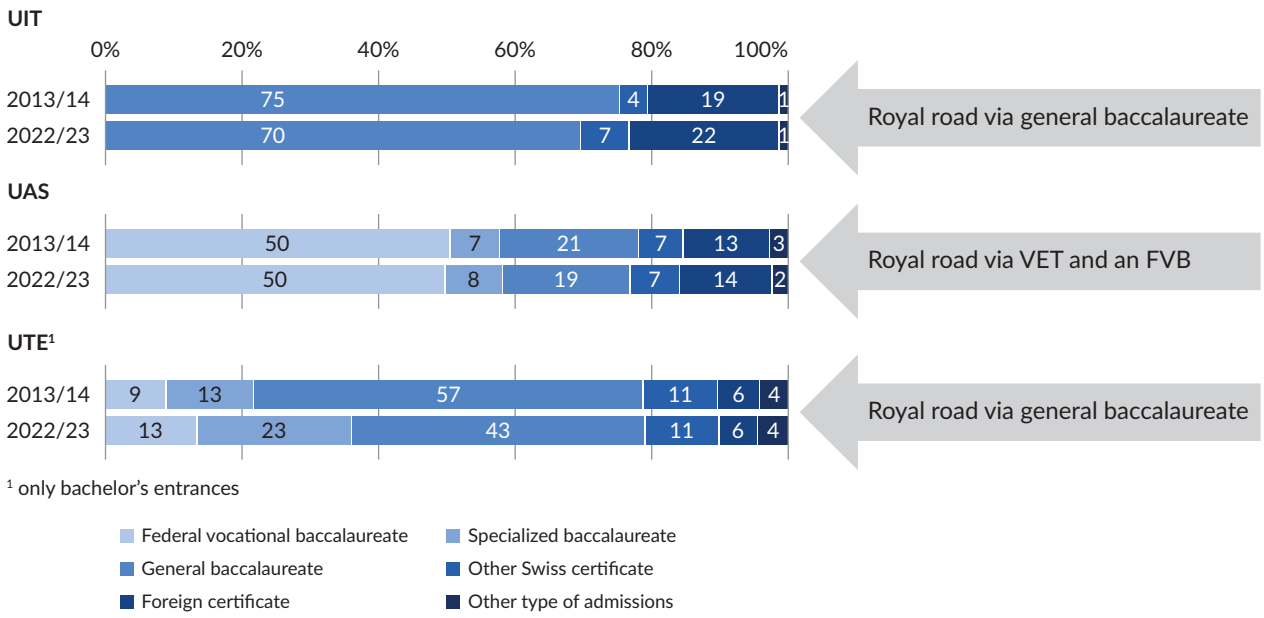

Figure 2. Entry pathway at the bachelor level by type of university and entry certificate (FSO, 2024). Notes: UIT stands for universities and institutes of technology; UAS stands for universities of applied sciences; UTE stands for universities of teacher education.

The arrows to the right added to Figure 2 illustrate how the comparison shown in the graph contributes to constructing a value judgment in which the baccalaureate school appears to be the royal road to traditional universities and the universities of teacher education, similarly to the FVB when it comes to the universities of applied sciences. What is not or not clearly shown in Figure 2 is that the respective university entrance qualifications differ considerably in terms of the absolute numbers of certificates acquired at the upper-secondary level (in 2017, general bacc.: 17,009, FVB: 13,129, specialized bacc.: 2,654 certificates; see FSO, 2023b)—among other things as a result of the educational policy restrictions imposed on the VOMS as a class ceiling or additional access requirements (Esposito, 2023b). When we bear this in mind, it is not surprising that the specialized baccalaureate plays only a minor role when comparing the relative strength of the baccalaureate certificates. In the absence of this additional piece of information, the comparison

suggests—and thus creates the value judgment—that there are only two royal roads to HE and that the specialized baccalaureate is only of marginal significance. What this example also shows is that the practice of commensuration plays a role in constructing value judgments based on a generalized common metric at "the expense of a greater specification of detail" (Diaz-Bone, 2018, p. 87) and is a crucial factor in what becomes visible and invisible and how this affects these value judgments.

5.2. Categorization: Separation vs. Subsumption

Until 2014, the FSO classified VMS in the field of commerce as a separate statistical category. Inconsistent data collection on school-leaving qualifications at VMS resulted in problems and inaccuracies of statistical analyses. For this reason, the statistical data on the VMS are no longer reported separately but are subsumed in the general statistics on initial VET (SERI, 2014). One of the consequences of this is that qualifications acquired at VMS and thus the university entrance certificates that they issue are no longer shown separately but are subsumed into the categories of the "federal VET diploma" and "federal vocational baccalaureate." The lack of a specific categorization of this kind results in VMS no longer being visible as a specific upper-secondary educational pathway in the analyses of the FSO and there being no statistical cross-cantonal analysis available at the national level for this type of school. The FSO provides a limited selection of analyzed data (e.g., number of school-leaving certificates and gender distribution) upon request. While it holds raw data on transitions to HE and educational pathways, these are not further analyzed. If we assume with Espeland and Sauder (2016, as cited in Kornberger, 2017, p. 1761) that "categorizing is a frame-making activity" that establishes "cognitive schemata that guide the distribution of attention," we can conclude for VMS that failing to report data for them as a category in its own right contributes to rendering them invisible and thus indirectly devalorizes them as a pathway to HE compared to baccalaureate school and VET.

5.3. Visualization: Visibility vs. Invisibility

In Switzerland, both the Swiss Confederation and the cantons within the scope of their powers are jointly responsible for the Swiss Education Area (Federal Constitution of 18 April 1999 of the Swiss Confederation, 2006, Art. 61a). To fulfill this responsibility, the Confederation and the cantons have, since 2011, agreed on a few key strategic objectives in a joint educational policy declaration (Federal Department of Economic Affairs, Education and Research & Swiss Conference of Cantonal Ministers of Education, 2023). The formulation of common education policy goals and thus the declaration is based on findings from the National Education Report and forms the framework for the shared responsibility for high quality and permeability of the Swiss education system between the cantons and the Confederation. Therefore, the declaration is an important document for education policy in Switzerland. The actors involved renewed these educational objectives in 2015, 2019, and 2023. The third objective of this declaration maintains, that having acquired the general baccalaureate entitles the graduate to enroll in a traditional university without any further examination (Federal Department of Economic Affairs, Education and Research & Swiss Conference of Cantonal Ministers of Education, 2023). This objective has remained unchanged from the beginning. Formatted and visualized in the joint educational-policy declaration in which the Confederation and the cantons state the objectives for the Swiss educational area, the pathway to traditional university via the baccalaureate school has received much attention from educational policymakers, educational administrators, and the public for many years. One example of this is the commitment of the Swiss Conference of Cantonal Ministers of Education and the Swiss Rectors' Conference (2019) to work together

to optimize the transition from baccalaureate schools to traditional universities and, in this context, to ensure access to traditional universities with a baccalaureate school certificate without further examination. The high political attention given to this educational goal has reinforced the idea of a royal road to the traditional university via the baccalaureate school and the value judgment underpinning it.

Accessing HE via (dual) VET combined with an FVB as a pathway to the universities of applied sciences in Switzerland is rooted in various visual formats with high visibility and wide reach. One example of this is the online website www.berufsmaturitaet.ch, which the Confederation, cantons, and professional organizations launched specifically to strengthen the FVB pathway. There, the FVB is framed as the "pathway for high-fliers in VET," which provides the "admission ticket" and thus "opens the door…for studying at a university of applied sciences." Another example is the Federal Vocational Baccalaureate 2030 project, which is part of the extensive Vocational Education and Training 2030 joint initiative championed by the Confederation, cantons, and professional organizations to advance and strengthen VET in Switzerland. Their website praises the route via VET combined with an FVB as "the most important pathway to a bachelor studies program at a university of applied sciences" (SERI, 2018).

Baccalaureate school and dual VET combined with an FVB are thus positioned as the royal roads to university or university of applied sciences on highly visible stages of vocational educational policy. VMS, by contrast, are presented as part of the Swiss education system—for instance, in schematic representations—for the sake of completeness, but remain invisible. It is only in a footnote to VET at the bottom of such a schematic representation where it is explained that, "for certain professions, a VET diploma [first vocational qualification] can be obtained in a full-time school programme (e.g., in trade [commerce] or IT schools)" (Swiss Conference of Cantonal Ministers of Education, 2023). This is the only place where the VMS are explicitly mentioned and become visible (Figure 3).

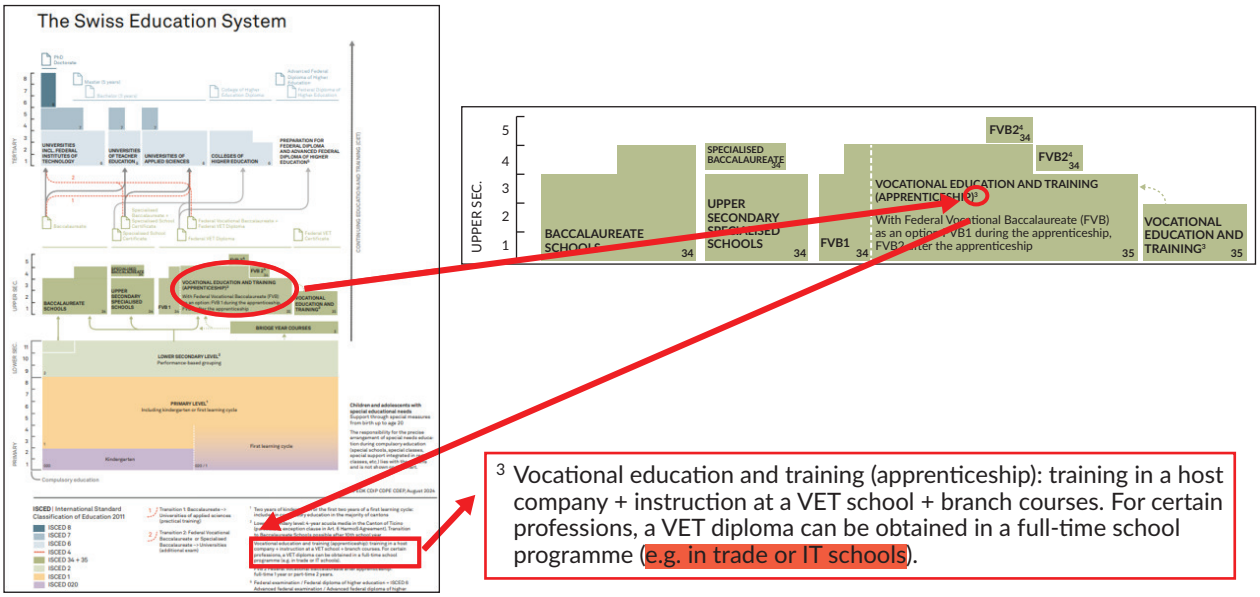

Figure 3. Positioning and listing of the VMS highlighted and marked in the official graphic representation of the Swiss education system. Source: Swiss Conference of Cantonal Ministers of Education (2023).

Bearing in mind that "visualizations are a form of demonstration…that focus attention" (Kornberger, 2017, p. 1763), we can maintain for VMS that their invisibility in the visual representation of the Swiss education system—which is one of the most well-known and most significant visualizations (even internationally) that illustrate the various educational pathways and their roles as pathways to the Swiss HE system—expresses and underpins graphically the value judgment according to which they represent, in the words of an educational administrator, a "marginal phenomenon."

Unlike the VMS pathway, the route to HE via the USPS is clearly depicted and positioned as such in the schematic representation of the Swiss educational system. Nevertheless, says an educational administrator, "far too little is known" about USPS' role as a pathway to HE:

> [Even among] people who, in my view, should know this, you notice that they have not fully understood these [USPS] structures….There is still a lot of educational effort needed….There are three kinds of baccalaureates. People have recognized the federal vocational baccalaureate but not the specialized baccalaureate.

In 2017, the Swiss Conference of USPS Rectors (CUSPS) made an effort to raise awareness of the USPS as a whole, but also in their role as a pathway to HE, by publishing an information video on the upper-secondary specialised school in Switzerland (KFMS, 2017). The aim was to strengthen the USPS as a "national brand" (representative of the CUSPS) and to make it visible as such through visualization strategies. The video positions the USPS as "your pathway to university studies in all of Switzerland" (KFMS, 2017). With this "promotional video," said a representative of the CUSPS, the CUSPS intended to show that "there is a pathway in Switzerland that is just as valuable as the baccalaureate pathway or the VET pathway." The reasoning of this representative of the CUSPS illustrates how advocates of this pathway attempted to influence how the value of the USPS is judged by investing in the visual format of a publicly accessible video. Publishing the video on the CUSPS website, however, made use of a channel with very limited reach.

The different examples presented here show how practices of visualization in the context of the governance of upper-secondary education position the different pathways to HE more or less visibly, and how this supports and sustains the notion of a royal road or some other pathway to HE.

5.4. Engagement of a Variety of Actors: Power vs. Powerlessness

The previous discussion has shown that a variety of actors (education policymakers, federal department, statistics, graphical illustrations, etc.)—in the sense of an "assemblage of human and non-human actors" (Landri, 2015, p. 607)—influence, via various practices such as commensuration, categorization, and visualization, how the value of the different pathways to HE is perceived. Overall, the two royal roads are championed by a set of actors (such as the Swiss Confederation and the Conference of Cantonal Ministers of Education) that makes for a powerful lobby. Backing for the VOMS, by contrast, comes from the respective conferences, which, within their scope of possibilities, attempt to position these types of education as pathways to HE, but have almost no lobby and thus, as per an educational administrator, "lack power." This powerlessness becomes manifest in the everyday coordination of action with the representatives of VET in statements like the following, by a representative of the Conference of VMS in the field of commerce:

> We have to make sure that they [the VMS in the field of IT] are actually recognized…and that people [in the circles of VET] do indeed always keep them in mind….They [advocates of dual VET] tolerate us but don't want to promote us [VMS in field of commerce].

6. Conclusion

By drawing on the educational policy discourse on the significance of the different pathways to HE in Switzerland, this article has examined how—that is, by means of which practices and processes—the conception of the baccalaureate school and dual VET combined with an FVB as being the two royal roads to HE is constructed, maintained and reproduced within the governance of upper-secondary education. Based on this the study investigated how this affects the positioning of VOMS as pathways to HE. These research questions have been answered against the theoretical backdrop of the sociology of conventions framework (Boltanski & Thévenot, 2006; Diaz-Bone & de Larquier, 2022) and with reference to Kornberger's (2017) concept of valuation practices (commensuration, categorization, visualization, and engagement of a variety of actors), based on a diverse corpus of data (educational policy documents, statistics, graphs, websites, interviews with relevant actors, video).

The findings show that, within the governance of upper-secondary education, powerful actors continuously stabilize and reproduce a conception and an attribution of value to what they perceive as being the royal roads to HE. They do so by engaging in various practices of valuation. These practices result in material and cognitive formats (such as statistical indicators, graphics, statements of educational policy intent, websites, etc.) that interact in ways that form a highly stable and powerful dispositif of valuation in favor of the two royal roads. The advocates of baccalaureate schools and VET have this dispositif at their disposal to position in clear view, protect, and maintain their societal and educational policy conception of each being a royal road to HE.

At the same time, many of these valuation practices and resulting formats reinforce the image of VOMS as inconspicuous additional pathways to HE. This is because their qualities (e.g., high transition rate to HE among holders of a specialized baccalaureate compared to holders of an FVB) and potentials as pathways of this kind often remain invisible, are kept opaque, or are tabooed in the service of educational policy interests. Accordingly, the advocates of VOMS have no such powerful dispositif of valorization—composed of far-reaching, stable formats—at their disposal to emphasize and strengthen the visibility and significance of VOMS as pathways to HE.

Based on these findings and in line with Favereau (2017), this article proposes to understand Kornberger's theoretical concept of valuation practices as always also involving devaluation practices—in the sense of two sides of the same coin. The following questions illustrate this:

- Commensuration: What are the relevant measures applied in making different things comparable and then evaluating them? What value judgment would result if an alternative measure was applied?
- Categorization: What is being categorized separately and thus becomes visible? And what is subsumed into an existing category and is rendered invisible in the process? What relevant details are concealed by the formation of categories?
- Visualization: What is showcased and what is obscured?

- Engagement of a variety of actors: Which actors are powerful or powerless? Whose voice is clearly heard and whose not, or who has definitional power and who does not?

Practices of valuation (and devaluation) are hence always a manifestation of educational policy interests and are intended to justify and legitimize educational policy decisions. Certain (desired) aspects are rendered visible and thus valorized accordingly, whereas other (undesirable, unsuitable) aspects are kept invisible and, in so doing, implicitly devalorized. We can maintain that the invisibility created around VOMS is often exploited by the advocates of (dual) VET as evidence of the marginality and irrelevance of VOMS. This in turn lays the groundwork for justifying governance measures that constrain VOMS as upper-secondary educations and as pathways to HE while adopting and implementing policies for further strengthening the royal roads.

Drawing on these findings, we can state for Switzerland that commensuration, categorization, visualization, and the interplay between a variety of human and non-human actors have formed and maintained two highly stable and powerful cognitive formats of royal roads in the sense of two standard pathways to HE. What the educational policy and societal discourses as well as the strategies, mechanisms, and instruments of governing upper-secondary education show is that the two royal roads, on the basis of "a trust in the established" (Diaz-Bone, 2018, p. 338), are accepted without question, reproduced, and referenced to legitimize educational policy decisions. At the same time, this leads to closing one's eyes (Thévenot, 2009) to alternative forms, as this article has demonstrated through the example of VOMS as pathways to HE in Switzerland. What has become clear overall is that, to date, neither the general public nor educational decision-makers in politics and public administration perceive VOMS as pathways to HE that are on par with baccalaureate school and dual VET combined with an FVB, nor are they anchored as such in the minds of other relevant actors.

Different pathways to HE address different interests, skills, needs, biographical circumstances, and life plans of youths. The valorization and simultaneous devalorization of the different pathways to HE that have been demonstrated in this article are a manifestation of tendencies observable in Switzerland to channel the variety of pathways to HE toward the two favored royal roads at the expense of VOMS. These dynamics call for an explanation in the face of three aspects in particular: (a) the high rate of transition to tertiary education among VOMS graduates, (b) the potential of these schools to usher young women into typically male (tertiary) professions, and (c) their success in getting youths of immigrant background into VET and the latter at the same time with a structurally high likelihood of leading them to pursue a university education.

In recent years, Germany, Austria, and Switzerland have adopted different strategies to increase the permeability between dual VET and HE (e.g., Ebner et al., 2013; Nikolai & Ebner, 2012). Germany has focused on the recognition of vocational qualifications for admission to HE, while Switzerland and Austria have introduced double qualifications that allow students to obtain both a vocational qualification and a university entrance certificate at the same time. The introduction of these double qualifications in Switzerland and Austria was driven by two main factors: First, the dual VET system was less attractive to highly qualified young people, and second, there were appealing alternatives, such as Switzerland's baccalaureate schools or VOMS and Austria's full-time school-based VET programs (Nikolai & Ebner, 2012). The findings of the present study on quantitatively and politically rather marginalized and little-known educational (VET) programs as pathways to HE thus add new insights to the international scholarly discussion on the permeability between VET and HE as well as hybrid pathways to HE. The international

embedding of the results shows that, compared to other European countries, Switzerland, with its strongly distinctive education system, still pays little attention to and supports hybrid access routes to HE, such as VOMS, and thus continues to leave their potential unexploited. Rather, the relevant actors promote and maintain two main routes to HE: one via general education baccalaureate schools and one via dual VET combined with an FVB.

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Conflict of Interests

The author declares no conflict of interests.

Data Availability

The analyzed data are available on request from the author.

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ARTICLE

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Challenges in the Transition From Apprenticeships to Higher Education in England, Germany, and Norway

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Abstract

The transition from technical and vocational education and training to higher education is particularly challenging for apprenticeship graduates. These challenges are not only bureaucratic or logistical but also reflect deeper systemic inequalities. In many countries, apprenticeship routes at the upper secondary level are disproportionately chosen by disadvantaged groups in relation to class, gender, and/or race. As a result, the limited, time-consuming, and inconsistently regulated progression pathways in place contribute to the reproduction of social inequality. This article examines how such structural barriers are embedded in three national apprenticeship models in England, Germany, and Norway, where access to apprenticeship qualifications is primarily mediated by the labour market. In England, higher-level apprenticeship routes combine company-based learning with part-time participation in institutional education. In Germany, the parallel or "dual" model integrates school-based and company-based training, while Norway's sequential model structures apprenticeships as successive phases in schools and workplaces. In comparing these models, we conclude that despite differences across transition routes and claims to improve permeability, the divide between vocational and academic education persists across all three systems, thereby reinforcing rather than reducing systemic inequality.

Keywords

case study; comparative analysis; cross-national; higher education; pathways; permeability; transition; TVET

1. Introduction

Discussions on permeability mostly refer to the transition from technical and vocational education and training (TVET) to higher education. This is why the Austrian *berufsbildende höhere Schule* (vocational college), which combines a TVET qualification with a higher education entrance qualification, is considered the "best practice" (Deißinger et al., 2013, p. 8). However, transitions between TVET and an increasingly stratified higher education system are not necessarily developing as smoothly in the context of apprenticeships, which require substantive workplace training (Frommberger, 2019; Sender & Kriesi, 2021). By contrast with vocational schooling that may provide additional university preparation, apprenticeship graduates have been prepared explicitly for working life and therefore face disadvantages when attempting to transition to academic pathways. In many countries, apprenticeship routes are not only considered dichotomous to academic education, but they are also structurally and symbolically positioned as inferior. These routes often serve students from working-class or otherwise marginalised backgrounds, compounding issues of educational inequality. Consequently, the promise of equal opportunity through education remains unfulfilled for many apprenticeship graduates, raising critical questions about how education systems reproduce, rather than resolve, social divisions. Additionally, the higher education destinations are often of comparatively low value and may be seen as diverting or discouraging students from authentic higher education rather than as modes of access (Boliver, 2015; Brint & Karabel, 1989; Grubbs, 2020). Therefore, this article investigates the extent to which education systems support or hinder progression from apprenticeships to higher education, with apprenticeships defined as educational routes where access to qualifications is mediated by the labour market (Esmond, 2020; Fuller & Unwin, 2009).

The challenges and obstacles that persist throughout the transition from apprenticeships are closely monitored. In this article, we analyse options for permeability into higher education for apprenticeship graduates at upper secondary level—level 4 of the European Qualification Framework (EQF). A comparative approach is applied across countries that have different apprenticeship structures implemented. Our goal with this study is twofold: firstly, we aim to illustrate the common barriers encountered across different countries and, secondly, to highlight the differences in permeability between these countries. The central question posed in this article addresses the issue of equality between TVET, on the one hand, and general/higher education on the other. For apprenticeship graduates, access to higher education can be constrained by limited pathways and perplexing regulatory frameworks (Knight et al., 2022; for Germany, see Freitag et al., 2011; for Norway, see Schmees et al., 2024). These individuals may face marginalisation or rejection by (traditional) universities during the admissions process (Coulson et al., 2017; Jones et al., 2019; Pilz, 2019) and may possess inadequate academic skills due to the circumscribed nature of their school-based education (Spöttl, 2013, p. 466). Vocational expertise is frequently regarded as inconsequential within higher education settings (Gale, 2022). Simultaneously, level 4 EQF apprenticeship pathways are pursued by marginalised groups, in numerous countries, particularly in terms of class, gender, and/or race. Consequently, these individuals encounter additional forms of discrimination. Therefore, apprenticeship holders are, from a structural, organisational, and individual perspective, most likely *not* to progress into higher education despite increasing permeability claims.

At the *structural* level, student access to higher education marks the central concept that widens or closes possibilities for permeability between TVET and higher education (e.g., Bernhard, 2019, pp. 132–134). However, even in countries where TVET is regarded as relatively prestigious, such as Austria, Germany, and

Switzerland, access from apprenticeships to higher education is the exception rather than the rule. The concept behind the expression "equivalent not equal" (for Germany, see Eckelt, 2016, chapter 6.3; for Austria and Germany, see Schwabe-Ruck & Schlögl, 2014) has been used to legitimise obstacles and time-wasting that vocationally qualified students face when pursuing academic qualifications. The implementation of the EQF has resulted in the establishment of eight distinct levels of qualifications. Level 4 represents a qualification in upper secondary education, Level 5 an intermediate qualification, and levels 6, 7, and 8 correspond to bachelor's, master's, and PhD qualifications, respectively. This has served to further clarify the distinction between vocational and general/academic education. In Germany, for instance, it is possible to progress from EQF level 4 in general education to academic education at EQF level 6. However, this progression is significantly restricted for vocationally qualified students who are at the same EQF level. Furthermore, the progression is rendered even more challenging for those who possess an apprenticeship qualification, thereby supporting claims that permeability is more restricted for those who qualify from more work-related forms of TVET (Frommberger, 2019, pp. 24–25).

At the *organisational* level, recognition of prior learning (RPL) as well as the connections between TVET and higher education institutions are central to enable permeability (Bernhard, 2019, pp. 132–134). In England, for instance, despite a long-standing tradition of RPL in TVET, progression into higher education, which is usually from general education, tends to emphasise direct links to the study destination. It is inevitable that progressions from apprenticeships, which are more oriented to industry expectations, will not align in the same way. The "connections between TVET and higher education institutions" refer to models where the transfer from TVET to higher education is implemented through cooperating institutions in the sense that a vocational school, college, or workplace learning are closely connected to higher education to enable students' progression (Frommberger & Schmees, 2022). However, forms of hybridisation often fail to acknowledge workplace learning. Exceptionally, cooperative studies, often also referred to as dual studies, are degree programmes in Germany that combine work placements with higher education. But also, for these programmes, access is not guaranteed to apprenticeship holders at EQF level 4, illustrating that without student access, permeability has little meaning. Students graduating from cooperative studies programmes, in turn, face difficulties by themselves if they plan to progress into a master's or doctoral programme at a traditional university. While there are alternative options to obtain a master's degree also at a university of applied sciences or a cooperative studies university, the degree-awarding power for a doctorate is, in general, restricted to universities alone (Behrenbeck, 2022; Meurer, 2018; Schmees, 2022).

At the *individual* level, the majority of students enrolled in TVET in most countries are from working-class backgrounds (Avis & Atkins, 2017). It has been demonstrated that institutions of higher education, most notably those of a prestigious reputation, either refuse to accept these students (Coulson et al., 2017; Jones et al., 2019) or are not prepared for the diversity that follows their admission (Reay et al., 2009). Additionally, vocational knowledge is frequently not recognised by the more prestigious and well-resourced institutions that determine what is of value in higher education, whilst being its providers (Gale, 2022). It is evident that apprenticeship schemes exhibit a heightened prevalence of underprivileged individuals and a pronounced emphasis on vocational expertise when compared to the broader context of TVET. It can be claimed that the higher education destinations of apprenticeship graduates, due to the reasons mentioned, are likely to be less prestigious forms of higher education. The potential for an individual to benefit from the structural permeability mechanisms is contingent upon the assessment of appropriateness by the gatekeepers (Banscherus et al., 2016, p. 9; Schröder & Dehnbostel, 2019).

The barriers on the structural, organisational, and individual levels delineated above form the background of our investigation of transitions from apprenticeships to higher education. In order to comprehend the intricacies of these barriers at different levels and their multiple interactions in the diverse case studies of England, Germany, and Norway, potential transition pathways are initially identified and then discussed, supported by secondary data and/or statistics.

2. Methodology

Taking a comparative approach enables us to look beyond national explanations and reveal the structural patterns that influence the permeability between vocational and higher education in different systems. By examining three countries with distinct apprenticeship models and higher education systems, we can identify how formal progression opportunities are influenced by underlying institutional factors, such as the symbolic value of vocational knowledge, the stratification of higher education, and the impact of policy on access. This perspective enables us to look beyond context-specific barriers and interrogate whether educational reforms genuinely expand social mobility—or merely reproduce existing hierarchies in new forms.

The primary research method is a comparative case study analysis (Kroon & Sturm, 2007) between England, Germany, and Norway. In this approach, the cases are firstly analysed in-depth before a comparison is carried out. These cases were selected based on their distinct (and different) apprenticeship structures, which provide a diverse set of cases for comparison (Gerring, 2007, p. 89). This allows us to consider the impact of different apprenticeship models on the transition to higher education. This way, we are able to detect variations due to the design of the apprenticeship models. Our data basis comprises education reports, government documents, national statistics, and academic research. We, therefore, refer to the different designs of apprenticeship models in England, Germany, and Norway comparatively. In England, apprenticeship routes are increasingly fragmented, combining company-based learning with institution-based studies in varying ways across occupational orientations and levels of study (Esmond, 2020; Esmond & Atkins, 2022). In Germany, the dual apprenticeship can be characterised as a parallel company-based and school-based structure (Frommberger & Schmees, 2024). And, in Norway, the sequential model consists of successive phases in school and corporations (Smeplass & Schmees, 2023; Virolainen & Tønder, 2018). In all three cases, apprenticeships at EQF level 4 represent the initial qualification from which the possible transition pathways to higher education are analysed.

Finally, our analysis takes into account different routes from apprenticeship to higher education. As indicated in prior studies (Frommberger & Schmees, 2024; Schmees et al., 2024), systems usually provide multiple routes to higher education. In order to systematise those routes, we imply a vertically and horizontally organised structure of the education system (Wilbers, 2014, p. 21). The vertical structure is indicated, for example, by different levels of qualifications and the horizontal structure by different education subsystems with different aims and contents, for example, TVET, general/higher education, and increasingly hybrid forms (for the latter, see Schmees, 2022). When transitioning from apprenticeships to higher education, we can then distinguish horizontal, vertical, and lateral transitions (Hemkes, 2018; Hemkes & Wilbers, 2019; Wilbers, 2014). Horizontal transitions refer to pathways where another qualification on the same qualification level is done in another educational subsystem. Vertical transitions refer to transitions to a higher qualification level but in the very same education subsystem. Finally, lateral transitions refer to a

combined transition (horizontally and vertically) at the same time. Then, three different routes from apprenticeships to higher education can be traced (see Figure 1):

1. Diagonal routes from apprenticeships to higher education (lateral transitions);
2. Routes via higher TVET qualifications (vertical transition + horizontal transition);
3. Routes via general education (in Germany, however, as part of the school-based TVET system) on the same qualification level, that have to be added to the existing apprenticeship qualification before entering higher education (horizontal transition + vertical transition).

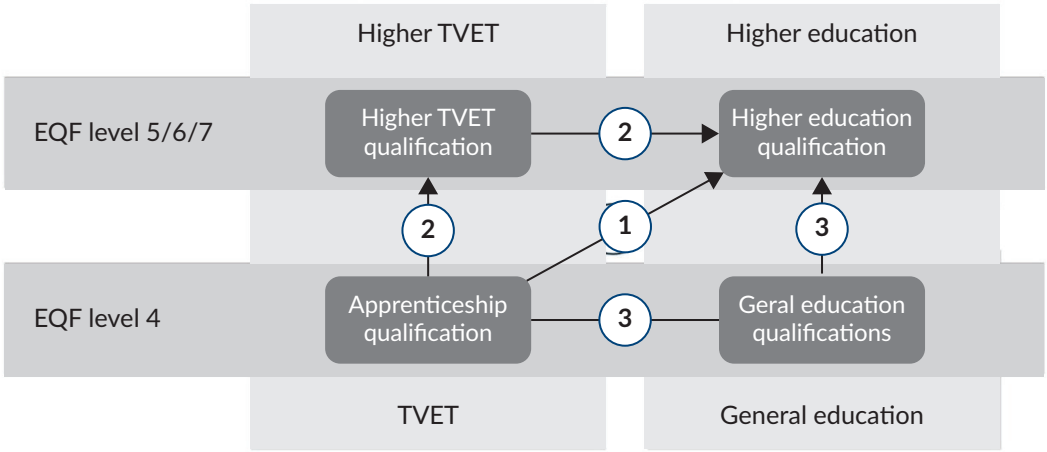

Figure 1. Conceptualisation of the three routes into higher education.

The following sections present the three country case studies. After a brief introduction to the national context, the case-specific transition pathways from apprenticeships (EQF level 4) to higher education are described in the context of the heuristic model. Finally, each case study will discuss how the possibilities of transferring from apprenticeships to higher education are contributing to educational mobility. Table 1 provides an overview of the transition paths identified in the case studies. Within the case studies, we present applied versions of Figure 1, except for the case of England, as the degree apprenticeship is at the same time a potential way into higher education, as it is itself a higher education programme already.

Table 1. Important pathways from TVET to higher education.

Cases	Route 1 (diagonal)	Route 2 (higher TVET)	Route 3 (general education)
England	Degree apprenticeship (combined higher education and higher apprenticeship qualification)		n.a.
Germany	Work experience plus admission test	Higher TVET (*Aufstiegsfortbildung*)	*Fachoberschule* (FOS)/*Berufsoberschule* (BOS)
Norway	Y Pathway or 23/5 rule	TVET college (*Fagskole*)	Supplementary programme

3. England: Innovation or Re-Drawing Barriers?

In England, the recent innovation of "degree apprenticeships," which combine a degree with certified higher-level work experience (and sometimes professional qualifications), appears to have provided a route to higher education for apprentices. This has been hailed by policymakers as a success; yet this apparent triumph is deceptive. Simply put, progression to these studies predominantly occurs from substantially different educational routes and different social groups than the working-class young people who dominate apprenticeships at EQF level 4. Instead, degree apprenticeships widely attract senior staff, such as managers and professionals who are already employed. In this sense, we can identify English degree apprenticeships not as a successful route from TVET into higher education, but as an alternative route into higher education for those who have already achieved some degree of mobility within the workforce. Alternatively, the recruitment of less academically successful young people directly into degree apprenticeships, promoted by some universities, can be described as a diversion (Brint & Karabel, 1989) from conventional higher education for direct entrants.

Apprenticeships in England include a wide range of substantially different provisions. The most self-evident distinction is by level (from EQF level 3 to postgraduate level). The higher levels include: higher-level apprenticeships, usually at EQF level 5 (sub-bachelor), and degree apprenticeships at bachelor's and postgraduate levels. The current structure of apprenticeships has been determined by legislation rather than by industry needs, although some employers have been involved in the design of qualifications by so-called "trailblazer groups" that have brought educators and other stakeholders together to design them. Neither the level, length, nor associated qualifications are determined in advance of this design process. Moreover, these qualifications differ even at the same level: an apprenticeship in engineering at EQF level 4 can include a two-year college course, leading to an upper-secondary qualification, alongside work experience; a course in hairdressing or beauty therapy is more likely to be provided entirely in the workplace (Esmond, 2020). The apprenticeship standard mandates that apprentices be given 20% of their time as "off-the-job training," but there are no strict requirements as to what this includes or where it takes place (Esmond, 2020).

Apprenticeships in England have long been distinguishable as a less favourable TVET route than in other European countries, such as Germany. During the early post-war period, they provided an option for low-attaining young people seeking to leave school early to enter the labour market, with apprenticeships combining full-time work and part-time day or evening study; apart from small numbers of engineering apprentices progressing to part-time "higher national certificates" in their final year, questions of higher-level progression hardly arose. The divide between sectors widened with the explosion of youth unemployment in the 1980s, as apprenticeships became the name given to competency-based qualifications offered by a private training market (Fuller & Unwin, 2009). By contrast, over the same period, higher education expanded from participation below 20% to over 40% of the age cohort, the beneficiaries including lower-achieving middle-class youth in schools and further education colleges (Hodgson & Spours, 2015; K. Orr, 2020). Consequently, apprenticeships have lost much of their former character as a direct entry route to work, supported by educational provision that could provide a platform for more senior roles in the workforce at a later stage.

3.1. Introduction of Apprenticeship-Only Pathways

More recent attempts to introduce apprenticeship routes at higher levels have had a difficult history. Entry into English higher education through an apprenticeship route first took the form of "higher level" apprenticeship (Dismore, 2014). Motivated by a government drive towards quasi-market diversity, including the encouragement of private providers, its introduction was seen as an alternative to full-time bachelor's degrees, which had long remained the main mode of study in English higher education (Higher Education Funding Council for England, 2010; National Committee of Inquiry into Higher Education, 1997). The numbers on these courses remained low compared to part-time higher education in colleges, which had been undermined by the withdrawal of grant funding (Esmond, 2012, 2015). Without the support of significant financial investment, growth was insubstantial, as captured by a series of reports (e.g., Joslin & Smith, 2013). Smith et al. (2015) recorded the three-year progression rate of advanced (i.e., EQF level 4) apprentices as falling from 11.2% in 2006/2007 to 8.8% in 2009/2010. In common with other vocational routes, the transitions of young people from this generation were frequently irregular and disrupted: Whilst the progression of the 2006/2007 cohort into higher education over seven years stood at 19.3%, only 58% of these students progressed within three years, whilst 42% progressed between four and seven years after completing their apprenticeship. Meanwhile, a shift to older apprentices was accomplished at a stroke by re-designating adults on a work-based "train to gain" route as apprentices. Smith et al. (2015, p. 9) reported an increase in the total of advanced apprentices who were aged 25+ from 115 or 0.3% of the total in 2006/2007 to 25,015 or 40% of the total in 2010/2011.

The policies of conservative-led governments from 2010 proved more successful, through reforms designed to raise both the profile and quality of apprenticeships, as well as the level of study that most apprenticeships provide. Changes in apprenticeship policy since 2015 have centred on the introduction of new apprenticeship standards (routes with fewer knowledge-based qualifications and with rigorous end-tests replacing competency assessments) and a compulsory levy imposed on employers (Richard, 2012; Wolf, 2015). For employers unwilling to spend this levy on training new entrants to the business, degree apprenticeships offered the chance to spend it on management qualifications for their senior staff. These reforms, taken together, have allowed UK governments—positioning apprenticeships as a diversification of higher education—to increase the proportion of apprenticeships at higher levels even as the total number of apprenticeships has declined. The number of approved standards was much higher at EQF level 4 and above, and these were funded at significantly more favourable levels. Thus, 33% of apprenticeships started in 2022/2023 were at higher levels, whilst intermediate level (EQF level 3) apprenticeships had fallen from 65% of the total (prior to the reforms) to only 23% of the total. The total number of apprenticeships at all levels remains lower than before the reforms (Foley, 2021; Powell, 2024). Conversely, the number of higher education entrants studying on degree apprenticeships has more than quadrupled since 2015/2016. This now stands at 13.2%, almost one-seventh, of the total entrants to degree studies (Department for Education of the UK, 2024).

3.2. More Higher Study, Less Progression

This has transformed apprenticeships from a system in which progression to higher education was largely excluded to a system in which apprenticeship now *includes* study at higher levels. Work-based and work-related learning have become recognised components of many degree courses, a change easily

represented as a convergence of higher and vocational sectors. Pullen et al. (2024) argue that degree apprenticeships now provide a route through which adults can progress into higher education in a way that was not previously available. Albeit in an impoverished way, this supports the entry to higher education of those who have found themselves in, or close to, more responsible positions at work. In this, they have favourable opportunities to carry out the requirements of their apprenticeship compared to those studying at earlier levels (Esmond, 2020).

This reform, however, does not represent an increase in progression from TVET courses at EQF level 3 and below. Instead, it has introduced a new route within higher education. From the perspective of access for disadvantaged students, this shift appears to have widened rather than diminished the divide, as degree apprenticeships and higher-level apprenticeships become more frequent opportunities for middle-class staff (Fuller & Unwin, 2017). In 2022/2023, 48% of starting apprenticeships were undertaken by entrants aged 25 and over, who were often senior managers. Evidence of contributions to social mobility remains partial, with even providers reluctant to claim degree apprenticeships as evidence of widening participation (Cavaglia et al., 2022; Lillis & Bravenboer, 2022; Pullen et al., 2024). Reflecting the market policies of recent years, it has been argued that apprenticeship in England may be less likely to promote permeability than to assure the educational success of those already socially advantaged. The appearance of apprenticeships at degree level coincides with the discontinuation of apprenticeships at lower levels of study, from which progression to degree study has become as improbable as ever, but with fewer apprenticeships at lower levels to start with. Rather than a new ladder of opportunity, apprenticeships in England have had many of the lower rungs kicked away.

4. Germany: Between Permeability and the Educational Divide

The German TVET system offers a broad spectrum of initial and further vocational qualifications (Frommberger, 2025; Frommberger & Schmees, 2024), aimed at diverse target groups and sectors and providing a range of options for further studies. In numerous cases, these programmes offer the opportunity to obtain TVET qualifications that can be utilised to directly access higher education. In certain instances, hybrid qualifications are also offered, integrating vocational and higher education (in particular, cooperative degree programmes). In general, approximately one-third of students in Germany transfer to higher education via vocational pathways rather than via general education (Autor:innengruppe Bildungsberichterstattung, 2024, pp. 209–215).

The development of these diverse pathways between vocational and higher education has been a historical process. In Germany, there is a long-standing tradition of acquiring a higher education entrance qualification through TVET (Buchholz & Pratter, 2017; as cited in Autor:innengruppe Bildungsberichterstattung, 2024; see also Frommberger, 2021). The expansion of TVET pathways leading to higher education entrance qualifications constituted a central component of the so-called educational expansion in the 1970s. In this respect, TVET in Germany serves to develop opportunities for a target group that did not complete general upper secondary education. In this regard, TVET fulfils a compensatory function.

However, these opportunities, i.e., to be permitted to transfer to a course of study via TVET, are not traditionally associated with the dual apprenticeship model (EQF level 4). Here, the acquisition of recognised vocational qualifications is predicated on training that takes place predominantly in the company and is

supplemented by learning in vocational schools. The transition from dual apprenticeships to employment is a relatively effective process. However, it lacks connections to higher education. This dead end of apprenticeships has shaped the political and scientific discourse on TVET for decades. Particularly since the 1970s, there have been ongoing discussions and demands for the integration of apprenticeships with the higher education entrance qualification. Notwithstanding the implementation of pilot programmes, a direct link between the two has not been established to date.

4.1. Diversified Routes From Apprenticeships to Higher Education

With regard to the representation of transitions in Figure 1, the following transitions can be distinguished (see Figure 2):

1. Transitions from apprenticeships to higher education via work experience and an admission test;
2. Transitions through higher TVET qualifications;
3. Transitions through school-based university entrance qualifications as part of school-based TVET.

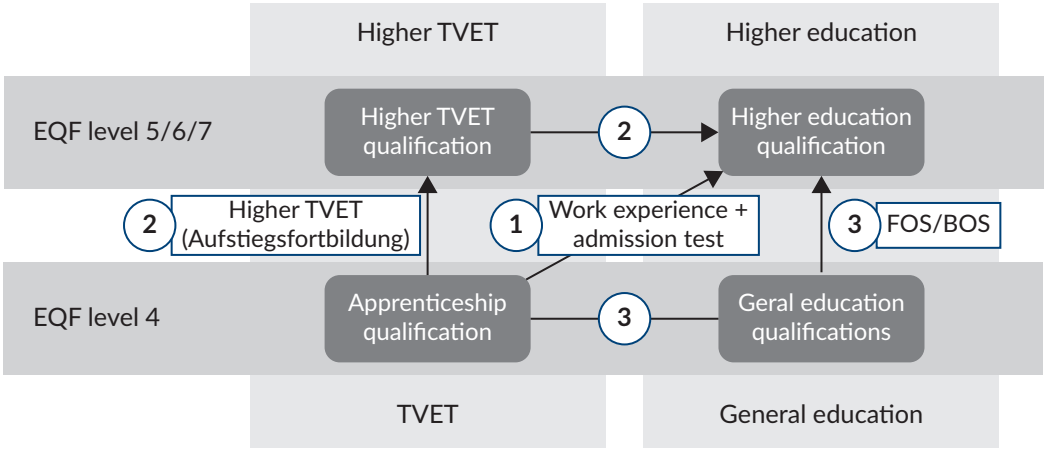

Figure 2. Transition routes to higher education in Germany.

Since the beginning of the 2000s, this structural deficit has been partially compensated for by changes to the admission regulations for higher education access in the higher education acts of the federated states. The prevailing regulations stipulate that, in each federated state, individuals who have not obtained a general qualification for university admission at school, but a vocational qualification, may also be admitted to university studies. In order to be considered for this position, it is necessary to have a minimum of three years of professional experience, which must have been gained following the conclusion of the apprenticeship programme. Prospective students are then required to undertake an admission test offered by the target university. If the necessary criteria are met, it is possible to undertake a programme of study that is closely related to the training occupation (Standing Conference of the Ministers of Education and Cultural Affairs, 2009). It should be noted that the regulations pertaining to the admission test are subject to variation depending on the federated state. Some federated states have additional regulations. In the state of Hesse, for instance, the admission test can be omitted if they achieve a certain grade in their apprenticeship qualification.

Vocationally qualified people who have successfully completed an apprenticeship are presented with the opportunity to pursue an additional qualification in a TVET school after their apprenticeship. For this purpose, the specialised upper secondary school (FOS) and the two-year full-time vocational school (BOS) are available at the upper secondary level (EQF level 4), offering programmes that combine vocational training with general education in specific occupational fields (see also Dörffer & Bernhard, 2025). This generally two-year full-time school course enables students to obtain both a subject-specific and a general university entrance qualification. The latter is contingent upon the student's selection of a second foreign language. Since the general higher education entrance qualification depends primarily on advanced knowledge in general education, this pathway is assigned to general education in the presented conceptualisation, although the FOS/BOS are part of the school-based TVET system.

An alternative pathway to higher education is represented by higher TVET. Graduates of higher TVET are awarded the sequential titles of *vocational specialist* (EQF level 5), *bachelor professional* (EQF level 6), and *master professional* (EQF level 7), thus obtaining a general higher education entrance qualification. This allows them to study in a programme that is not related to their apprenticeship.

In addition to these pathways, which are closely related to vocational education and training, a study by Ordemann et al. (2023) shows that a relevant proportion of people begin an apprenticeship even though they already have a school-based higher education entrance qualification. However, many of these people do not remain in the training occupation but instead begin a study programme following their apprenticeship qualification. This pathway is not included in the analysis, as a university entrance qualification is already available; nevertheless, it seems important to mention that such educational pathways are also common in Germany.

4.2. The Educational Divide and Its Consequences

The German Qualifications Framework (DQR; Deutscher Qualifikationsrahmen, 2024) reflects the political desire for equivalence of qualifications in the different subsystems of general, vocational, and higher education. Within this framework, initial TVET qualifications are positioned at the same level as general education degrees. Higher level TVET qualifications, such as the bachelor professional and the master professional, are classified within the same EQF-level as university bachelor's and master's degrees. This mapping and comparison of the different qualification levels in the DQR serves to transparently present the politically desired value of the qualifications. However, the hypothesis that the formal mapping of qualifications facilitates actual transition opportunities—or even legally enshrined entitlements—for horizontal or diagonal mobility bears little resemblance to reality. The higher education subsystem recognises vocational qualifications only to a very limited extent. Transitions from a bachelor professional qualification to a university-based master's degree programme are infrequent and largely confined to a few exceptions, predominantly within part-time programmes offered by private universities. Conversely, there is also an absence of systematic recognition or credit transfer from academic to vocational pathways.

The number of students at universities in Germany who were able to take up studies via the aforementioned admission regulations under federal higher education law has increased in the last two decades, but remains at a relatively low level overall, at around two percent of all students. Despite initiatives to admit non-traditional students to universities, the political target of five percent was not met (Stifterverband für die Deutsche

Wissenschaft, 2022, p. 32). In 2022, only 12,676 students started a degree course at higher education without a general school-based permission for higher education. In comparison to the year 2007, when only 3,940 of the mentioned students started studying, the number has almost tripled but remains at a significantly low level (Nickel & Thiele, 2024, p. 5). Significant differences in the numbers can be seen between the federated states, between the types of higher education institutions, and between the subject areas. The number of this group of students is above average at universities of applied sciences (Spangenberg & Quast, 2023, p. 34). The vast majority of these students are enrolled in programmes, and their average age is notably higher than that of traditional students (Nickel & Thiele, 2024, p. 8).

A significant rationale for the expansion of higher education to people with vocational qualifications pertains to the promotion of is equal opportunities. This particular vocational pathway into higher education is predominantly utilised by people who come from families where the parents do not possess academic qualifications (Wolter, 2018). The most significant obstacles encountered by individuals from non-academic households pertain to the transition to institutions that offer university entrance qualifications and the subsequent transfer to a university (Stifterverband für die Deutsche Wissenschaft, 2022, p. 86). Even when vocationally qualified students start a university programme, the success rate of students whose parents are not academics is proportionally lower. Only 76% of these non-traditional students complete a bachelor's degree, 40% a master's degree, and 7% a doctorate. In contrast, 82% of students with academic parents complete a bachelor's degree, 55% a master's degree, and 8% a doctorate. As posited by Ordemann et al. (2023, p. 62) and Stifterverband für die Deutsche Wissenschaft (2022, p. 13), success at university remains contingent on educational and familial background. However, it is also true that the opening of higher education, long desired by education and social policy, could only be implemented politically with economic policy efforts to increase the attractiveness of TVET (via these additional access rights).

It has been demonstrated that students whose parents have not obtained an academic degree are significantly more likely than the children of academics to acquire a higher education entrance qualification via a general secondary school followed by attendance at a vocational school like FOS/BOS. Consequently, the FOS/BOS route has been identified as a well-established model for the transition to higher education (Spangenberg & Quast, 2023, pp. 30–33). Dahm and Peter (2023, p. 242) emphasise that the majority of those with a vocational qualification who acquire a higher education entrance qualification at a vocational school, such as an FOS/BOS, after their apprenticeship have only a subject-specific higher education entrance qualification. This means that they have only limited access to universities of applied sciences or subject-specific university courses. However, in FOS/BOS, a general higher education entrance qualification would be a formal opportunity. Nevertheless, such pathways demonstrate that in many cases a period of employment is interspersed with a transition to vocational school in order to obtain a higher education entrance qualification. As a result, these pathways tend to be more fragmented and time-consuming (Spangenberg & Quast, 2023, pp. 30–33). Not mentioned so far is the possibility of obtaining a general higher education entrance qualification via evening classes. These have not been included here as a specific option for those with vocational qualifications due to their generalised nature. Additionally, this possibility is equally time-consuming.

5. Norway: A Multitude of Opportunities Into Higher Education

Established in 1994, the Norwegian TVET system follows a sequential model comprising two years of school-based education followed by two years of company-based apprenticeship training. This approach enables students to gain both classroom learning and workplace experience, preparing them for a variety of career paths. Currently, the system offers 196 distinct qualifications across industries such as healthcare, construction, maritime operations, and technical trades (Norwegian Directorate for Education and Training, 2020). Apprenticeships are central to the system, providing students with hands-on experience and facilitating transition into employment. These structural elements reflect the dual aim of addressing individual learning needs and supporting workforce development (Smeplass & Schmees, 2023).

Higher education in Norway comprises universities, university colleges, and specialised institutions offering bachelor's, master's, and doctoral programmes. Admission to higher education typically requires a higher education entrance certificate, which is usually obtained through academic upper secondary education. Vocational graduates face challenges in meeting this requirement, as their training does not automatically confer a higher education entrance certificate, creating systemic barriers to further education. To address these limitations, Norway has introduced reforms to enhance accessibility, for example, the Competence Reform (2001) that allows individuals aged 25 and older to qualify for higher education through *realkompetanse* (a form of RPL), bypassing traditional academic requirements. This initiative reflects broader efforts to support lifelong learning and adapt the education system to the needs of a changing labour market (Ministry of Church, Education and Research of Norway, 1999; D. Orr & Hovdhaugen, 2014).

5.1. Differentiated Possibilities to Progress From Apprenticeships to Higher Education

In Norway, the higher education entrance certificate is typically required for entry into higher education, as outlined by the Universities and Colleges Act. However, alternative pathways allow students with apprenticeship backgrounds to pursue higher education. These pathways aim to make higher education accessible to a broader range of students, accommodating the needs of those who followed the vocational track during upper secondary education (Schmees et al., 2024). Here, we only discuss pathways from apprenticeships to higher education systematised against the transition types (Figure 3):

1. As for the diagonal route, two distinct pathways exist in Norway, the Y Pathway as well as the 23/5 rule;
2. Also, higher TVET is an option to eventually enter higher education;
3. As for the horizontal pathway, students could opt for the supplementary year.

The Y Pathway (derived from *yrkesfag*, which means vocational) is a specially designed educational route for individuals with a relevant trade certificate, journeyman's certificate, or vocational qualification but who lack general study competence (Direktoratet for høyere utdanning og kompetanse, n.d.). This pathway enables the apprenticeship holder to access higher education programmes, particularly in fields such as engineering, maritime operations, and nautical studies, without needing to meet the traditional academic entry requirements. The Y Pathway is offered by various higher education types across Norway. In addition to technical disciplines, some institutions, like the Inland Norway University of Applied Sciences, offer Y Pathway programmes tailored to fields like service management and marketing. Typically, Y Pathway programmes are designed as bachelor's degrees. Admission requirements are based on the applicant's vocational background, with specific entry criteria determined by each higher education institution.

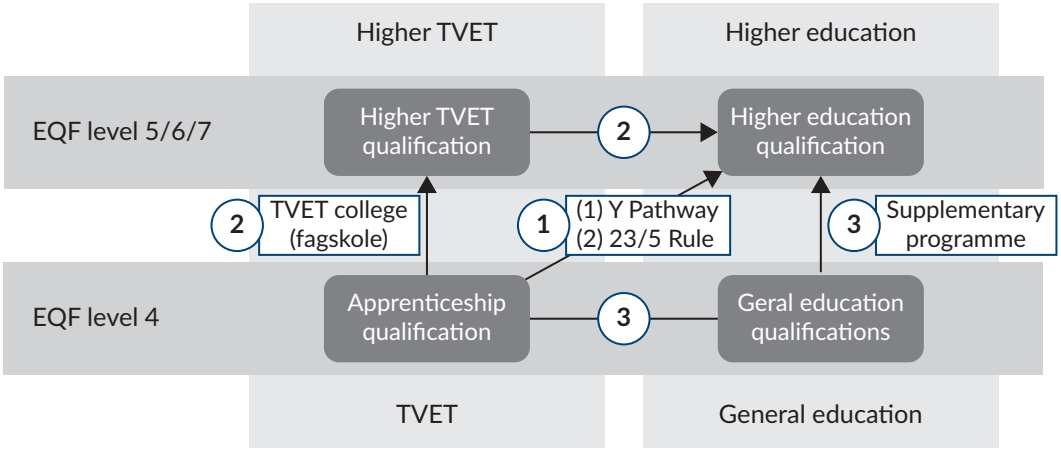

Figure 3. Transition routes to higher education in Norway.

The 23/5 Rule (*23/5-regelen*) offers an alternative entry route into higher education for adults who do not have general study competence. This pathway is open to individuals who are at least 23 years old and have five years of combined work or educational experience following an apprenticeship qualification (or comparable). To fulfil the experience requirement under the 23/5 Rule, applicants must document a minimum of five years of full-time work experience and/or education, with this combined experience totalling the equivalent of five full-time years. Applicants must also complete a set of six core subjects, including English, history, mathematics, science, Norwegian, and social studies, to meet the minimum competency standards for higher education. According to this rule, the student receives a grade point average based on achievements in the mentioned subjects. These must be documented through a diploma or certificate of competence. In addition, and not uncommonly, students also gain points from other documented characteristics or achievements such as science credits, language points, gender points, points for entrance exams, age points (from the age of 24) as well as additional points for (a) military or civil service, (b) folk high schools, (c) higher TVET, or (d) other higher education.

Furthermore, students may choose to continue with a one-year supplementary programme. This pathway has specific requirements for students to complete a specific set of general education subjects and is part of upper secondary education. Students can also complete this programme prior to their apprenticeship, offering flexibility in their educational journey (Ministry of Education and Research of Norway, 2009, 2022).

The *higher TVET* system in Norway, known as *fagskolene*, offers a pathway for apprenticeship graduates to expand their skills at a post-secondary level without requiring general study competence. As noted by the Ministry of Education and Research of Norway (2025), *fagskole* programmes deliver specialised, practical education tailored to labour market needs, typically ranging from six months to two years. Graduates receive qualifications recognised at EQF level 5. Graduates earn either a *fagskolegrad* (60 credits for one-year programmes) or a *høyere fagskolegrad* (120 credits for two years). Both qualifications can facilitate entry to higher education by (a) providing additional admission points for applicants, (b) supporting admission based on RPL (*realkompetanse*), or (c) conferring general study competence for graduates of two-year programmes, provided the programme grants at least 120 credits (NOKUT, n.d.). Completion of a two-year *fagskole* programme confers general study competence, allowing graduates to pursue university or college education if desired. A recently adopted reform now ushers in a paradigm shift, mandating new *fagskole* tracks at EQF

levels 6 and 7 and effectively aligning higher vocational routes with bachelor and master levels (Ministry of Education and Research of Norway, 2025).

5.2. Limited Use of Permeability Options

Among the presented alternative routes to higher education, the supplementary programme remains the most prominent, accounting for 15.4% of total admissions in 2022 (Schmees et al., 2024). This pathway continues to serve as a vital link for vocational graduates seeking a higher education entrance certificate, enabling access to a broad range of higher education opportunities. Other pathways, while impactful, show lower uptake. The Y Pathway, designed for vocationally trained students entering fields such as engineering and maritime studies, accounted for just 0.5% of total admissions in 2022 (Schmees et al., 2024). Its targeted nature demonstrates the potential for tailored programmes to address specific industry needs, but also reflects the limitations of such niche solutions. Similarly, the 23/5 Rule, which accounted for 3.6% of admissions in 2022, provides a crucial avenue for mature students with substantial work experience but limited formal qualifications, offering a flexible re-entry point into higher education (Ministry of Education and Research of Norway, 2022). The *fagskole* system, which has provided TVET at EQF level 5, has experienced remarkable growth, with enrolments doubling since 2016 to over 30,000 students in 2023 (Norwegian Government, 2023). This reflects government efforts to align education with labour market needs, particularly in sectors such as healthcare, technical trades, and maritime industries (CEDEFOP, 2024). Pathways like the fagskole system, Y Pathway, and 23/5 Rule have successfully facilitated transitions in technical and applied disciplines but remain limited in scope. The Y Pathway, for instance, is predominantly geared towards engineering and technical professions, while the fagskole system primarily attracts students in specific sectors such as healthcare or maritime industries, limiting its broader applicability (Norwegian Government, 2023). Expanding these pathways to encompass a wider range of disciplines will significantly enhance their impact. However, despite these successes, alternative pathways collectively contributed to only 21.7% of total admissions to higher education in 2022, indicating the continued dominance of traditional academic routes (Schmees et al., 2024). If we exclude the supplementary programme—since it is, at its core, closely aligned with general education pathways—the share of TVET-based admissions to higher education stands at just 6.3%. This indicates that non-academic routes into higher education, and thus the recognition of vocational knowledge and skills, remain rather limited.

The limited scale of alternative routes highlights ongoing challenges in achieving full educational mobility. While these pathways mitigate traditional barriers imposed by a higher education entrance certificate and create opportunities for apprenticeship graduates, structural inequalities persist. Early educational tracking often funnels students into vocational pathways by age 15 or 16, shaping their aspirations and limiting their chances of pursuing higher education. These decisions perpetuate socioeconomic divides, as TVET students are disproportionately from lower-income or underprivileged backgrounds (Schmees et al., 2024). Addressing these systemic biases is essential to ensure that pathways genuinely promote social mobility (Smeplass & Schmees, 2023). On the other hand, Norway's strong labour market for vocational graduates reduces the incentives for transitioning to higher education. Attractive salaries, job security, and favourable working conditions make TVET an appealing endpoint for many students, often outweighing the perceived benefits of higher education (Barth et al., 2014; Smeplass & Schmees, 2023). This dynamic highlights the need for policies that enhance both the perceived and actual value of higher education for vocational graduates, particularly in non-technical fields.

Despite these challenges, the inclusion of non-traditional students in higher education demonstrates progress toward educational equity. Norway has made strides in addressing inequality, but achieving full mobility requires ongoing efforts to reduce societal biases against apprenticeship graduates, broaden the scope of existing pathways, and create tailored support mechanisms (D. Orr & Hovdhaugen, 2014; Smeplass & Schmees, 2023). Efforts should also focus on providing incentives for apprenticeship graduates to engage with higher education, ensuring that transitions are both accessible and desirable.

6. Comparative Cross-Case Analysis

The case studies indicate that an increasing number of routes are being established to enable individuals with apprenticeship qualifications to access higher education. Depending on individual circumstances and specific aspirations, pathways exist; however, nearly all involve opportunity costs. When additional qualifications are required between completing training and entering higher education, this often includes at least time-related burdens. Such barriers can be particularly challenging for individuals with low socio-economic status. Other hindering factors include a lack of information or family responsibilities (e.g., caregiving duties). Comparing the three cases, we can see that, despite differences, pathways from apprenticeships to higher education are still challenging and more complex than the standard routes into higher education in all three cases.

For Germany and Norway, we analysed Route 1 as an option for a diagonal transfer from apprenticeships to higher education. However, in no case is the access straightforward. In Germany, while there is a possibility to enter higher education with an apprenticeship after three years of work experience and a university-specific admission test, the regulations are very confusing and state—as well as university-dependent (Freitag et al., 2011). Consequently, this route is taken by a very limited number of students. For Norway, we discussed two possibilities for a diagonal entry from apprenticeship to higher education. While the Y Pathway is limited to areas of skills shortage, the 23/5 Rule, similarly to Germany, entails a highly complex admission procedure that is ultimately decided by universities on a case-by-case basis. As in the case of England, these possibilities are located within the most vertically extensive apprenticeship system, ranging from level 2 qualification level to master's degrees. By studying in a degree apprenticeship, students gain both an apprenticeship qualification at the level of studies and an academic degree. However, as analysed in the case study, there are barriers in the system for those with an apprenticeship qualification at level 4 EQF in both the higher education system and the degree apprenticeship system, where mainly people already in middle management positions are enrolled. Also, the participating universities are usually former polytechnics and therefore less prestigious than older universities.

Route 2 is defined as a higher education entrance via higher TVET. In Germany, this route is implemented by a newly established system of three distinct levels of higher TVET. If any of these levels is accomplished, a transfer to higher education is possible. However, very often these transitions are further limited by the type of university and/or the study programme. Furthermore, it is very unlikely that a higher TVET qualification at master's level is accredited towards an academic qualification. Therefore, graduates from higher TVET usually start their academic qualification as university freshers in bachelor's programmes. Also, Norway distinguishes two levels of higher TVET. Diagonal transfer is only possible via level 2, while level 1 is eligible to be supportive in other routes into higher education only.

Route 3 was introduced as another qualification on EQF level 4 in order to enter higher education after a horizontal transition. And if students must acquire additional qualifications either within the general education system or through advanced TVET, it raises the question of how effectively the skills gained during apprenticeships are being recognised. As for Germany, this route is the standard pathway for apprenticeship graduates at EQF level 4 who do not already possess a higher education entrance qualification. The educational pathways at FOS (and BOS) are preparing their students for higher education by mostly covering general subjects, even though those schools are part of the system of TVET schools. These routes take another two to three years, depending on whether the objective is access to universities of applied sciences or traditional universities. A similar possibility exists in Norway, which takes just one year to be completed. However, the requirements for students in the supplementary year are extremely high and very much general education-driven.

As long as profitable outcomes like career pathways, salaries, and prestige continue to be achieved primarily through academic qualifications, these transition pathways from vocational to higher education are relevant for social equality. Although the creation of alternative further education pathways in higher TVET is being addressed, it is still not on an equal footing with academic education. Despite the efforts made to support the transition of people with vocational qualifications into higher education, the numbers are comparatively low. This may be due to the fact that creating transition pathways does not sufficiently address the structural, organisational, and individual barriers that are faced by those with vocational qualifications.

The presentation of the transition pathways and the analysis were carried out on the basis of a heuristic model (Figure 1). Accordingly, a selection of country-specific transition mechanisms was made to ensure comparability of the cases. However, this means that other transition mechanisms are not mentioned in this article. These relate, for example, to educational pathways through general education without taking TVET into account, or individual regulations for private or specific types of higher education institutions, such as the recognition of exceptional individual talents in specialised higher education institutions, for example, for sport, music, and art in Germany (Winter, 2019). Furthermore, the cases and transition routes were primarily presented at a formal-structural level and supported by statistical data. This approach also results in a less detailed depiction of the routes themselves. The limited depth is partly attributable to the need for a uniform basis of comparison, which, on the other hand, provides the possibility for the comparative approach chosen. The partial lack of quantitative presentation of individual transition pathways is due to a lack of data. This applies in particular to the German case.

As our cross-country comparison shows, policy can lay formal bridges only when the supporting institutions and reward structures rise to equal height on both banks. Until vocational and academic credentials share the same societal status, permeability will remain more a design feature on paper than a functioning part of the education landscape. At the same time, it promotes systemic inequality and tends to reinforce it rather than reduce it.

Conflict of Interests

The authors declare no conflict of interests.

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