Tertiarization and academization of Vocational Education and Training in China and Germany

Junmin Li[a]*, Johannes Schmees[b], Hui Tang[c], Dietmar Frommberger[d]

[a]*Chair for Economic and Business Education, University of Cologne, Cologne, Germany;* [b]*Department of Teacher Education, Norwegian University of Science and Technology, Trondheim, Norway;* [c] *Department of Economics and Business Education, University of Bamberg, Germany;* [d]*Department of Business and Economic Education, Osnabrueck University, Germany*

*Dr. Junmin Li, Chair for Economic and Business Education, University of Cologne, Herbert-Lewin-Str. 2, 50931 Cologne, Germany, e-mail: junmin.li@uni-koeln.de

Authors' short biographies:

Dr. Junmin Li is a senior researcher at the Chair of Economics and Business Education at the University of Cologne, Germany. Her research is concerned with international comparative TVET research, school quality development, in-company training, learning task and the integration of refugees into the labour market.

Dr. Johannes Karl Schmees is Postdoctoral Fellow at the Norwegian University of Science and Technology, Trondheim, Norway. His research focuses on international and comparative VET.

Hui Tang is a Doctor student at the Department of Economics and Business Education at the University of Bamberg. Her research focuses on comparative VET and vocational teacher education.

Dr. Dietmar Frommberger is Professor of Vocational Education and Training at Osnabrueck University, Germany. His research focuses on vocational education and training in international comparison.

Tertiarization and academization of Vocational Education and Training in China and Germany

Vocational education and training (VET) and higher education serve different purposes and pursue different logics. In view of the increase of qualification requirements for skilled workers, many education systems are responding by linking VET to higher education. However, the borders between VET and higher education have developed in different ways in different nations. Therefore, we analyze different approaches of tertiarization and academization of VET to answer to what extent VET and higher education are affected by the described changes. To answer these questions, we use a heuristic that includes an objective, an organization, a program, and a system dimension. Subsequently, we analyze the cases of China and Germany as they differ greatly in the dimensions of the heuristic. The study is based on the analysis of documents in the selected countries. Based on our findings, we point out consequences for the purpose and equality between VET and higher education.

Keywords: China; Germany; higher education; higher vocational education and training; hybrid education; permeability; vocational education and training

Introduction

Vocational education and training (VET) is often regarded as a distinct pathway separate from academic education, focusing on practical skills and knowledge for specific occupations. The approach to VET after secondary education varies from country to country. In many countries, VET after secondary education is referred to as further education, continuing education, or adult education and is categorized separately from tertiary education (e.g., for Germany see Cedefop, 2011, 2020). However, there are an increasing number of countries where post-secondary VET is considered part of or as an extension to tertiary education. For instance, in Finland, universities of applied sciences have been introduced at the beginning of the 1990s in order to provide VET in the tertiary sector. In Australia, associate degrees, which are understood to be both academically and vocationally qualifying, have been introduced as a qualification in recent years and are provided both by universities and by VET organizations, such as Technical and Further Education Colleges (Koshy *et al.*, 2020; Hippach-Schneider

et al., 2017).

These developments are a response to changing societal and economic needs. As such, the relationship between VET and higher education is transforming. Different approaches are used in the discourses of this transformation, e.g., “academic drift” (see Sinclair & Webb, 2020; Tight, 2015; Griffioen & de Jong, 2013; Kyvik, 2007), “vocationalization of higher education” and “tertiarization of VET” (e.g., Deissinger & Ott, 2016), “academization of emerging professions” (e.g., McEwen & Trede, 2014), “hybrid pathways” (e.g., Bathmaker, 2017), or “hybrid education systems” (Author, 2022). The different terms can be partly explained by the different relationships between VET and higher education in the respective national contexts.

To take different approaches into account we make an international comparison and describe this transformation following the approaches of tertiarization and academization of VET. Based on Criblez (2010), this study defines the tertiarization of VET as a process where VET programs are upgraded to the tertiary level but are not given an academic status, e.g., in terms of an academic bachelor’s or master’s degree. Furthermore, the organizations providing VET programs at the tertiary level are not considered research oriented institutions, and the curricula are written first and foremost for employable competences, not for research competences. Tertiarization refers to elevating the status of VET, increasing the attractiveness of vocational pathways as well as enhancing the social and economic benefit of VET qualifications. In summary, tertiarization promotes parity of esteem between vocational and academic education but does not entail the transformation of VET into an academic format (Deissinger & Ott, 2016). In contrast, academization involves the incorporation of VET into the academic system. In the process of academization, VET programs incorporate research-oriented content, are delivered at higher education organizations, and qualify for academic

degrees (see Criblez 2010). Especially in countries with a high proportion of university graduates, the vocationalization of higher education as a consequence of the academization of VET aligns programs more closely with labor market demands and facilitates graduates' entry into the labor market (Hippach-Schneider *et al.*, 2017).

From the policy understanding, Cedefop (2011) divides the relationship between academic education and VET into five categories. Originally derived from European cases, these categories can also be applied elsewhere. The categories are: (1) a dual system vocational and academic education at tertiary level, separate from each other, (2) an integrated approach defined via the qualification and recognition system, (3) tertiary VET integrated or separated as part of higher education policy, (4) education policy emphasis on academic tertiary education, and (5) no explicit VET programs at the tertiary level (Cedefop, 2011). The categories illustrate the diversity of relationships between VET and higher education. It is important to recognize the starting points from which the academization and tertiarization of VET originate to analyze them and their effects.

From a comparative perspective, borders and overlaps between VET and higher education have developed in different ways. Our objective is to distinguish approaches of tertiarization and/or academization of VET in China and Germany comparatively. Our structured analysis and comparison of the developments in China and Germany are carried out using a heuristic consisting of four dimensions, each representing a comparative dimension (tertium comparationis) and empirically based on a qualitative document analysis.

The Chinese VET system beyond upper secondary education is to be placed in Cedefop's (2011) third group as a part of higher education but separates it from academic education. The German VET system is predominantly dual. VET after upper

secondary education is separated from higher education, but nevertheless organized in a legally prescribed VET system and can be classified in Cedefop's (2011) first category. Due to the different initial situations of the relationship between VET and higher education, a most-different approach (Gerring, 2007) is pursued here in order to compare strategies of initially different structured systems. The most-different approach makes it possible to examine country-independent developments and country-specific developments (Pilz, 2022).

Heuristic as methodology

Drawing on an evolutionary perspective in the comparative education research (Lauterbach, 2003), the study seeks to identify, interpret, and classify overarching developments related to academization and tertiarization, which are observed as global trends in various countries. The initial situation of academization and tertiarization of VET differs significantly between China and Germany. The study primarily relies on qualitative document analysis to investigate tertiarization and academization in VET within the selected countries. The document analysis encompasses a range of sources, including government publications e.g., educational reports, regulations, policy papers by educational and VET stakeholders, and research studies that encompass both theoretical and empirical publications. The analysis for both cases follows a three-step process: (1) selection, (2) sampling, and (3) thematic analysis (Morgan, 2022). Initially, a search was conducted to assemble all relevant publications pertaining to the academization and tertiarization of VET in both the German and Chinese contexts. This entailed utilizing various related search terms, such as "higher VET" and "dual study," as well as employing the respective national language equivalents. Alongside English documents, materials in the native languages of the two countries were also included in the document selection. To ensure the quality and validity of the document analysis,

several factors, including authenticity, credibility, representativeness, and meaning are considered (Flick, 2018). These factors serve as criteria for qualitative validation of the documents.

In total, 38 documents were subject to a comprehensive analysis, comprising 18 documents for the German case and 20 documents for the Chinese case, which were carefully selected for intensive document scrutiny. Of these, 13 documents are from governmental sources, while the remaining 25 were drawn from academic literature and studies concerning tertiarization and academization within both nations. The ensuing thematic analysis adhered to the dimensions outlined in the respective heuristic frameworks for each country, as elaborated in the subsequent section. The analysis was underpinned by a reflexive approach, as outlined by Braun *et al.* (2019). To minimize interpretative bias in the document analysis, two researchers independently conducted qualitative validation for each country. Subsequently, the research team convened to compare and synthesize the findings from both countries, culminating in a holistic perspective in response to the overarching research question.

The comparison is based on a heuristic that pursues several goals: The status quo in a given country can be described in terms of the links between VET and higher education; on the basis of the description, comparisons to other countries can be drawn; finally, the heuristic serves to identify development options from the scratch, for example in the context of development policies (Entenmann *et al.*, 2023). In this paper, we use the heuristic mainly to describe the developments in China and Germany.

The objective dimension reflects the needs of society in terms of the permeability of education systems, for example the possibility of moving from the VET system to the higher education system. Combining VET and university education in different ways can build bridges, allowing individuals with vocational qualifications to

access university education. Another factor closely linked to this dimension is opening new access routes so that socially disadvantaged groups can benefit from university education. Over and above this, the establishment of a higher-level VET sector, such as the Swiss Professional Education at the tertiary level, can open purely vocational career options that also provide access to higher-level vocational qualifications. Conversely, higher VET offerings can unlock new prospects for school leavers completing their education at general schools. British degree apprenticeships, for instance, offer the chance to obtain a bachelor's and master's degree parallel to extensive practical vocational training (Schmees *et al.*, 2019). These developments are closely linked to the imperatives of training and developing skilled workers.

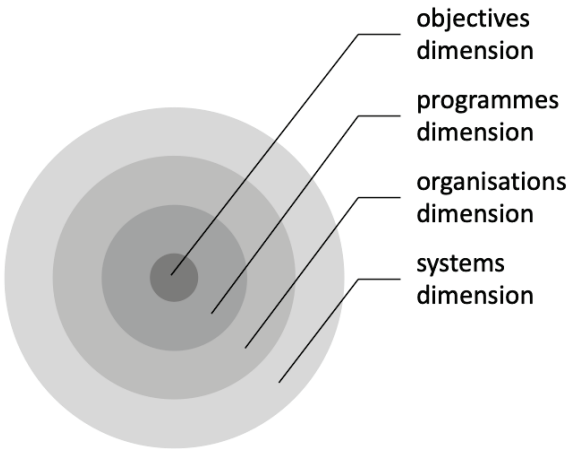

Figure 1: Four dimensions of the heuristic

The program dimension looks at the specific form of hybrid education courses that straddle VET and higher education. Existing VET offerings can be supplemented by elements of general education or university education, which can be interpreted as the "generalization of the vocational" (Deissinger & Ott, 2016). This aspect is particularly relevant to the permeability of education systems, which enables individuals to move up the ladder from one subsection of the education system to another. In Germany, for instance, combinations of VET and general university entrance

qualifications were firmly anchored in the former German Democratic Republic (Bojanowski, 1996). Currently, a regional pilot scheme is ongoing in the state of Saxony: "*Duale Berufsausbildung mit Abitur*," meaning a dual apprenticeship program in combination with a general higher education entrance qualification (Banscherus *et al.*, 2016). Individual federated states are also offering full-time school-based vocational training as part of which apprentices can also acquire general higher education entrance qualifications (cf. for the state of North Rhine-Westphalia: Euler, 2022). Austria's *berufsbildende höhere Schulen* (vocational colleges) have established a type of qualification where students obtain both a higher VET qualification (corresponding to Level 5 in the European Qualifications Framework) and a higher education entrance qualification (Smith, 2013; Frommberger & Schmees, 2019, 2021, pp. 67–68).

It is also possible to incorporate relevant occupational elements in a university degree course, which could be interpreted as the "vocationalization of general education" (Deissinger, 2019). These elements can be integrated parallel to regular programs or in a sequential manner. In Iran, for instance, it is common for university graduates to take courses at the Iran Technical and Vocational Training Organization after their degree course. These certificate-awarding courses train practical occupational skills. It is, however, possible to offer vocational and higher education parallel to each other. In Canada, for instance, within the scope of the cooperative education concept, practical elements are systematically integrated into college education (Deissinger, 2019). As part of dual study programs in Germany, practical elements or a full apprenticeship are linked to a university degree.

In terms of the linkages between VET and university education, the organization dimension focuses on the education organizations offering hybrid programs. The

courses may be offered by existing VET and/or university facilities or by entirely new organizations. One example can be seen in the dual degree courses introduced in the German states of Hesse and Lower Saxony alongside the more traditional degree courses at existing universities of applied sciences. The British higher apprenticeships and degree apprenticeships are also generally offered by existing universities, primarily the more technically-oriented former polytechnics that acquired university status in 1992, in collaboration with employers (see Schmees *et al.*, 2019). We can also observe that organizations are broadening their profile significantly and that part of this involves offering hybrid courses. One example of this trend can be seen in Australia's Technical and Further Education Colleges, which have shifted from offering only advanced technical training to becoming broader-based education organizations also offering tertiary level hybrid qualifications (Koshy *et al.*, 2020; Webb *et al.*, 2017). Lastly, new (hybrid) education organizations can be established that combine VET and university education.

The system dimension sets out the framework within which the education system operates and within which the other dimensions develop. The different forms of linking VET and academic education set out here are, thus, part of an existing education system that may provide for greater or lesser permeability. According to Hemkes (2018), educational permeability can be divided into horizontal, vertical, and lateral permeability. Here, horizontal permeability means to cross educational sub-systems (general education, VET, and academic education) on the same qualification level. Vertical permeability addresses the possibility of reaching a higher qualification level in the same sub-system where the prior qualification was achieved. Finally, lateral permeability combines the concepts. Here, a higher qualification level is reached in a different sub-system of education. For example, the education system in the Netherlands

is held to be an excellent example of a system that is permeable by design, where all levels VET qualifications can lead to higher education (Busse, 2019). The Swiss education system, by contrast, is characterized by the very distinct nature of the different pillars within the system, with minimal (but increasing, see SKBF, 2023, p. 2010) opportunities to move from one to another (Kost, 2018). Additionally, the forms taken by education systems reflect the latest political developments, marked by policies, which in turn result from both the politics and the polity in a particular state. The introduction of the qualification framework as a background to current and future forms of hybridization of Germany's education system was marked by the involvement of education-policy actors from the fields of general education, VET, and university education (Eckelt, 2016).

Findings

In this section the Chinese and German cases are presented in sequence. Within each case, firstly, the relationship between VET and higher education, in general, will be elaborated on. Secondly, the heuristic will be used to discuss one form of tertiarization and one form of academization in each of the two countries.

People's Republic of China

In China, VET programs are offered at the lower and upper secondary levels and at the tertiary level. VET is mainly provided full-time in schools and is supplemented by work placements and training workshops. At the lower secondary level, there are general lower secondary schools (普通初中, pǔtōng chūzhōng) and lower secondary technical and vocational schools (职业初中, zhíyè chūzhōng). The lower secondary schools begin with the seventh school year and end after the ninth or tenth school year, depending on the region. Lower secondary technical and vocational schools are not very common in China and are mostly found in rural areas. In 2020, only nine lower

secondary technical and vocational schools existed in the whole of China (MoE, 2021). Access to upper secondary school requires successful completion of lower secondary school and passing the entrance examination for upper secondary schools (中考, zhōngkǎo). In terms of time, upper secondary schools span the tenth school year to the end of the twelfth school year. In addition to the general upper secondary school (普通高中, pǔtōng gāozhōng), different vocational schools are offered at the upper secondary level in the regular education system. The first school type to be mentioned is the secondary specialized school (中等专业学校, zhōngděng zhuānyè xuéxiào), which is the most common type of vocational school at the upper secondary level. Here, vocational school qualifications can be obtained in, for example, the fields of administration, agriculture, finance, industry, law, and health care. While there were still 3,536 secondary specialized schools in China in 2014 (MoE, 2015), the number has fallen to 3,269 in 2021 (MoE, 2022, p. 96). One of the reasons is that selected specialized schools have been transformed into higher vocational colleges (高等职业技术学院, gāoděng zhíyè jìshù xuéyuàn). The other reason is the reduction in the scale of vocational education at upper secondary level in China. The second type of school is the vocational upper secondary school (职业高中, zhíyè gāozhōng), which focuses on cross-occupational skills. The last type of school in upper secondary education is the skill-workers' school (技工学校, jìgōng xuéxiào). Graduates of lower secondary schools attend these schools to receive practice-focused training for industrial production. These schools teach specific knowledge and skills for the manufacturing industries. Skill-workers' schools are the type of school with the strongest practical orientation (Wang & Guo, 2019). In 2021 the China Statistical Yearbook reported a total of 7,294 upper secondary vocational schools and 13,118,146 enrolled students, whereas 14,585 regular upper

secondary schools and 26,050,291 enrolled students were recorded within China during the same year (China Statistical Yearbook, 2022a, 2022b).

At the tertiary level, higher VET exists parallel to academic education (Hao, 2012). On the one hand, the educational institutions of the higher VET accept graduates of general upper secondary school who have not achieved sufficient scores in the higher education entrance examination (普通高考, pǔtōng gāokǎo) to enter the university's bachelor's level. On the other hand, organizations of higher VET offer the tertiary VET entrance examination (职教高考, zhíjiào gāokǎo) for the graduates of vocational upper secondary school. The duration of VET programs at the tertiary level is three to four years. There are currently two types of higher VET organizations. The first is the higher vocational college. It is considered the first access to tertiary VET. Higher vocational colleges train professionals of higher qualification levels and administrators with practical skills below the bachelor's level (Wu & Ye, 2018). This form of education comprises more than 700 vocational training programs (MoE 2021). In 2021, 1,486 higher vocational colleges and 15,900,966 enrolled students were reported by the China Statistical Yearbook (2022a, 2022b), while 1,238 higher educational institutions offering academic degree programs (e.g. universities) and 18,931,044 enrolled students at undergraduate level were recorded.

The second form of higher VET organizations is the vocational and technical university (职业技术大学, zhíyè jìshù dàxuè). Here, a vocational bachelor's can be obtained. This form of education comprises more than 200 vocational training programs (MoE 2021). Courses are offered in agriculture, forestry and fisheries, resources, environment and safety, energy and materials, civil engineering, and water engineering. The standard duration of the bachelor's program is four years and therefore the same as a bachelor's at a university (大学, dàxuè). In 2021, 32 vocational universities and 129,297 enrolled

students were reported by the China Statistical Yearbook (2022a, 2022b).

Objective dimension

VET in China has a poor reputation in society due to various factors, such as the harsh working conditions of apprenticeships (Hao & Pilz, 2021). Consequently, young people aspire to academic education. This academic focus places pressure on the employment system (Chan, 2015). There is a high demand for skilled workers with practical skills in the Chinese economy. The Chinese government sees an overly theoretical education of young people as the cause of the imbalance and is trying to counterbalance this by expanding tertiary VET (MoE, 2014). Thereby, the government assumes that the establishment of higher vocational colleges and vocational universities will secure skilled workers, increase the employment rate of university graduates, and raise the reputation of VET in general. The development of higher VET since 2000 has indeed increased the attractiveness of VET, at least to a certain extent. Young people who previously had little chance of accessing the tertiary VET entrance examination are now given the opportunity to take the examination due to a more differentiated access policy in the tertiary VET sector. School leavers who did not score enough points in the general university entrance examination to enter university can attend either the higher vocational colleges or the vocational university to obtain a tertiary degree, depending on their score (see Qiao & Li, 2019). From the perspective of VET organizations, the increase in institutional attractiveness for a new student target group is expected.

Program dimension

With reference to the program dimension, it should be noted that education in China has a strong theoretical orientation. In the Chinese context, the distinction between

secondary and tertiary VET is made through qualification levels. The upgrading of secondary specialized vocational schools to tertiary higher vocational colleges means more in-depth vocational skills transfer and simultaneously an upgrading of program content from intermediate to higher qualification levels. The study programs at vocational universities impart technology-related and work-oriented skills at a high level, which considers the usability of the content on the labor market (Kuang & Li, 2021, p. 48). Graduates of this form of education obtain a vocational bachelor's degree. In the future, this can be followed by a master's degree program in the same VET institutions. Cooperation with local companies for practice-oriented placement is a component of the vocational training programs. However, the company-based component, curriculum, and organizational structure are not formalized and can be determined independently by all higher VET organizations.

Organizations dimension

The analysis of the organizational dimension of Chinese higher VET shows that higher VET is realized at already existing organizations by upgrading these organizations. In this way, the organizations experience a shift in curricular focus and tasks. However, the organizational structure and staff often remain unchanged. That is why higher vocational colleges have often been criticized for their marginal distinction from secondary specialized vocational schools, particularly in terms of the curriculum and the educational profile (Wu & Ye, 2018). The structure of the vocational universities currently points to some challenges regarding their profiling in differentiation from both the academic and application-oriented forms of higher education (Kuang & Li, 2021) and education at higher vocational colleges. The differences in, for example, positioning, orientation, target group, and curricula are critically discussed (Li & Xu,

2022).

Systems dimension

The relationship between higher VET and academic education is reflected in different aspects. On the one hand, the university entrance policy and the associated access regulations to universities and higher VET reflect the lower reputation of higher VET compared to academic education. On the other hand, this disregard for (higher) VET can be illustrated by the founding process of the vocational university: In 2014, the central government decided to convert selected universities into universities of applied sciences. This form of higher education was also supposed to offer higher VET at the bachelor's level. Most affected universities were willing to implement application-oriented education but refused to offer higher VET (Hou, 2020). The latter was understood as "downgrading" (e.g., Guo, 2020). The resistance led to the amendment of the political "Implementation Plan for National VET Reform (2019)." In this plan, the implementation of higher VET at the bachelor's level should be realized through a new organizational type, the vocational university. Furthermore, instead of "downgrading" the new organizational type should come into being by upgrading higher vocational colleges.

Permeability within the Chinese higher education system is regulated by different types of entrance examinations. The most important entrance examination for an academic career is the general university entrance examination. The examination score determines admission to an elite university (the so-called "985" and "211" universities), an average university, a university of applied sciences, the higher VET system, or the labor market. The "modern" VET system in China has introduced a tertiary VET entrance examination in addition to the general university entrance

examination to enable graduates of vocational upper secondary education to pursue higher VET (State Council of the People's Republic of China, 2019). It has also enabled graduates of higher vocational colleges to study for a vocational bachelor's degree at vocational universities. However, a parallel system has been established where permeability is limited (Kuang & Li, 2021). The political intention here is to expand the VET pathway from secondary to tertiary education and to strengthen the vocational focus in the education system (State Council of the People's Republic of China, 2021). An improvement in permeability within the VET pathway between the upper secondary and tertiary levels can be attributed to the system dimension (Wu & Ye, 2018). Following Hemkes (2018), we can speak—at most—of vertical permeability within the VET system. However, as graduates from general upper secondary education are able to apply for higher VET, aspects of parity of esteem between both higher education pathways are questionable.

Federal Republic of Germany

The VET system of Germany is among the most developed systems in the world in terms of standardization and employer involvement. Within the VET system one can distinguish between a dual apprenticeship system, a school-based system and the transition system. Of the two-thirds of the German youth who enter the VET system after their general education, around half (49% in 2021) of these choose the dual apprenticeship system, a quarter (25% in 2021) choose the school-based system and another quarter (26% in 2021) will be transferred to the transition system (Autor:innengruppe Bildungsberichterstattung, 2022, p. 167). Additionally, there is a further education system. Finally, there are dual study programs that integrate work-based training and an academic degree. In the following paragraphs, these different possibilities are further described.

The German dual apprenticeship system is characterized by two learning sites: the VET school and the company. The curriculum of in-company training is nationally regulated, while the curriculum for the VET school is regulated at the federated state level. To coordinate the two curricula, a complex process is in place, which involves employer's organizations, unions, the federal state, and the federated states. Currently, students can choose from 324 dual apprenticeships in Germany (Bundesinstitut für Berufsbildung, 2022). The number and tailoring of the apprenticeships are regularly updated. Notably, there are no formal regulations for entering the dual apprenticeship system besides being at least 16 years of age. However, as aspiring apprentices have to apply to an employer directly, prior school performance plays an important (but hidden) role. The pathways from an accomplished dual apprenticeship towards higher education are only indirect.

Usually, potential apprentices cannot choose whether to go into the dual apprenticeship system or the school-based system, as most VET programs are offered either as apprenticeships or as school-based programs. Regarding the school-based roots, the choice is limited to programs in care work and assistant jobs. Counterintuitively, school-based programs do have long stretches of practical phases in companies as well. However, they are regulated by either national or state-level regulations. Entering the school-based systems usually requires a school-leaving certificate from secondary school (*Mittlere Reife*). The pathways to higher education after school-based programs are possible directly in most cases.

The transition system was formed in a time when the dual apprenticeship system did not offer enough places to serve the youth interested in an apprenticeship. Originally, the system was intended to support the transition into the dual apprenticeship system or directly into the labor market. However, it also guarantees

schooling for children under 18 years old as mandated by federal legislation. As the transition system does not offer formal VET qualifications, pathways to higher education are possible by taking general education classes that lead to a higher education entrance qualification (Allgemeine Hochschulreife) within the transition system, which is, however, very unlikely. Both the school-based system and the transition system are located in the VET schools. The dual apprenticeship is located both the VET schools and in the companies.

Also, general school-leaving qualifications can be made up and additional general school-leaving qualifications can be acquired in almost all VET programs in Germany. Furthermore, it is legally possible to obtain admission to higher education based on VET qualifications, even for those who have not acquired a school-based higher education entrance qualification (Frommberger, 2021). However, a number of additional conditions (such as professional experience and, where applicable, country-specific regulations) must usually be met and an entrance examination passed (cf. KMK, 2015).

At the tertiary level, further education is offered for those with an initial VET qualification. Recently, three levels of further education were defined aligning with the European Qualification Framework (EFQ) levels 5, 6 and 7. This will be discussed as tertiarization of VET in the following sections. Academization in VET can be ascribed to the dual apprenticeship programs, offered by dual study universities or universities of applied sciences (rarely at traditional universities). These programs are offered at the bachelor's and less often the master's level. The dual study programs will be discussed as an example of academization of VET in the following subsections.

Objective dimension

The standardization and leveling of further education qualifications in Germany is a recent process (cf. the Federal VET law modernization in Germany in 2020). The primary goal of the process was to regain reputation for the VET qualifications and to integrate these qualifications into the national (and therefore European) qualification framework. By stratifying further education in three distinct levels (EFQ level 5,6 and 7) that built upon one another, educational upskilling is possible and visible in form of a qualification.

Regarding academization, the criticism of the dual apprenticeship system outlined above has led to many reforms in Germany in recent decades to achieve a connection of these VET programs to the general and higher education system (Author, 2021). Along with processes of massification, the landscape of higher education is becoming more stratified and specialized drifting away from the Humboldtian ideal of integrated research and teaching at universities (Altbach *et al.*, 2021). In particular, the development of dual study programs is of interest for this paper. Contrary to most developments in education, the dual study programs originated in and were co-developed by the industry. The German automobile industry was in need of a new type of worker, as new developments in car manufacturing necessitated highly skilled personnel that also understood practical considerations. It was then that the idea of the extension of the dual apprenticeship to higher levels was initiated in collaboration with the government of Baden-Württemberg, a German state in the southwest.

Program dimension

This emphasis on higher VET also led to new degree titles, specifically the degrees "Certified Occupational Specialist" (level 5 of the European Qualifications Framework), "Bachelor Professional" (level 6 of the European Qualifications

Framework) and “Master Professional” (level 7 of the European Qualifications Framework, cf. Frommberger & Schmees, 2021, pp. 66–67). The new vocational degree designations are intended to enhance the value of higher VET and thus increase the attractiveness of the VET pathway, the different values of vocational and academic qualifications are still firmly anchored and present in society. Furthermore, it should be noted that these developments are primarily only linguistic in nature. An increase in permeability between further education degrees and university degrees is not to be expected, at least not immediately. It is more likely that a potential student with a Master Professional degree at university would have to start with a bachelor’s program.

A dual study program serves to combine extended practical phases in a company with a course of study. It is defined by the Federal Institute for Vocational Education and Training as “a course of study at a university with integrated vocational training or practical phases in a company [...] [In doing so, the] acquisition of academic competencies [...] [is] combined with practical vocational competencies [...]” (Hofmann & Koenig, 2017, p. 6). Compared to a university study program, the application for the dual study program usually takes place at the employer or practice partner and only at the university following that. Various forms of dual study can be distinguished (Hofmann & Koenig, 2017, p. 6).

Organization dimension

No new organizations were founded, as the prescribed changes were merely conceptual and linguistic. Therefore, further education is still offered by VET schools, chambers, and private further education providers. However, most further education qualifications can be obtained without having participated in a course. Most importantly, the final exam has to be passed. This exam is usually offered by chambers.

Dual studies are offered at universities of applied sciences or dual universities and—to a very limited extent—at traditional universities. One example of a dual university is the Baden-Württemberg Cooperative State University (DHBW), which is not only the first of a new type of university with its own legislative foundations in the federated state but is organized more similarly to an American state university with different campuses than the traditional German university (DHBW, 2021; Author, 2022). In its logic, the dual study program represents an extension of the dual system of initial training at the university level. However, the unions and the federal government are not involved in the development of the degree courses. The central criterion for many programs is that it is not the higher education institution that selects the future students, but the companies or businesses. However, the higher education institution required a higher education entrance qualification excluding students that just finished their dual apprenticeship (Author, 2022).

System dimension

VET and general/academic education in Germany have developed as largely independent pillars. The general/academic education pillar has the strongest appeal for young people globally (it is often referred to as the "gold standard"). In Germany, the VET pillar is traditionally associated with relatively attractive development opportunities for young people. VET enjoys a high level of social recognition in Germany. The latter is traditionally associated in Germany with relatively attractive development opportunities for young people. Vocational education and training enjoys a high level of social recognition in Germany.

However, the independent status of VET—especially in the dual apprenticeship system and the subsequent further training opportunities—has been met with much

criticism. Specifically, there is talk of an “educational schism” (Baethge, 2006) Where the separation of the pillars or educational pathways leads to comparatively fewer educational and career opportunities for VET graduates. VET offers represent a dead end because they are not linked to further general education qualifications, and only partially lead to higher education and fundamentally contribute to lower income and fewer career development opportunities.

This criticism of the traditional separation of general/academic education on the one hand and VET on the other is directed in particular at VET in the dual apprenticeship system and the subsequent further training courses. This separation is much less pronounced for the many other VET programs in Germany that are offered at state VET schools. As a rule, these offers do not fall into the “educational schism”. Instead, they lead to higher education and to a relatively high degree (Frommberger & Schmees, 2023; Cedefop, 2020).

It can be said that the bridges between VET and higher education have been expanded in recent decades. This applies above all to the pathways from VET to higher education. However, despite the formal upgrading and legal qualifications for access to higher education, the offers of VET in the dual apprenticeship system and in the subsequent further training courses only relatively rarely lead to actual transitions to higher education (Nickel & Thiele, 2022.). The reasons for this are manifold. They lie, for example, in the attractiveness of these vocational qualifications, which makes studying undesirable. Alternatively, the vocational training in the dual apprenticeship system and the subsequent further training do not develop study skills and motivation.

In this respect, the topic continues to dominate the reform discourse in Germany. On the one hand, the question of equal educational opportunities continues to play an important role in these discussions. Alongside this, the focus is now primarily on

increasing the attractiveness of VET, since the attraction of academic education has led to a marked decline in demand for VET (Janson, 2023). In the meantime, therefore, the main concern is to establish equivalence between vocational and higher education qualifications to counteract the trend towards academization. More attention is thus being paid to the autonomy of the VET pathway. In particular, VET qualifications are to be of equal value compared to academic qualifications. In 2020, this led to the introduction of the term higher VET for the further training sector, specifically in the amended Vocational Training Act of 2020.

Comparative views

In the previous section, we analyzed two distinct developments in each of the investigated country cases, China and Germany. One development in each country represented a form of tertiarization of VET and the other one a form of academization of VET. In this section, we compare the process of tertiarization in China with the process of tertiarization in Germany. Similarly, we compare the cases for academization. Finally, the structural developments of tertiarization and academization are compared with a focus on increased permeability.

Tertiarization in comparison

In China, the industry's need for more vocationally qualified professionals in combination with the university being the first choice for school leavers led to a tertiarization of VET in the form of a higher vocational college/university. The creation of tertiary VET in Germany took place in order to increase the attractiveness of VET by creating VET pathways up to the European Qualification Framework Level 7. However, in Germany the focus lies on leading more people in the traditional pathways by creating a more standardized and transparent higher VET system inside the existing

structure. In China, the VET system was updated and has expanded.

In China, while the program dimension does show a stronger emphasis on academization of the curriculum content, the primary focus of these programs is on elevating the professional qualification levels for the labor market. For the German case, tertiarization can be observed in the bachelor professional and master professional programs. Analysis of the heuristic reveals that, apart from conferring the titles of bachelor and master professional and classifying them as level 6 (bachelor professional) and level 7 (master professional) of the European Qualification Framework, there are no notable changes in the program dimensions. The objective of tertiarization is to establish equal status for continuing VET in comparison to academic education. For instance, while continuing VET is considered equivalent to a bachelor's degree at a university, only horizontal permeability is permitted. This means that it is possible to pursue a bachelor's degree program following completion of further VET, but it remains at level 6 of the European Qualification Framework. On the other hand, there is no provision for lateral permeability into an academic program at level 7, such as a master's degree program, for holders of a bachelor professional qualification.

In the Chinese context, tertiarization can be observed in the case of higher vocational colleges. This is evident from the analysis of the program dimension, which indicates that higher vocational colleges have emerged through the upgrading of secondary-level institutes and do not possess academic status. Furthermore, no academic degrees are awarded upon completion. The target dimension reveals that higher vocational colleges provide an additional educational pathway for participants in VET at the secondary level. This signifies a shift away from considering VET at the secondary level as a "dead end". Additionally, higher vocational colleges serve as an alternative route for pursuing tertiary education for individuals with lower scores on the

university entrance examination. This is very different from the German case where no organizational changes were applied.

Academization in comparison

While academization in China follows similar objectives to the tertiarization of VET, the German dual study programs' primary legitimization is making higher education more related to labor market needs.

In China, the distinctiveness of the curriculum of higher VET is an issue for the vocational university as it is for the higher vocational college. In the German case, the curriculum needs to be redesigned, and the scheduling of the program must be adjusted to accommodate all stakeholders. Analysis of the target dimension reveals two main outcomes: first, academization enhances the appeal of dual training for young people by providing the opportunity for a double qualification within a shorter time frame; second, the vocationalization and close alignment with companies increase the attractiveness of the bachelor's degree, enhancing employability prospects.

A process of academization can be observed in the case of vocational universities in China. This is evident from the establishment of new higher education institutions at the organizational dimension and the awarding of vocational bachelor's degrees at the program dimension. In the context of the dual study program, an academization process can be observed. This occurs when a portion of the program is transferred to an institution with academic status, such as a university of applied sciences (Fachhochschule). In some states, new dual study universities were also established.

Structural developments in comparison

Possessing both a vocational and academic degree facilitates progression along educational pathways in both the vocational and academic domains. However, scrutiny of the system dimension reveals that the equivalence between vocational and academic education is limited in terms of permeability. Considering the systems dimension, it can be noted that both the tertiarization of the Chinese higher vocational colleges and the establishment of vocational universities facilitate vertical permeability within VET. However, lateral permeability is relatively rare or only implemented on a pilot basis. This is also true for the German case, where higher VET provides possibilities for vertical permeability. Lateral permeability, however, is not realized. On the other hand, German dual study programs require the completion of a higher education entrance qualification. Consequently, the option to directly access dual study programs from apprenticeships is prohibited.

Considering the Cedefop (2011) categories, both China and Germany exhibit a movement towards higher VET integrated or separated within higher education policy, despite their distinct starting positions. The German post-secondary VET is separated from higher education, can be classified in the first category according to Cedefop (2011). The Chinese VET system beyond secondary education was less developed and but within higher education with a separate pathway, could be placed in the third group of Cedefop (2011). The comparison shows that the main challenges lie in the perception and acceptance of vocational and academic education in terms of equivalence, diversity, and permeability. The development and the political discussion on the establishment of the vocational universities in China could be considered as evidence for few equivalences of the academization of VET. The strong resistance of both universities and students to the establishment of vocational universities within the already existing university structure even led to the government adjusting policy. This development

reflects the weak reputation of the higher VET within the academic system (for details see the system dimension in the heuristic). In Germany, the academization of VET through the dual study framework presents a starkly different perception and acceptance of higher VET. The integration of dual apprenticeships into the dual study program combines the strengths of both approaches and signifies an appreciation for workplace learning and informal learning in companies.

Conclusion and outlook

In both countries, the analysis revealed that, despite the processes of tertiarization and academization, permeability between vocational and academic education is predominantly limited to vertical and horizontal transitions. Lateral permeability, allowing for direct progression from vocational to subsequent (the next level in the qualification framework) academic degrees, is scarce or nonexistent. This observation indicates that genuine equivalence between vocational and academic education has not been fully attained (Author, 2022), despite the efforts made during the tertiarization and academization processes. The lack of lateral permeability (Hemkes, 2018) suggests that there are still barriers and distinctions between VET and academic education that prevent a smooth transition and recognition of qualifications across these pathways. While tertiarization and academization of VET have enhanced the academic elements and market value of VET, they have not eliminated the perceived divide between VET and academic qualifications.

Our comparative analysis reveals that the landscape of VET after upper secondary education is diverse. It is crucial to distinguish between tertiarization and academization, as these developments have distinct objectives. Tertiarization primarily aims to enhance VET independently from academic higher education, with minimal impact on the latter. On the other hand, academization involves integrating VET into

higher education, resulting in reciprocal effects. This integration also leads to the vocationalization of academic education, as VET and higher education mutually influence each other (Dunkel & Le Mouillour, 2009; Deissinger & Ott, 2016).

The examples presented from China and Germany illustrate the diverse development of post-secondary VET and the various attempts to include them in the tertiary education sector, aiming for equivalence with traditional higher education. Despite the existing resistance from traditional higher education, the growing need for lifelong learning drives this global development and challenges historical perceptions and boundaries between VET and higher education (McEwen & Trede, 2014). The ongoing global development of the knowledge society and the high demand for further training and education create opportunities for new forms and approaches to lifelong learning. Furthermore, in many industrialized regions and knowledge societies worldwide, competition for the diminishing pool of young people has emerged as a significant factor in explaining the institutional strategies of providers in both higher education and vocational training. This leads to the emergence of new competitors and providers in the tertiary education and further education landscape. These developments prompt higher education institutions to redefine their roles and missions within the education system, establishing links with both higher VET and the labor market (McEwen & Trede, 2014; Cedefop, 2011; Dunkel & Le Mouillour, 2009). This situation may render the current limited permeability to universities unsustainable in the future, necessitating a more open and competitive approach. Recognizing qualifications regardless of organizational form like it is—at least conceptually—;) could become increasingly important.

The individual learner's ability to pursue continuous learning without facing structural barriers is of the utmost importance, regardless of the position of higher VET

within higher education. To meet the demands of modern higher education, it is crucial to enhance lateral permeability by ensuring recognition of prior qualifications. By enhancing lateral permeability, educational institutions can offer more flexible pathways for individuals to navigate between vocational and academic education. Breaking down the barriers that traditionally separate these domains allows learners to explore diverse educational opportunities and make transitions between different types of qualifications more seamless. This promotes a learner-centric approach and encourages individuals to follow their own unique educational paths. A modern higher education system needs to be a responsive ecosystem that meets the diverse learning needs. This approach is essential for facilitating lifelong learning and accommodating the individual needs of learners as well as to provide possibilities for upwards social mobility (Kanwar *et al.*, 2019; McEwen & Trede, 2014).

Finally, it is important to acknowledge that the differentiation between the processes of tertiarization and academization, as delineated in this paper, is primarily a conceptual framework adopted to examine these developments separately. In practice, the intricacies and interconnections between these processes may exhibit a more pronounced presence in the real world.

References

Author (2021)

Author (2022)

Altbach, P.G.; Reisberg, L.; de Wit, H (Eds.) (2017). Responding to Massification. Differentiation in Postsecondary Education Worldwide (Global Perspectives on Higher Education). SensePublishers. https://doi.org/10.1007/978-94-6351-083-7

Baethge, M. (2006). Das deutsche Bildungs-Schisma: Welche Probleme ein vorindustrielles Bildungssystem in einer nachindustriellen Gesellschaft hat [The German Education Schism: What Problems a Pre-Industrial Education System Has in a Post-Industrial Society]. SOFI-Mitteilungen, (34), 13–27.

Banscherus, U., Bernhard, N., & Graf, L. (2016). Durchlässigkeit als mehrdimensionale Aufgabe: Bedingungen für flexible Bildungsübergänge [Permeability as a multidimensional task: conditions for flexible educational transitions]. Friedrich-Ebert-Stiftung e.V.. Retrieved from https://nbn-resolving.org/urn:nbn:de:0168-ssoar-67875-5.

Bathmaker, A.-M. (2017). Post-secondary education and training, new vocational and hybrid pathways and questions of equity, inequality and social mobility: Introduction to the special issue. Journal of Vocational Education and Training, 69(1), 126–146. https://doi.org/10.1080/13636820.2017.1304680

Autor:innenengruppe Bildungsberichterstattung (Eds.) (2022): Bildung in Deutschland 2020. Ein indikatorengestützter Bericht mit einer Analyse zu Bildung in einer digitalisierten Welt [Education in Germany 2020. An indicator-based report with an analysis of education in a digitalized world.]. wbv. https://doi.org/10.3278/6001820hw

Bojanowski, A. (1996). Integration von Berufs- und Allgemeinbildung in der Sekundarstufe II: Modelle zur Doppelqualifikation [Integration of vocational and general education at upper secondary level: dual qualification models]. In Dedering, H. (Ed.), Handbuch zur arbeitsorientierten Bildung. München [Handbook on work-oriented education. Munich] (pp. 479–500). R. Oldenbourg.

Bundesinstitut für Berufsbildung (Ed.) (2022). Verzeichnis der anerkannten Ausbildungsberufe 2022 [List of recognized training qualifications 2022]. Bundesinstitut für Berufsbildung.

Busse, G. (2019). Übergangsoptionen von der beruflichen Bildung in die Hochschulbildung in den Niederlanden [Transition options from VET to higher education in the Netherlands]. Bertelsmann Stiftung.

Cedefop [European Centre for the Development of Vocational Training]. (2011). Vocational Education and Training at Higher Qualification Levels. Research Paper no. 15. Publications Office of the European Union.

Cedefop [European Centre for the Development of Vocational Training]. (2020.).Vocational education and training in Germany. Short description. Publications Office of the European Union.

Chan, W. T. (2015). Higher Education and Graduate Employment in China: Challenges for Sustainable Development. Higher Education Policy, (28), 35-53.

China Statistical Yearbook (2022a). 21-1 Number of Schools and Educational Personnel by Type and Level (2021). Retrieved from http://www.stats.gov.cn/sj/ndsj/2022/indexeh.htm

China Statistical Yearbook (2022b). 21-2 Number of Students of Formal Education by Type and Level (2021). Retrieved from http://www.stats.gov.cn/sj/ndsj/2022/indexeh.htm

Criblez, L. (2010). Die Reform der Lehrerinnen- und Lehrerbildung in der Schweiz seit 1990: Reformprozess, Erste Bilanz und Desiderata [The Reform of Teacher Education in Switzerland since 1990: Reform Process, Initial Assessment and Desiderata]. In H. Ambühl & W. Stadelmann (Eds.), Tertiarisierung der Lehrerinnen- und Lehrerbildung [Tertiarisation of teacher education] (pp. 22-58). Ediprim AG.

Deissinger, T. (2019): Cooperative Education in Kanada [Cooperative education in Canada]. Bertelsmann Stiftung. Retrieved from https://www.bertelsmann-stiftung.de/fileadmin/files/Projekte/13_Chance_Ausbildung/pdf_Durchlaessigkeit/Fallstudie_Kanada.pdf

Deissinger, T., & Ott, M. (2016). Tertiarisation of Vocational Education and Training and its implications – problems and issues in Germany and France. In S. Bohlinger, T. K. A. Dang, & M Glatt (Eds.), Education Policy: mapping the landscape and scope (pp. 267-296). Peter Lang.

DHBW. (2021). Wir über uns [We about us]. Retrieved October 7, 2021, from https://www.dhbw.de/die-dhbw/wir-ueber-uns

Dunkel, T., & Le Mouillour, I. (2009). Through the looking-glass. Diversification and differentiation in vocational education and training and higher education. In Cedefop (Ed.), Modernising vocational education and training. Fourth report on vocational training research in Europe: background report. Volume 2, Cedefop Reference series; 70. Luxembourg, pp. 242–268. Retrieved from https://www.cedefop.europa.eu/files/3050_II_en.pdf

Eckelt, M. (2016). Zur sozialen Praxis der Berufsbildungspolitik [On the social practice of vocational training policy]. wbv.

Entenmann, S.; Euler, D.; Frommberger, D.; Li, J., & Schmees, J. K. (2023). Linking Technical and Vocational Education and Training with Higher Education, and Possible Consequences for Development Cooperation. In Trends in vocational education and training research, Vol. VI. Proceedings of the European

Conference on Educational Research (ECER) (pp. 88 – 95), Vocational Education and Training Network (VETNET). VETNET. https://doi.org/10.5281/zenodo.8208378

Euler, D. (2022). Die Rolle des Berufskollegs im nordrhein-westfälischen Bildungssystem. Leistungspotenziale, Herausforderungen und Ansätze zur Weiterentwicklung [The role of the Berufskolleg in the North Rhine-Westphalian education system. Performance potentials, challenges and approaches to further development]. Ministerium für Schule und Bildung, RuhrFutur.

Flick, U. (2018). An introduction to qualitative research. Sage.

Frommberger, D., & Schmees, J. K. (2019). Die berufsbildende höhere Schule in Österreich [The vocational secondary school in Austria]. Gütersloh: Bertelsmann Stiftung.

Frommberger, D. & Schmees, J. K. (2023): Deutschland [Germany]. In P. Grollmann, D. Frommberger, T. Deissinger, U. Lauterbach, M. Pilz, T. Schröder & G. Spöttl (Eds.), Internationales Handbuch der Berufsbildung [International Handbook of Vocational Education and Training]. Verlag Barbara Budrich.

Frommberger, D., & Schmees, J. K. (2021). Bridging Vocational with Upper Secondary and Higher Education: International Developments. In C. Nägele, N. Kersh, & B. E. Stalder (Eds.), Trends in vocational education and training research Proceedings of the European Conference on Educational Research (ECER), Vocational Education and Training Network (VETNET). (pp. 64–72).

Gerring, J. (2007) Case Study Research: Principles and Practices. Cambridge University Press.

Griffioen, D., & de Jong, U. (2013). Academic Drift in Dutch Non-University Higher Education Evaluated: A Staff Perspective. Higher Education Policy, 26(2), 173–191. https://doi.org/10.1057/hep.2012.24

Guo, J.R. (2020). Zhiye Jiaoyu Benke De Xiangguan Zhengyi Tanxi - Jianlun Gaodeng Jiaoyu Shuanggui Tixi Goujian Yu Zhiye Jiaoyu Benke De Fazhan Kongjian [On Debates about Higher Vocational Undergraduate Education - Concurrent Discussion on Construction of Higher Educational Dual System and Development Space of Vocational Education at Undergraduate Level]. Vocational and Technical Education, 41(30), 8-15.

Hao, T., & PILZ, M. (2021). Attractiveness of VET in China: a study on secondary vocational students and their parents. Journal of Education and Work, 34(4), 472-487.

Hao, Y. (2012). The reform and modernization of vocational education and training in China. WZB Discussion Paper, No. SP III 2012-304. Berlin: Wissenschaftszentrum Berlin für Sozialforschung (WZB). Retrieved from https://www.econstor.eu/bitstream/10419/57097/1/69012368X.pdf

Hemkes, B. (2018). Transformation und Innovation an der Schnittstelle zwischen beruflicher und hochschulischer Bildung - Durchlässigkeit aus Sicht der beruflichen Bildung (Zwischenbericht) [Transformation and innovation at the interface between vocational and higher education - permeability from the perspective of vocational education and training (interim report)]. BIBB. https://www.bibb.de/tools/dapro/data/documents/pdf/zw_33308.pdf.

Hippach-Schneider, U., Schneider, S., Ménard, P., & Tritscher-Archan, S. (2017). The underestimated relevance and value of vocational education in tertiary education – making the invisible visible. Journal of Vocational Education and Training, 69(1), 28–46. Retrieved from http://dx.doi.org/10.1080/13636820.2017.1281342

Hofmann, S., & König, M. (2017). Duales Studium in Zahlen 2016. Trends und Analysen. Bundesinstitut für Berufsbildung [Dual study in figures 2016. Trends and analyses. Federal Institute for Vocational Education and Training]. Retrieved from https://www.bibb.de/dokumente/pdf/duales_studium_in_zahlen_2016.pdf

Hou, C.L. (2020, June 29). Benke Cengci Zhiye Jiaoyu：“Shui Lai Ban” He “Zenme Ban”[Vocational education and training at a Bachelor-Level: "Who should run it" and "How to do it". China Youth Daily, (6).

Janson, M. (2023). Schere zwischen Azubis und Studies bleibt weit offen [The gap between apprentices and students remains wide big], Statista. Retrieved from https://de.statista.com/infografik/28021/anzahl-der-auszubildenden-und-der-hochschul-studierenden-in-deutschland--in-mio-/

Kanwar, A., Balasubramanian, K., & Carr, A. (2019). Changing the TVET paradigm: new models for lifelong learning. International Journal of Training Research, 17(1), 54-68. DOI: 10.1080/14480220.2019.1629722

KMK. (2015): Hochschulzugang über berufliche Bildung Wege und Berechtigungen. Information des Sekretariates der Kultusministerkonferenz vom 08.09.2015

[University access via vocational training pathways and entitlements. Information of the Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder of the Federal Republic of Germany as of 08.09.2015]. Retrieved from https://www.kmk.org/fileadmin/veroeffentlichungen_beschluesse/2015/2015_09_08-Hochschulzugang-ueber-berufliche-Bildung.pdf

Koshy, P., Webb, S., Dockery, A. M., & Knight, E. (2020). Bachelor degree participation in vocational institutions: examining the determinants of participation. International Journal of Training Research, 18(2), 106-120. DOI: 10.1080/14480220.2020.1830838

Kost, J. (2018): Wie durchlässig ist die Schweizer Berufsbildung wirklich? [How permeable is Swiss vocational education and training really?]. Transfer, Berufsbildung in Forschung und Praxis, (1/2018).

Kuang, Y., & Li, Q. (2021). Ci Benke Fei Bi Benke: Zhiye Benke Benzhilun Jiqi Fazhan Celue[The Undergraduate Programme is not the So-called One: the Essence of Vocational Undergraduate Programme and its Development Strategy]. Research in Educational Development, (3), 45-51. DOI:10.14121/j.cnki.1008-3855.2021.03.008.

Kyvik, S. (2007). Academic drift—A reinterpretation. In The Officers and Crew of HMS Network (Ed.), Towards a Cartography of Higher Education Policy Change (pp. 333–338). Enschede: A Festschrift in Honour of Guy Neave, CHEPS.

Lauterbach, U. (2003). Vergleichende Berufsbildungsforschung [Comparative vocational education and training research]. Nomos-Verl.-Ges.

Li, S., & Xu, G.Q. (2022). Zhiye Benke Jiaoyu Fazhan Beijing Xia Zhiye Zhuanke Jiaoyu Dingwei Yanjiu [Research on Orientation of Vocational College Education under the Background of Vocational Undergraduate Education Development]. China Higher Education Research, 38(02), 102-108. DOI:10.16298/j.cnki.1004-3667.2022.02.16

McEwen, C., & Trede, F. (2014). The Academisation of Emerging Professions: Implications for Universities, Academics and Students. Power and Education, 6(2), 145–154. DOI: 10.2304/power.2014.6.2.145

MoE. (2014). Difang Gaoxiao Zhuanxing Fazhan Huhuan Dingceng Sheji ——Fang “Difang Benke Yuanxiao Zhuanxing Fazhan Shijian Yu Zhengce Yanjiu” Keti

Fuzeren Mengqingguo [Research Report on the Transformation and Development of Local Undergraduate Higher Educational Institutions and Policies - Interview with Meng Qingguo, project director of 'Research on Transformation and Development Practice and Policy of Local Undergraduate Universities.'] Retrieved from http://www.moe.gov.cn/jyb_xwfb/s271/201401/t20140107_161967.html

MoE. (2015). Quanguo Jiaoyu Shiye Fazhan Tongji Gongbao 2014 [National Statistical Bulletin on the Development of Education 2014]. Retrieved from http://www.moe.gov.cn/srcsite/A03/s180/moe_633/201508/t20150811_199589.html

MoE. (2021). Zhiye Jiaoyu Zhuanye Mulu (2021) [Catalogue of specialty in vocational education and training (2021)]. Retrieved from http://www.moe.gov.cn/srcsite/A07/moe_953/202103/t20210319_521135.html.

MoE. (2022). Zhongguo Jiaoyu Tongji Nianjian 2021[Educational Statistics Yearbook of China (2021)]. Beijing: China Statistics Press.

Morgan, H. (2022). Conducting a qualitative document analysis. The Qualitative Report, 27(1), 64–77. DOI: 10.46743/2160-3715/2022.5044

Nickel, S. & Thiele, Anna-Lena (2022): Update 2022: Studieren ohne Abitur in Deutschland. Überblick über aktuelle Entwicklungen [Update 2022: Studying without Abitur in Germany. Overview of current developments]. CHE Impulse, (9).

Pilz, M. (2022). Ansätze und Methoden der international vergleichenden Berufsbildungsforschung [Approaches and methods of international comparative vocational training research]. In P. Grollmann, D. Frommberger, T. Deissinger, U. Lauterbach, M. Pilz, T. Schröder & G. Spöttl (Eds.), Vergleichende Berufsbildungsforschung –Ergebnisse und Perspektiven aus Theorie und Empirie: Jubiläumsausgabe des Internationalen Handbuchs der Berufsbildung [Comparative VET Research - Findings and Perspectives from Theory and Empiricism: Anniversary Edition of the International Handbook of Vocational Education and Training] (pp. 77-95). Verlag Barbara Budrich.

Qiao, Y.X., & Li, J. (2019). Woguo gaodeng zhiye jiaoyu fazhan qishinian de huigu yu zhengce jianyì [Review and Policy Suggestions on the 70 Years' Development of Higher Vocational Education in China]. Zhijiao fazhan yanjiu [Development of Vocational Education Research], (03), 8-15.

Schmees, J. K.; Popkova, T., & Frommberger, D. (2019). Das Higher Apprenticeship in England (Bertelsmann Stiftung, Hrsg.) [The Higher Apprenticeship in England (Bertelsmann Foundation)]. Retrieved from https://www.bertelsmann-stiftung.de/de/unsere-projekte/chance-ausbildung/projektnachrichten/wege-zwischen-beruflicher-und-hochschulischer-bildung-ein-internationaler-vergleich

Sinclair, A., & Webb, S. (2020). Academic identity in a changing Australian higher education space: the higher education in vocational institution perspective. International Journal of Training Research, 18(2), 121-140. DOI: 10.1080/14480220.2020.1824874

Smith, E. (2013). 'Qualifications for work and further learning': The Australian approach to hybrid qualifications. In T. Deissinger,, A. Fuller,C. Helms Jørgensen, & J. Aff . (Eds..), Hybrid Qualifications: Structures and Problems in the Context of European VET Policy, (pp. 227–242) Peter Lang AG Internationaler Verlag der Wissenschaften.

State council of the People's Republic of China (2019). Guojia Zhiye Jiaoyu Gaige Shishi Fang'an [National implementation plan for VET reform]. Retrieved from http://www.gov.cn/zhengce/content/2019-02/13/content_5365341.htm

State council of the People's Republic of China (2021). Zhonggong Zhongyang Bangong Ting guowuyuan Bangong Ting Yinfa "Guanyu Tuidong Xiandai Zhiye Jiaoyu Gao Zhiliang Fazhan De Yijian [Statements on the promotion of the high-quality development of modern vocational education and training]. Retrieved from http://www.gov.cn/zhengce/2021-10/12/content_5642120.htm

Tight, M. (2015). Theory development and application in higher education research: The case of academic drift. Journal of Educational Administration and History, 47(1), 84–99. https://doi.org/10.1080/00220620.2015.974143

Wang, A., & Guo, D. (2019). Technical and vocational education in China: enrolment and socioeconomic status. Journal of Vocational Education and Training, 71(4), 538-555. DOI: 10.1080/13636820.2018.1535519

Webb, S., Bathmaker, A.-M., Gale, T., Hodge, S., Parker, S., & Rawolle, S. (2017). Higher vocational education and social mobility: Educational participation in Australia and England. Journal of Vocational Education and Training, 69(1), 147–167. DOI: 10.1080/13636820.2016.1269359

Wu, X., & Ye, Y. (2018). Technical and Vocational Education in China. Springer & Higher Education Press.