Vocational Education and its Perspectives

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Abstract

Vocational education has long held a fundamental and significant position within the Czech educational environment. However, in recent decades, it has faced challenges due to the variability of graduates' applicability in the labour market and rapid technological advancements. In the Czech Republic, a substantial majority of students pursue secondary education after completing primary school. It is reported that up to 80% of pupils undergo vocational education and less than 20% undergo general education programme. Approximately 6% of the population has not progressed beyond primary education, typically due to not completing secondary education and thus, the majority of secondary vocational education graduates then enter the labour market directly.

The employment rate of vocational graduates aged 20-34 is around 80%, which is above the EU average, even though most graduates obtain a qualification recognised in the labour market. Aligning vocational training with labour market demands and addressing the workforce's age composition presents significant challenges. The Ministry of Education, Youth, and Sports of the Czech Republic has proposed strategies to mitigate these issues, emphasizing enhanced collaboration between the education sector and industry, as well as the integration of dual system elements into vocational education. These initiatives are outlined in the 'Strategy for the Education Policy of the Czech Republic up to 2030+'.

Another option being considered is a later selection of professions and postponing early specialisation by creating a common foundation for related fields of education. This approach is being implemented through the ongoing revision of vocational education framework programmes and the innovation of the sectoral system. This paper examines these developments and offers reflections on the anticipated changes in vocational education within the Czech Republic.

Keywords: Vocational Education, Statistics, Typology of Vocational Education, Comparison of Vocational Education Systems

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1 Introduction into the System of Vocational Education in the Czech Republic

In cultural societies, schools are considered a crucial transition from family to society. This transition ensures the fulfilment of one of society's fundamental functions: education (Jůva, 2001). However, in each country, this transition is conceptualised differently due to the long-term development of the society, political system, and the formation of the educational system as stated by Čepelová (2020).

Vocational education is not only part of the education system, but also an important element of the economic and social development of any country. Vocational education is defined as any professional training of workers during their lifetime (Průcha, Walterová, Mareš, 2009). Adamec (2021) describes vocational education as an integral component of the education system, emphasising its significant role in secondary education, particularly at the higher secondary level, which in the Czech Republic corresponds to the secondary school level. This level encompasses two primary domains: vocational and general education. Collectively, these domains provide a comprehensive framework for the development of students' knowledge, skills, and attitudes. Consequently, vocational education can be characterised as a systematic sequence of steps designed to prepare students for specific professional tasks. These competencies are essential for individuals in performing the professional activities they have chosen, aligning with the field of study they have completed. Another objective of vocational education is to provide a general framework for habitual resocialisation, facilitating the gradual integration of each adolescent into the adult world (Hrmo & Krpálková-Krelová, 2010). Vocational education is divided into various segments based on the specifics of the vocational focus. Part of this process includes assisting individuals in finding employment, considering further educational opportunities or daily life requirements (Arbizu, et al. 2008). In the Czech Republic, vocational education is initiated at ISCED 32, which is rated as upper secondary education, which usually starts after the completion of compulsory primary level of education. However, the vocational education system in the Czech Republic is rather fragmented after this completion. At the age of 15, primary school leavers can choose between general education programmes (four-year programme: Grammar school) and so-called 'vocational education' programmes. These are, however, of two types: vocational secondary education and lyceum, which is on the borderline between general education, i.e. grammar school, and vocational education; programmes of post-secondary education; and shortened programmes (see Figure 1):

- Three-year vocational training programmes ISCED 353 – this end with a final examination leading to a vocational certificate - level 3 of the European Qualifications Framework (EQF) and enable graduates to enter the labour market directly and to pursue occupations requiring mainly practical skills (bricklayer, hairdresser, etc.). The

[2] International Standard Classification of Education (ISCED, mezinárodní standardní klasifikace vzdělávání) je klasifikace vzdělávání schválená UNESCO v roce 1976. (http://www.uis.unesco.org/Library/Documents/isced97-en.pdf http://www.uis.unesco.org/Education/Documents/isced-2011-en.pdf)

apprenticeship certificate also enables individuals to obtain a trade licence and operate a business. Graduates of these programmes can pursue two-year further education programmes (ISCED 354, EQF level 4) and sit the matriculation examination, which will allow them to study at universities or higher vocational schools.

- The four-year vocational training programmes ISCED 354 and the lycée programmes ISCED 344 culminate in the baccalaureate examination, corresponding to level 4 of the European Qualifications Framework (EQF). These qualifications enable graduates to pursue tertiary education or enter mid-level positions in sectors such as technical, commercial, service, or health. Lycée programmes, which include up to 70% general education subjects, primarily prepare graduates for university studies.

Initial vocational training programmes with lower requirements in general education and vocational theory are primarily designed for candidates with special educational needs. These programmes, which can last one, two, or three years, culminate in a diploma or final examination certificate, corresponding to level 2 of the European Qualifications Framework (EQF).

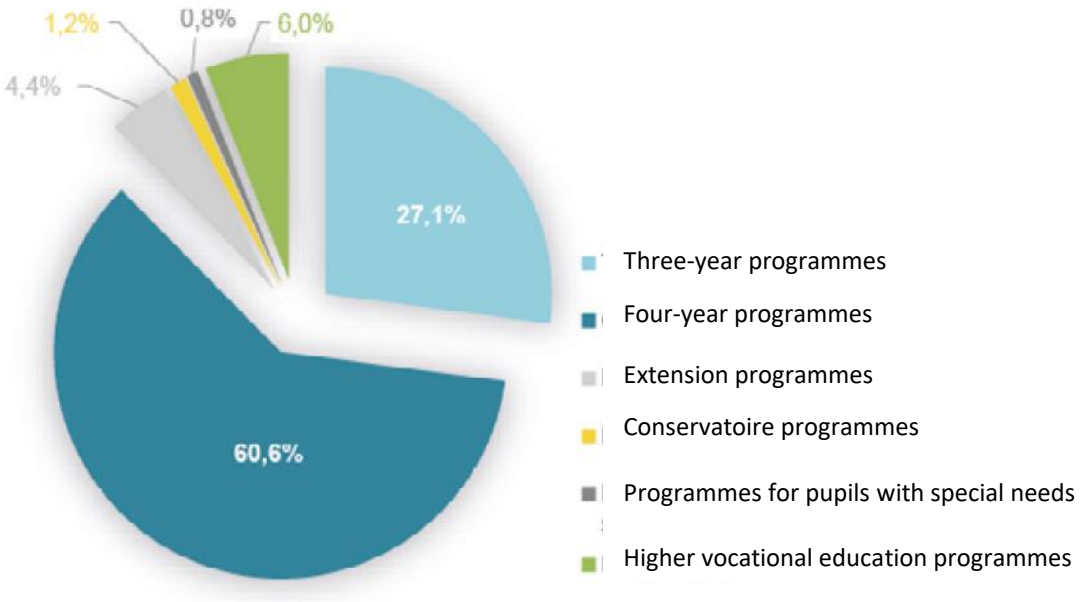

Figure 1: Pupil ratio by type of vocational education in the school year 2021/2022. (https://statis.msmt.cz/rocenka/rocenka.asp)

Initial vocational training programmes are offered by public and state schools, which provide programmes free of charge, as well as by private and religious schools, which may charge tuition fees. Depending on the type of disability, secondary schools may also provide programmes for students with special educational needs.

Graduates with a school-leaving certificate can then apply to study at the tertiary level of their choice, with the lowest level of tertiary education being the so-called vocational colleges, where studies lead to the degree of Diploma Specialist (DiS). Studies at these schools have the approximate character of university studies. Further vocational training can be provided:

a) within the formal education system (there is no age or other formal restriction for adults),
b) as part of active employment policy (so-called retraining),
c) through corporate training - this may be either compulsory training as provided for by law, or unregulated training in accordance with company policy,
d) through open market training providers responding to the specific needs of individuals.

In addition to initial vocational training programmes, secondary schools also offer programmes aimed at employed candidates (varying form and length of distance learning), combining shorter full-time school-based training with tutorials and various methods of online distance learning.

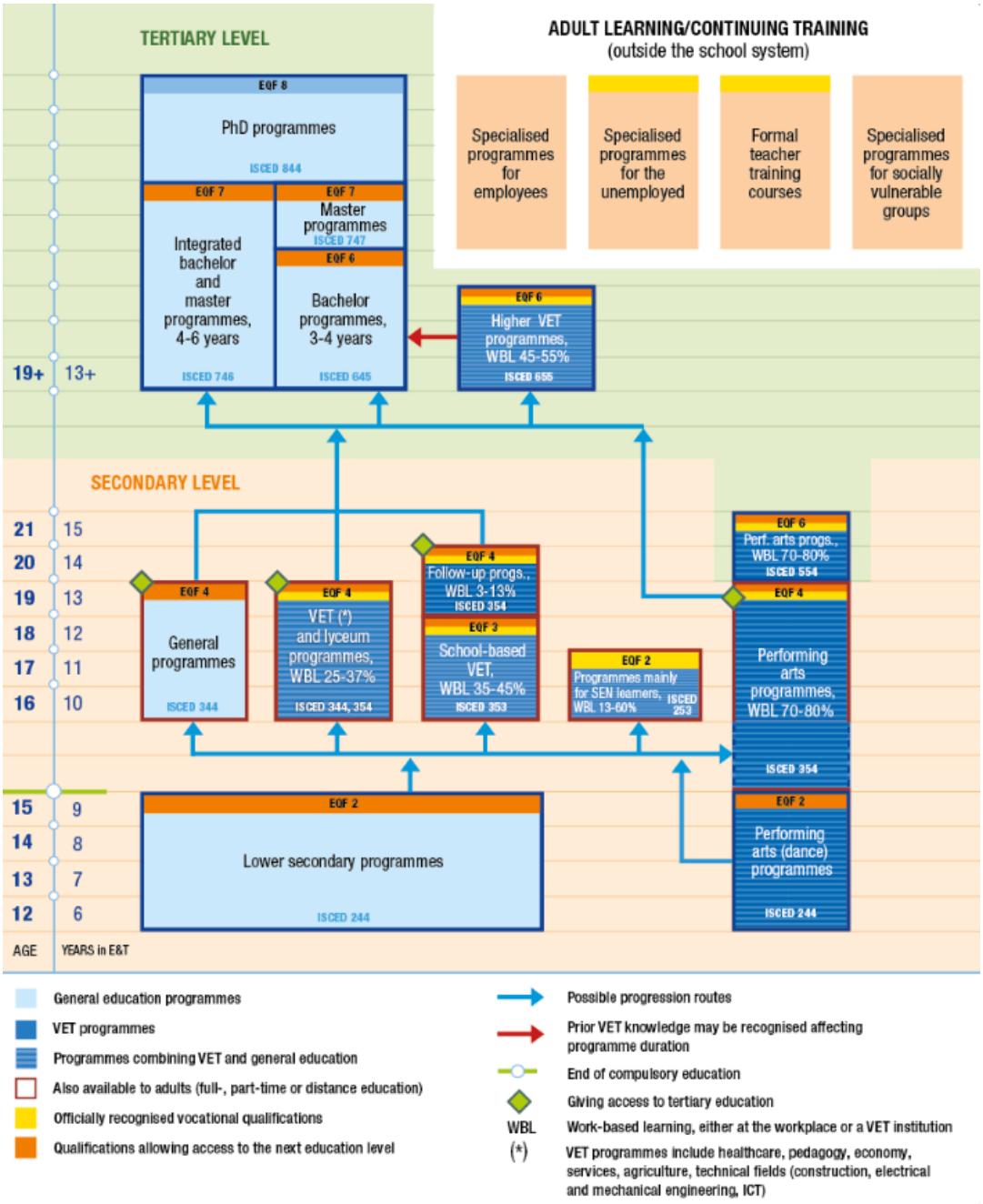

Figure 2: Vocational training in the Czech education system. (Cedefop and ReferNet Czechia, 2022)

The National Qualifications Framework (NQF) facilitates the verification and recognition of prior learning, enabling individuals to obtain qualifications typically awarded through initial vocational training without the necessity of completing a formal training programme.

2 Selected Foreign Vocational Education Systems

If we examine the evaluation of foreign systems of secondary vocational education, we find that the German and Swiss systems are most often cited as the best or most effective. The primary reason for this assertion is the existence of the so-called dual model in apprenticeship training (Tureková, Hrmo, Marková, Kordosová, 2021). However, despite its sophistication, the German system is hardly transferable to other educational systems. This is primarily due to differences in national cultures, which is, incidentally, a challenge faced by all education systems globally. Indeed, attempts to transfer various models (e.g. Swedish, Finnish) to the Czech Republic in the 1990s confirmed this rule of non-transferability and led to the subsequent development of framework educational programmes (Kleskeň & Podpiera, 2010). Below, typical examples of the implementation of secondary vocational education in selected countries are provided:

The Swedish model integrates vocational and general education in one type of upper secondary school, while giving equal importance to both types of education (Ježková et al., 2011). In Sweden, the principal of a single school has been applied since the early 1970s. This means that all Swedish youth aged 7-16 are educated in a nine-year primary school (grundskola), which has a unified curriculum (content and objectives of general education). After leaving primary school, almost all pupils go on to one type of secondary school, which is the grammar school (gymnasieskola). This is an institution that provides either general or vocational education over three years, i.e. usually for pupils aged 16-19. Pupils entering a grammar school choose one of the national curricula on offer, which are differentiated according to the prospective orientation of the students. These programmes are either academically oriented, i.e. preparing students for later university studies, or vocational education and training programmes.
In addition to the predominant vocational stream in grammar schools, a smaller proportion of young people are integrated into apprenticeships (lärlingsutbildning). This is vocational training in which at least 50 % takes place in the workplace (in vocational training at grammar school, the proportion is only 15 %). Apprenticeships involve a tripartite contract between the pupil, the employer and the school. Apprentices study the same compulsory subjects as pupils in grammar school and have an instructor at the workplace. Importantly, in addition to entering the labour market, apprenticeship graduates have the option of continuing their

education in one- and two-year vocational colleges with a vocational focus or, under certain conditions, applying for admission to tertiary institutions.

The German and Swiss models of vocational education differ significantly from those of many other European countries. This is mainly due to the fact that, while in most of these countries there is a uniform education for all young people at primary school level, usually up to the age of 15-16, in the German model the principle of distributing pupils already after the first stage of primary education, i.e. at the age of ten, is embedded, and at the age of 15-16 all pupils (with the exception of pupils in multi-year grammar schools) can start one of the initial vocational education pathways at upper secondary school level (Hippach-Scheinder & Huismann, 2016). The variation in vocational schools is also very diverse. The main types of vocational secondary schools are:

- A vocational (apprenticeship) school (Berufsschule) implements dual vocational training (duale Berufsausbildung) of usually three years.
- The basic vocational training year (Berufsgrundbildungsjahr) is a compensatory one-year education for pupils who have not completed their main school or have completed it with poor grades. The year serves to enable pupils to start an apprenticeship.
- Vocational training schools (Berufsfachschule) prepare for a vocation in 1-3 years and provide vocational qualifications accordingly. On completion of this school, pupils can take an exam (Fachschulreife) and continue their education at a vocational college or vocational school.
- Vocational/vocational grammar school (Berufliches Gymnasium/Fachgymnasium). These schools provide both general and vocational education with a focus on business, economics, technical, IT, food and agricultural professions. Students take the baccalaureate and have access to universities.
- Vocational training schools (Berufsaufbauschule) are vocational schools with one to three years, mainly for young people who are already employed but have not completed secondary education. They can be attended by pupils who have already completed an apprenticeship or several years of work experience.
- Vocational upper secondary school (Fachoberschule) These vocational schools are at upper secondary level and give access to vocational colleges. The studies combine vocational theoretical training with workplace experience.
- A vocational school (Berufsoberschule) is a type of vocational school for students who have already completed a vocational apprenticeship or have five years of professional experience. It offers a certificate in various fields of study leading to a university degree, with the requirement of a foreign language examination.

One of the strengths of German vocational training, which places it at the top of international rankings, is the 'duals system'. In this country, it is seen only as a way of apprenticeship, but its possibilities are wider. Different forms of the dual system operate in vocational training in

countries such as Austria, Switzerland, Denmark, Hungary, the Netherlands and partly also in the Czech Republic, the Slovak Republic and Poland. The purpose of dual training is to ensure that apprentices acquire as effectively as possible the practical skills required for a particular profession. The training takes place in such a way that about 40% of the time is the theoretical part at school. School attendance is usually two days a week. In the practical training (about 60 % of the time) at the workplace, apprentices are already trained by instructors (masters) in the special skills of each profession.

The American model has no uniform education system in the USA as in Europe. School education varies from state to state in the federation. Nevertheless, certain common educational features can be defined (Prucha, 2017). The beginning of compulsory schooling is at the age of six in primary school (elementary school), in which students are educated during eight or six years and then enter secondary school with four years (high school). This education is usually completed by the age of seventeen. Graduates can earn a GED (high school diploma), which is required for entry into higher education, including vocational education. High school provides a general education, although through electives students may receive orientation in some vocational areas. After graduating from high school, most students enter one of the colleges or, less frequently, an apprenticeship. Colleges are of several types, the most common being two-year colleges, known as junior colleges, which provide post-secondary non-tertiary education (at ISCED level 4), either general or vocationally oriented. Another type is four-year colleges, some of which are at ISCED 5 and ISCED 6 level. Graduates receive an Associate Degree, and exceptionally some of these colleges award a Bachelor's Degree.
In the USA, apprenticeships are usually started after high school, i.e. at the age of 17-18, but a large proportion of apprentices are older students aged 20 and above. Depending on the level of expertise, the apprenticeship lasts between 1-5 years. The dual training model is widespread in the US, with American apprentices completing the majority of their training on-the-job in businesses and other workplaces and a smaller proportion in school.

3 Factors Influencing Vocational Education

Historically, vocational education has been developed in response to the needs of the labour market and the economy. With the development of industry and subsequently information technology, it has undergone and is undergoing many transformations. In the Czech Republic, as in many other countries, vocational education is key to preparing a workforce capable of adapting to the changing demands of the labour market.
The economic and social development of any country is largely determined by the level of skills of its workforce. In this context, vocational training has a crucial role to play in providing skills and competences that are relevant to the rapidly changing needs of the labour market. The ability of education systems to meet the demands of particular occupations depends on the influence of several factors such as demographics, economic indicators and highest

educational attainment (Petnuchova, et al., 2012). The most important external factors include:

- demographics,
- economic and labour market indicators (economic structure, employment, etc.),
- highest educational attainment.

For instance, research by the World Economic Forum (2020) predicts that up to 85 million jobs could be replaced by 2025 because of the transition to a new economic structure. This global trend is expected to impact the Czech labour market significantly. The integration of technologies such as robotics and automation necessitate that vocational education systems produce graduates capable of adapting to these changes. This requirement places high demands on the flexibility and adaptability of curricula.

The main challenge for education policy is, of course, the demographic evolution of the population. This concerns both pupils and teachers (the average age of teachers in secondary schools is 49.4 years3). One of the ideas reflected in the Czech Republic's Education Policy Strategy 2030+4 is the introduction of elements of the dual system in vocational education, the promotion of cooperation between education and the world of work, an emphasis on improving vertical permeability within the vocational education system and strengthening the link between formal and non-formal education.

The economy and the labour market are currently undergoing dynamic developments that are changing the needs of the labour market in relation to job seekers, including recent secondary school graduates. The Czech education system should respond to these trends in an appropriate way and prepare pupils for the changing work environment. This thesis has been pursued in many variations for decades, but only partial steps have been taken, mainly due to the transformation of the framework education programmes in force in the Czech Republic. An example of this is the thesis of the so-called 'emerging fourth industrial revolution, which brings changes related primarily to digitisation and the introduction of new technologies'. This thesis is undoubtedly valid and logical in the context of the rapid development of technology, yet it does not make any significant progress in the secondary education system. This is not only the case in the Czech Republic, as the context is global. The world economy is in a constant process of transformation under the weight of globalisation, technological and other socio-political influences. The high heterogeneity in education between countries creates, among other things, the overall sectoral distribution of a country's industry, as well as, for instance, the ability to telework (Brussevich et al. 2020). The effects on the workers themselves are also uneven, as some jobs adapt much more quickly and easily to the new conditions of Industry 4.0 (but also vice versa). Many industries, such as catering, hotels, agriculture, retail, transport and logistics, have limited opportunities to transition working from home and find it more challenging to adapt to the new industrial landscape (Echtelt 2021).

[3] https://www.npi.cz/images/EU_projekty/ReferNet/Spotlight_on_VET_Czechia_2022/Prehled_odborneho_vzdelavani_v_Ceske_republice.pdf
[4] https://msmt.gov.cz/vzdelavani/skolstvi-v-cr/strategie-2030

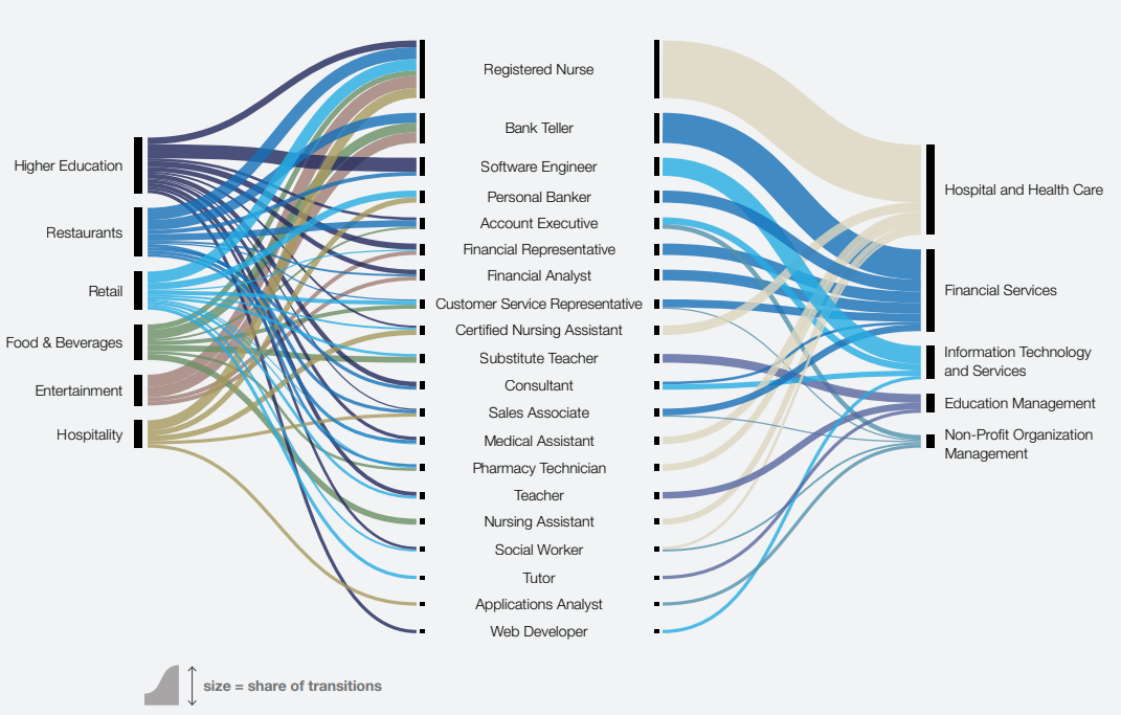

Figure 3: In-focus transitions for affected young workers.
(https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf)

The connotations around the impacts of automation sound rather negative and are mainly associated with job losses and mass redundancies. However, from a different perspective, automation and robotics can help to address the demographic ageing issues faced by most developed countries. The adoption of new technologies can sustain economic growth with a potentially lower labour force. This implies that a lack of jobs may not be the main problem, but too few people of economically active age are (Andres and Hrmo, 2020). This is supported by Abeliansky and Prettner [2017] who offer this explanation and present this trend as a reason why countries experiencing population aging tend to adopt more robotization of processes.

Data from these surveys show that companies expect to restructure jobs in response to new technologies. The main drivers of this revolution are the overall transformation of values and needs (55%) and the introduction of automation accompanied by a reduction in the workforce (43%) (World Economic Forum, 2020). The figure below shows in more detail the newly emerging jobs and, in turn, the jobs at risk or displaced jobs, i.e. employees who will need to be relocated to other positions as part of the new distribution of work between humans, machines and algorithms (Figure 3).

4 Vocational Education and Didactics

In preparing secondary vocational schoolteachers, vocational education didactics are fundamental components of their pedagogical training. These didactics are central to the

development of effective teaching strategies tailored to vocational contexts. Regrettably, this area often receives less emphasis in higher education compared to didactics for lower-level schools. Consequently, many subject-specific didactics remain stagnant, lacking the evolution necessary to establish a robust scientific foundation (Pecina, 2017). In this context, it is therefore possible to perceive the necessity to evaluate their current state in the context of all subject didactics and to indicate their further possible development regarding the transformation of the requirements of today's society, i.e. the change of the paradigm of vocational education due to the digitalisation of industry, commerce and services.

Field didactics are relatively young interdisciplinary disciplines in relation to didactics and pedagogy in general, applying just those general pedagogical and didactic knowledge to the teaching of specific fields (subjects) in vocational education. In the conditions of the Czech Republic, a certain systematic development of these sciences can be traced from the second half of the twentieth century.

The basis of subject didactics is formed by the relevant scientific disciplines, which are transformed into the curriculum, into the preparation of teachers of vocational subjects within the framework of these didactics. According to Pecina (2017), didactics in vocational education can be divided into the following groups according to the focus and specifics of the respective individual disciplines:

- Didactics of technical subjects.
- Didactics of economic subjects.
- Didactics of vocational subjects in commerce and services.
- Didactics of other subjects (disciplines) which cannot be clearly classified in the previous groups (agricultural subjects, medical subjects, police training subjects...etc.).

From the above it can be concluded that this is a rather very broad field due to the large number of disciplines. At present, there are almost three hundred of them, divided according to area, length of training and completion into the categories J, E, H, M, L0, conservatoires, post-secondary studies5. Despite the large number of subjects, certain common elements can be traced in some of them, which make it possible to develop common areas of teaching in each subject. Pecina and Marinic (2021) list these elements in the following summary:

- Teaching in materials and technologies, equipment of workplaces and facilities for teaching needs.
- Significant combination of theory and practice, great importance of students' professional practice and cooperation with the labour market, companies and establishments of the given fields.
- Preparation for future careers, courses with an apprenticeship certificate or a school-leaving certificate.
- The focus of the teaching technology in selected teaching methods and forms, specific material means of teaching (interpretation, demonstrative methods, instruction,

[5] https://www.infoabsolvent.cz/Obory/1?NastavKraj=True#filtrForm

teaching in specialised classrooms, teaching day, production means of the given fields, great importance of project teaching, teaching occupational safety,etc.).

- Specific diagnostics and assessment (in addition to the usual methods, these are set and check papers, assessment of final and graduation papers).
- The rapid development of the various disciplines and the resulting need to update educational strategies, projects, documents, teaching texts and textbooks.
- The focus is shifting to continuing and lifelong learning for both teachers and graduates of these disciplines.

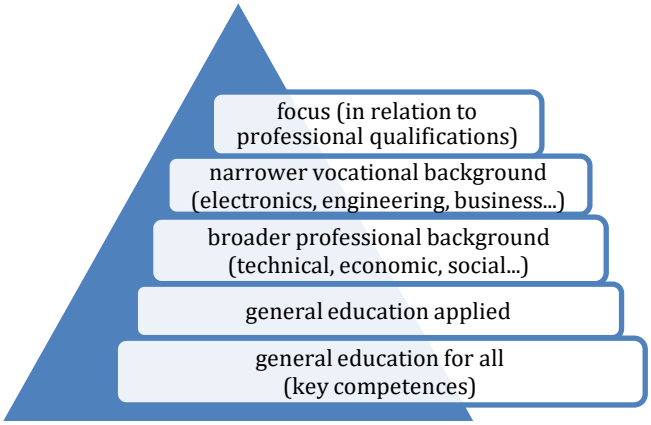

Figure 4 Competency pyramid[6].

Some of the above points can certainly be disputed, but in the reality of the labour market, the idea of interconnectedness of vocational training fields seems much more realistic today than it was a few years ago. The less than 300 courses mentioned also mean that pupils studying in them have only a limited opportunity to adjust their educational path. The narrow focus of the fields of study significantly limits their employment in the labour market, but also the prerequisites for retraining (Zimmermann, K. F., at al., 2013). The ineffectiveness of this system is furthermore underlined by the fact that a larger proportion of graduates do not end up working in their original field of study7. From this perspective, the argument that the fields should have a broader vocational basis based on the principle of the competence pyramid (see Figure 4) appears to be correct, as it is only on the higher levels that students build the knowledge, skills and competences needed for work activities. It can thus be concluded that the reduction of disciplines in the form of removing overlaps, often very narrow specialisations and reflecting on interdisciplinary links is a necessary part of the reform.

In fact, the Czech Education Policy Strategy 2030+ and the recommendations of experts from the European Centre for the Development of Vocational Training (Cedefop) show that the main objective of vocational education does not appear to be preparation for a narrow

[6] https://www.pzpk.cz/aktuality/odborne-vzdelani-cekaji-zasadni-zmeny/ or https://www.mpsv.cz/documents/20142/372813/K4.0_Blok_II._01_N%C3%A1stroje+New+Skills+Monitor+a+Kompeten%C4%8Dn%C3%AD+pyramidy.pdf/c63b5e18-5926-567c-2cff-4f1c49fd862a

[7] https://www.pedagogicke.info/2024/04/ve-vystudovanem-oboru-zustava-jen.html or https://infoabsolvent.cz/Temata/ClanekAbsolventi/4-3-09 or https://hn.cz/c1-65751270-vetsina-lidi-nepracuje-v-oboru-ktery-vystudovali-do-velke-miry-je-to-dano-i-vyvojem-pracovniho-trhu

profession, but much broader preparation for flexible participation of the graduate in society and the labour market. The reform that is underway in the Czech Republic at the time of writing aims to create a functional and permeable sectoral system that will equip graduates with the competences for long-term employability in the labour market with further vocational and non-vocational training.

5 Conclusion

The establishment of subject didactics in vocational education has been debated for many decades, even though the fact that it is a scientific field with its own genius loci in vocational education, within both basic and applied research. Unfortunately, this area is marginalised in terms of resources, incentives and research subsidies from relevant institutions. Consequently, there is a lack of research findings, which hampers the dissemination of results through monographs and international platforms such as professional journals and scientific conferences. This ongoing neglect continues to undermine the significance of this scientific field.

The challenge to change approaches involves modernising vocational schools through the transition to digital technologies, innovation, and the application of new teaching and assessment methods. Unfortunately, this reform trend is not supported by sufficient analytical evidence and relies more on the practical conclusions and experiences of experts who are only marginally active in this field.

References

Abeliansky, A. & Prettner, K. (2017). *Automation and Demographic Change.* SSRN Electronic Journal.

Adamec, P., at al. (2021). Vybrané kapitoly soudobých témat odborného vzdělávání. Vydání: první. Powerprint, Praha. 204.

Andres, P. & Hrmo, R. (2020). Education 4.0 - A New Systemic Paradigm of Teacher Education for Technicians–Engineers in the Czech Republic and Slovakia. In Auer, M., Hortsch, H., Sethakul, P. (eds) The Impact of the 4th Industrial Revolution on Engineering Education. ICL 2019. Advances in Intelligent Systems and Computing, vol 1135. Springer, Cham.

Arbizu, F. et al. (2008). Vocational education in the context of the European Qualifications Framework. Radom: The Publishing House of the Institute for Sustainable Technologies – National Research Institute.

Brussevich, M., Dabla-Norris, M. E., & Khalid, S. (2020). Who will bear the brunt of lockdown policies? Evidence from tele-workability measures across countries. International Monetary Fund.

Čepelová, S. (2020). Postoje učiteľov profesijných (odborných) predmetov v stredných odborných školách k inkluzívnemu vzdelávaniu. Nová Forma, Týn nad Vltavou.

Echtelt, R. (2021). Why upskilling is key for the future of work. AG5: Skills management software [online] [cit. 2024-10-10]. https://www.ag5.com/upskilling-future-of-work/.

Hippach-Scheinder, U., & Huismann, A. (2016). Vocational education and training in Europe – Germany. Cedefop ReferNet VET in Europe reports.

Hrmo, R., Krpálková Krelová, K. (2010). *Zvyšovanie kvality vyučovacieho procesu*. STU v Bratislave.

Ježková, V., Dvořák, D., Greger, D., & Daun, H. (2011). *Školní vzdělávání ve Švédsku.* Karolinum, Praha.

Jůva, V. et al. (2001). Základy pedagogiky pro doplňující pedagogické studium. Paido, Brno.

Kleskeň, B. & Podpiera, R. (2010). Klesající výsledky českého základního a středního školství, fakta a řešení. Odborná studie.

Pecina P. & Marinič, P. (2021). Oborové didaktiky v odborném vzdělávání v české republice – aktuální stav a perspektivy [online]. Lifelong Learning – celoživotní vzdělávání, 11(2), pp. 147–171.

Pecina, P. (2017). Fenomén odborného technického vzdělávání na středních školách. Odborné a technické vzdělávání. Masarykova univerzita Brno. ISBN 978-80-210-8677-7. https://munispace.muni.cz/library/catalog/book/944.

Petnuchova, J. et al (2012). Vocational education and training in OECD countries. 15th International Conference on Interactive Collaborative Learning (ICL), Villach, Austria, 2012, pp. 1–6.

Průcha, J. (2017). *Vzdělávací systémy v zahraničí. Encyklopedický přehled školství v 30 zemích Evropy, Japonsku*, *Kanadě, USA.* Wolters Kluwer, Praha.

The Future of Jobs Report 2020 https://www.weforum.org/publications/the-future-of-jobs-report-2020/

Tureková, I., Hrmo, R., Marková, I., & Kordosova M. (2021). Evaluation of Acquired Knowledge about Occupational Safety in Dual Education. *TEM Journal.* Volume 10, Issue 4, ages 1775–1780.

Zimmermann, K. F., et al. (2013). Youth Unemployment and Vocational Training [online]. Foundations and Trends® in Microeconomics. 9(1–2), pp. 1–157 [cit. 2024-03-03].