Generic skills in the 14-19 curriculum: an international review

Germany

International case study

Generic skills description	Framed within personal and professional competencies. Include transferable non-cognitive or 'soft' skills.
Generic skills in the academic and vocational curriculum	Generic skills in the academic curriculum vary across different German states. For VET, there is more commonality through the German Qualifications Framework based on the European Qualifications Framework. In VET: contextualised to specific tasks, attitudes and behaviours pertaining to occupations.
Skills teaching and learning approaches	In academic/general education, integrated into academic subject teaching, not standalone topics. In VET, work-based learning and project work.
Generic skills assessment	Integrated into as part of competence based assessment in VET.
Teacher autonomy	Substantial teacher autonomy in the context of significant regional autonomy for education at the state level.

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This is a case study of generic skills in 14-19 education in **Germany**, developed through a desk review of selected, mostly official documents. It is intended to be read alongside another 9 international case studies and an overarching summary report of the research *Sheffield Institute of Education* undertook in collaboration with *Centre for Education Systems* with funding from *The Charitable Foundation for Educational Development*. The project investigated how 'generic skills' are characterised, understood, and implemented across 10 jurisdictions, with particular reference to the relevance for England.

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Summary

An important contextual feature of German education is that responsibility for the education system is shared between the Federation and the Federal States (*Länder*); the states have most responsibility for decision-making and so curricula differ across states. Whilst a commitment to generic, transferable competencies appears important at all levels of German education from primary through to higher education, there is variation at state level. There is more commonality in VET education.

Generic skills in vocational education are identified within personal and professional competencies in the German Qualifications Framework (GQF), which is based on the European Qualifications Framework. The GQF is designed to help students develop critical personal, professional and emerging digital skills that are necessary to improve their employability and life chances. These skills include:

- Critical thinking, creativity and problem-solving
- Communication and negotiation
- Presentation skills
- IT skills
- Conflict, time and project management skills
- Work ethic, initiative and independence
- Team spirit.

In vocational education and training (VET) programmes they are contextualised to specific occupations. The dual system of VET in Germany is world-renowned and the concept of beruf (vocation) is deeply embedded in VET from secondary school to tertiary programmes. Learning develops through project work and work-based learning to support the transfer of generic skills to vocational areas and to contextualise competencies within occupations. Collaboration between government, educators and enterprise is enshrined in law and underpinned by funding, demonstrating the government's commitment to VET. Although teachers enjoy high status and above-average salaries, there is a teacher shortage and recruitment remain challenging, particularly in VET, as teachers can earn significantly more elsewhere.

1. Contextual Factors

This section provides an overview of Germany, beginning with its social and economic context and its educational traditions in section 1.1. Section 1.2 explores the key systems and structures of the education system. Section 1.3 covers the education workforce and professional status. Finally, section 1.4 describes how policy relating to skills is formed and enacted in Germany. These are all discussed in specific relation to generic skills.

1.1 Social and economic stability

The German economy is stable and strong and despite stagnating in 2023, a slow recovery is predicted from 2024. The COVID-19 pandemic and energy crises due to the war in Ukraine have demonstrated a need to improve energy security and to address skills shortages while boosting investment in the green and digital transition.[1] There are ongoing challenges related to income inequality and social cohesion, which have been exacerbated by the influx of refugees in recent years. These issues are aggravated by persistent disparities in economic capability between west and east Germany and also between south and north, which in turn affect the financial positions of the Federal States and their education budgets. Germany is also facing the ongoing challenge of balancing economic growth with environmental sustainability.[2]

Adults in Germany enjoy strong labour market outcomes, with above-average wage and employability premiums for higher educational attainment.[3] At 5.8%, Germany's unemployment rate is much lower than the EU average of 15.1%. This is largely attributed to its successful VET system, particularly apprenticeships.[4]

Germany has a diverse and multicultural society, but demographic shifts pose problems. Germany's population has been falling steadily, but migration has had a major impact – at the end of 2018, people with a migratory background, including refugees, made up over a quarter of the total population.[5] While this presents the social and economic challenges of integration, it has improved the old-age dependency ratio in Germany's ageing population.[6] Nevertheless, it is projected that by 2060 almost one in three people (28.4%) will be at least 65, while the working-age population (20-65) will have decreased to 57.2%. This has implications for VET because there will be fewer apprentices and greater demand for learners in health and social care. To tackle these skilled labour shortages, Germany must increase participation of women, older

[1] OECD, 2023 https://www.oecd.org/newsroom/a-return-to-strong-resilient-and-sustainable-growth-for-germany-requires-future-focused-investment-and-reform.htm
[2] CEDEFOP, 2020 https://www.cedefop.europa.eu/en/tools/nqfs-online-tool/countries/germany-2020
[3] OECD, 2020 https://www.oecd.org/education/policy-outlook/country-profile-Germany-2020.pdf
[4] CEDEFOP, 2020
[5] Federal Statistical Office of Germany, 2024 https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Migration-Integration/_inhalt.html#233658
[6] Ibid

and low-skilled workers, improve training and adult learning, and facilitate recognition of the qualifications of migrants and refugees.[7]

The German education system performs well compared with other OECD countries. In PISA 2018, Germany had above average results in reading, maths and science. In the OECD's 2012 survey of adult competencies, Germany was above average for maths and average for literacy. The proportion of Germans with an upper secondary qualification is above average; the proportion of these with a vocational qualification is also high. While tertiary attainment has been growing since 2008, the rate is slower than in other OECD countries.[8]

Educational traditions

When considering models of VET, it is useful to distinguish between systems that focus on education for an occupation, such as in Germany, and those that aim at employability for individuals, as in England.[9] In German society, the notion of beruf (vocation) is entrenched,[10] and VET is respected and deeply embedded in the school system. Its purpose is to integrate individuals into society through a professional identity and to enable them to develop the skills, attitudes and knowledge to act competently within their chosen field. In contrast, VET in England and the US involves a modularised system of qualifications or work experience that certifies specific competencies. The competencies are determined by market forces and the decisions made by individuals to enhance their employability, careers or income. Such systems require high levels of general education for individuals to make the best decisions.[11]

German VET is internationally renowned. It offers a dual system which integrates work-based and school-based learning. There is evidence that this approach leads to high-quality vocational qualifications and supports students to make successful transitions from school to full-time employment.[12] Employment rates among VET graduates are high.[13]

Until the mid-1960s, VET was the main route to employment for young people, while much smaller numbers, mostly from the middle classes, pursued higher education.[14] Higher education and VET in Germany were distinct sectors with different pathways (see figure 1) and associated professions requiring either academic or VET qualifications. However, the separateness of the routes is being challenged. Advances in technology mean that unskilled jobs are increasingly automated, boosting demand for highly skilled workers as Germany shifts towards a knowledge-based economy.[15] Employers are putting more emphasis on abstract knowledge and seeking employees who can problem-solve, deal with risk and unpredictability, and work flexibly across departments.[16] This has implications for the education system, particularly for VET.

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[7] CEDEFOP, 2020
[8] OECD, 2020
[9] Rauner, 2006
[10] Greinert, 2007
[11] Brockman et al., 2008
[12] Forster et al., 2016; Müller & Shavit, 1998; OECD, 2018 https://www.oecd-ilibrary.org/education/education-at-a-glance-2018_eag-2018-en
[13] CEDEFOP, 2020
[14] Baethge & Wolter, 2015
[15] Brockman, et al.,2008
[16] Boreham, 2002

Social challenges in German education

Educational outcomes in Germany reveal some important disparities. Socio-economic status has a significant impact on outcomes. Young people from disadvantaged backgrounds are less likely to go to university, and migrants having lower attainment in higher and vocational education. In 2017, foreign-born 15–29-year-olds were three times more likely to be NEET (not in employment, education or training) than their native-born peers.[17] The social mobility implications of a two-track school structure (academic/vocational), where changing paths may not be easy, can serve to entrench the disparities.

About 25% of low-skilled individuals in Germany have fundamental difficulties with reading and writing.[18] For low-skilled workers, the unemployed, and refugees with low proficiency in German language, basic skills are a prerequisite for continuous education and training. A key aim of Germany's National Skills Strategy, therefore, is to support the acquisition of basic skills, especially the ability to read and write in German, and IT and maths skills for adults.

Teacher shortages in Germany are also a serious concern, especially in disadvantaged schools. Unfilled vacancies mean that schools use teaching personnel who have no formal teacher training, threatening the quality of education and also the integration of recently arrived migrants.[19]

1.2 Key educational systems and structures

Curricula, assessment and qualifications

The German secondary education system has two tracks: academic and vocational. Purely academic schools, Gymnasiums, lead to the Abitur qualification involving high-stakes exams that determine entry to university. The Abitur has three key areas: languages, literature, and arts; social sciences; and mathematics, natural sciences, and technology.[20] Subjects can be taken at intensive or basic levels. The Federal States differ in their requirements for achieving the Abitur, including the mix of subjects and levels.

Germany's main vocational route is the long-established dual system, a model of apprenticeship with work-based learning at its core and school-based learning alongside. Students spend 15-25% of their training in vocational schools and the remaining time in companies. There is a second VET pathway, a school-based route covering over 100 training programmes where students learn full-time in vocational schools. Student numbers on these female-dominated programmes make up almost one-quarter of the German VET system.[21]

All VET is based on nationally recognised occupations and vocational training regulations which guarantee national standards. Final exams are regulated by law and executed by chambers of industry or commerce. Learners must demonstrate an array of competencies and perform practical tasks. Graduates are awarded a vocational qualification, giving them access to the

[17] OECD, 2020
[18] Grotlüschen et al., 2019
[19] OECD, 2020
[20] Erudera, 2023 https://erudera.com/germany/what-is-the-german-abitur/
[21] Brockman et al., 2008

labour market; these qualifications are highly valued by employers.[22] VET qualifications and curricula are designed in collaboration with employers and trade unions. Likewise, learning outcomes are negotiated by various stakeholders including the state, employers, unions, and teaching institutions. Framing learning processes as outcomes supports the comparability of qualifications and therefore helps to offset constraints on occupational mobility (explained below).

Traditionally, gaining a vocational qualification in Germany meant entering a life-long career which conferred social status and recognition. However, VET's strong links with the labour market along occupational lines means that access to jobs is determined by occupational certificates – which limits mobility between occupations.[23] This has implications for social mobility too, particularly for working-class children, who are frequently channelled into apprenticeships. The dual system is also criticised for being unable to adapt to socio-economic and industrial change. The specificity of VET qualifications equips graduates for labour market entry but at later career stages can prevent them from responding flexibly to technological changes such as automation or institutional changes such as declining employment protection.[24] Many observers assert that a more appropriate VET strategy is life-long learning within a framework of continuous vocational education and training (CVET). This approach encourages individuals to update their skills throughout their working lives, looking beyond the transition from school to the first job. For example, a modular system would provide flexible routes to qualifications by enabling individuals to switch between courses, continue training at different stages in their lives and study additional, optional modules.[25]

CVET has risen in importance and is now seen as necessary for individuals to remain employed. The German VET system provides CVET at secondary, post-secondary and increasingly at tertiary levels.[26] This is underpinned by the Qualification Opportunities Act (2019) which gave employees' rights to access CVET funding if they are affected by structural changes or want further training to access a shortage occupation.[27] Additional qualifications have been introduced, largely in the fields of international qualifications/foreign languages, business and commerce, engineering and technology.[28]

School/college organisation

The German education system (figure 1) prepares pupils from as early as 10 years of age (12 in some Federal States) to pursue either a vocational track (with graduation after grade 9 or 10) or an academic track to obtain a university entrance qualification (Abitur) after grade 12 or 13. Once on a track, it is difficult for students to change to a different school. This limits the social mobility of children from disadvantaged socio-economic backgrounds[29] who are more likely to take apprenticeship routes.

[22] CEDEFOP, 2020
[23] Rubery & Grimshaw, 2003; Haasler, 2014
[24] Krueger & Kumar, 2004; Thelen, 2014
[25] Brockman et al., 2008
[26] CEDEFOP, 2020; BIBB, 2019a https://www.bibb.de/dienst/publikationen/de/10335
[27] CEDEFOP, 2020
[28] BIBB, 2024 https://www-bmbf-de.translate.goog/bmbf/de/bildung/berufliche-bildung/strategie-und-zusammenarbeit/der-berufsbildungsbericht/der-berufsbildungsbericht.html?_x_tr_sl=de&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=sc
[29] Blossfeld, 2018

Secondary school has two stages: lower secondary level (LSL) (ages 10-15/16) and upper secondary level (USL) (ages 15/16-18). There are four main types of LSL school. Hauptschule and Realschule (secondary schools) have a vocational focus and combine school and work experience. Gymnasien (grammar schools) have a strong academic focus. Gesamtschule (comprehensive schools) combine vocational and academic elements. At LSL, students from the dual system or specialised vocational schools must obtain an occupational qualification before continuing to specialised vocational upper secondary schools (Berufsoberschulen), the USL dual system, or health and social sector programmes.[30]

USL is compulsory and typically lasts three years. General USL programmes are offered by Gymnasien or Gesamtschulen and lead to an upper secondary general school-leaving certificate (Abitur) enabling entry to higher education programmes. Alternatively, students can take one of four vocational USL streams which lead to the Fachgebundene Hochschulreife qualification or the Fachhochschulreife qualification which enable further study at universities of applied sciences.[31]

Secondary VET

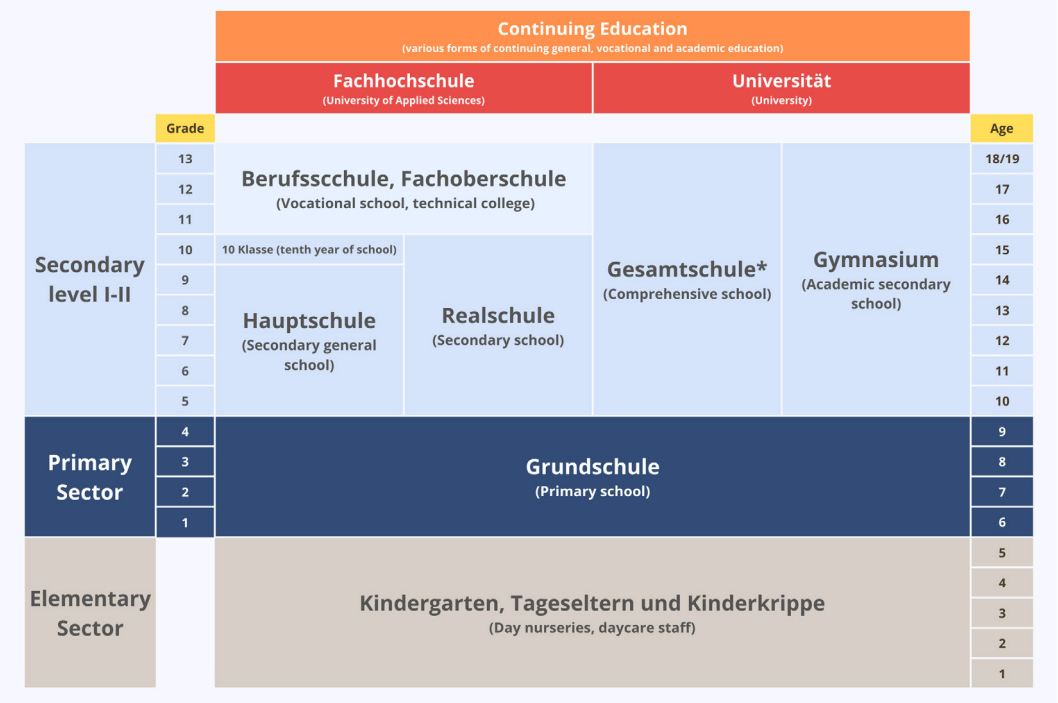
Programmes in Germany's dual system of VET, combining school and work-based learning, are available in over 300 trades.[32] VET is the main option for students who have obtained the lower secondary school certificate (Hauptschulabschluss after grade 9) and intermediate secondary school certificate (Mittlerer Schulabschluss, after grade 10). There are also transition programmes for learners who face difficulties accessing VET that would qualify them for the labour market. These programmes prepare young people who do not have the skills, qualifications, or who are not yet ready for VET, to enter a fully qualifying vocational programme or to complete a regular school-leaving certificate.[33] Approximately one third of students on these programmes have a migrant or refugee background.[34]

Higher VET

Young people in Germany completing their Abitur university entrance qualification are increasingly choosing higher VET.[35] Their options include dual-study higher VET programmes which combine apprenticeship with bachelor's degree studies. Germany has strengthened these programmes in recent years in response to the labour market's demands for higher skills and the shift in emphasis from experience-based knowledge to theory-driven knowledge and understanding.[36] Most of these programmes require high entry qualifications: over 80% of enrolling students have intermediate or upper secondary school-leaving certificates, compared with around 70% in the dual system.[37] Students who complete these integrated programmes receive both a recognised vocational certificate and a bachelor's degree award. These measures have made higher VET an attractive option for young people with university entrance qualifications, but the academisation of skills has also made access to training places highly competitive, disadvantaging refugees and low-achieving young people, who are often from lower social classes.[38]

[30, 31, 32] OECD, 2020
[33] Haasler, 2020
[34] Ibid
[35] BIBB, 2019a; CEDEFOP, 2020
[36] Thelen, 2014
[37] Autorengruppe Bildungsberichterstattung, 2018, p131
[38] Baethe & Wolter, 2015; Haasler, 2020

Figure 1: Germany's education system [39]



1.3 Education workforce and professional status

Professional status and autonomy

Prospective teachers in Germany must hold a bachelor's or master's degree and pass a qualifying exam to enter initial teacher training. This is followed by a teacher practicum of 18 to 24 months, leading to a further examination. Professional development is mandatory for all teachers and influences career progression. Teachers consider themselves to have significant autonomy in Germany, principally in how teaching and learning is delivered in the classroom.[40] However, subject leads within each school are typically responsible for the syllabi taught to young people, within the parameters of any content required for external examinations. From a generic skills perspective, this means teachers have autonomy for how to incorporate non-examined subjects into their teaching in the ways that they prefer.

Teachers in Germany typically have high levels of job security, as they are usually employed as civil servants once they have passed a probationary period. Germany ranked 8th out of 50 in the 2021 Global Teacher Status Index, reflecting the value placed on the teaching profession. Working conditions for teachers in German schools include above-average teaching hours, average class sizes, and higher salaries than their peers in other countries, particularly at the start of a career. However, the workforce is ageing and there are teacher shortages as the role is seen as less attractive and increasingly complex. Recruitment is challenging, particularly in VET, because prospective teachers can earn considerably more in industry.

[39] Studying in Germany, 2024 https://www.studying-in-germany.org/german-education-system/
[40] Wermke et al., 2019
[41] OECD, 2020

1.4 Policy formation and implementation

Responsibility for the education system is shared between the Federation and the Federal States. The States have most responsibility for decision-making[42] leading to differences among them in programme titles, duration and curricula,[43] and also teacher capacity and funding. External stakeholders play an important role across all education sectors, particularly in VET where employers contribute to governance and funding. In tertiary education, external representatives are increasingly on governing boards.[44] Education is clearly a policy priority in Germany, as demonstrated by its per-student funding, which is above OECD average, particularly in early years, vocational upper secondary, and tertiary education.

The Federal Ministry of Education and Research (BMBF) is responsible for VET policy generally; it coordinates and guides VET policy developments for all training occupations.[45] Upper secondary VET provision is regulated by The Vocational Training Act of 1969 (amended in 2019).[46] This Act promotes higher VET by giving it parity with academic education through new designations of bachelor professional and master professional, and through funding instruments for advanced vocational qualifications. Governance of the VET system is underpinned by the same Act and characterised by strong partnership between the Federation, States, employers and trade unions. All VET regulations are negotiated and agreed with all social partners.

The National Skills Strategy brings together the Federation, States, businesses, trade unions and the Federal Employment Agency to boost participation in continuing education and training. CET is seen as key to securing skilled labour and enabling people to maintain their employability and control their professional lives in the face of changes to occupational and qualification profiles driven by the digital revolution.[47]

[42] OECD, 2020
[43] CEDEFOP, 2020
[44] OECD, 2020
[45] CEDEFOP, 2020
[46] BIBB, 2019b https://www.bibb.de/dokumente/pdf/bmbf_The_new_Vocational_Training_Act.pdf
[47] Federal Ministry of Labour and Social Affairs and the Federal Ministry of Education and Research, 2019 https://www.bmas.de/SharedDocs/Downloads/EN/Topics/Initial-and-Continuing-Training/national-skills-strategy.pdf?__blob=publicationFile&v=1

2. Generic skills

The concept of bringing up children to embrace certain values is a dominant principle in German pedagogy[48] and the German curriculum focuses on competence-driven learning. Values-informed generic skills are important at all levels of German education from primary to higher education. These skills include:

- critical thinking, creativity and problem-solving
- communication and negotiation
- presentation skills
- IT skills
- conflict, time and project management skills
- work ethic, initiative and independence
- team spirit.

On general/academic education programmes, generic skills are not taught explicitly, but instead are integrated into the curriculum and delivered within constructivist approaches to teaching and collaborative learning (described further in section 4).

Generic skills in vocational education are encompassed in professional and personal competencies as codified in the German Qualifications Framework,[49] which are addressed in more detail in section 3 below. In VET programmes, these competencies are contextualised to specific tasks, attitudes and behaviours pertaining to specific occupations. Assessment of generic skills occurs within vocational education assessment.

[48] Brockman et al., 2008

[49] CEDEFOP, 2020, p14

3. Subject and vocational skills

As stated above, the German curriculum is competence-driven. Teaching and learning take place in a structured environment that allows for a democratic class community and high-level learning encompassing all academic areas. As part of general education, all students are offered the following subjects. In the course of learning subject-specific knowledge and skills, they are supported to develop generic competencies that are embedded into the following subjects:

- German language
- Maths
- Up to three foreign languages
- History
- Geography
- Health
- Science (physics, biology, chemistry)
- Art (including handicrafts/textile design)
- Music
- Sports
- Religion/ethics
- Media
- Sustainable development & valued education
- Civic/social/political studies

Turning to vocational skills education, the aim of VET in Germany is to enable students to take autonomous and responsible action within the workplace.[50] To this end, vocational learners are required to develop transferable professional and personal competencies (contextualised to specific vocations) as well as occupation-specific knowledge and expertise. This is enshrined in the German Qualifications Framework[51] based on the European Qualifications Framework.[52]

For example, **Table 1** (opposite) sets out these requirements for professional and personal competencies at levels 3 and 4 of the German Qualifications Framework. The general dimensions of competence are the same at the different levels, but the required learning outcomes increase so that learners must engage with greater complexity to master the competencies.

It is clear from this framework that in German VET, vocational skills are tightly interwoven with what we call generic skills for the purpose of this comparative review.

[50] Halfpap, 2000

[51] BIBB, 2013 https://europass.europa.eu/system/files/2020-06/German%20Referencing%20Report%20.pdf

[52] CEDEFOP, 2020:14

Table 1: Levels 3 and 4 of the German Qualifications Framework for Lifelong Learning [53]

Level	Requirements	Professional competence	Personal competence
3	Be in possession of competences for the autonomous fulfilment of technical requirements within a field of study or field of occupational activity which remains clear whilst being openly structured in some areas.	**Knowledge** Be in possession of extended general knowledge or extended professional knowledge within a field of study or field of occupational activity. **Skills** Be in possession of a spectrum of cognitive and practical skills for the planning and processing of technical tasks within a field of study or field of occupational activity. Assess results in accordance with criteria which are largely prestipulated, provide simple transfers of methods and results.	**Social competence** Work within a group and occasionally offer support. Help shape the learning or working environment, present processes and results to the appropriate recipients of such information. **Autonomy** Learn or work autonomously and responsibly including within contexts which are less familiar. Appraise own actions and the actions of others. Request learning guidance and select various learning aids.
4	Be in possession of competences for the autonomous planning and processing of technical tasks assigned within a comprehensive field of study or field of occupational activity subject to change.	**Knowledge** Be in possession of deeper general knowledge or theoretical professional knowledge within a field of study or field of occupational activity. **Skills** Be in possession of a broad spectrum of cognitive and practical skills which facilitate autonomous preparation of tasks and problem solving and the assessment of work results and processes according consideration to alternative courses of action and reciprocal effects with neighbouring areas. Provide transfers of methods and solutions.	**Social competence** Help shape the work within a group and the learning or working environment of such a group and offer ongoing support. Justify processes and results. Provide comprehensive communication on facts and circumstances. **Autonomy** Set own learning and work objectives, reflect on and assess such objectives and take responsibility for them.

[53] German EQF Referencing report, BIBB (2013), adapted from p61

4. Teaching and learning approaches

Teaching and learning approaches in German schools are based on a constructivist approach where group work and collaborative learning help learners see connections and develop skills that are transferable across subjects and contexts, including metacognitive skills. German classrooms are characterised by group dialogue about problem formation, scaffolding, and reflection; learners regularly verbalise their perceptions, impressions, questions, solutions and speculations. Teaching approaches encourage students to think critically and develop creative problem-solving skills, while supporting them to take ownership of their learning processes. Learners are taught that there is more than one way to find the answer to a question. Because schools are not ranked, there are very few standardized tests by which to compare schools. This removes the pressure on a school to achieve a particular score as an institution, and consequently on teachers to "teach to the test".

In VET programmes, learning is situated in concrete work scenarios, processes and tasks, rather than in subjects, making it more easily transferable between contexts and occupations. It is a holistic approach which develops occupational, social and individual competencies through individual and group activities, task-based and project work, and includes elements of self-directed learning. Learners are central to this process and shift from being passive consumers of knowledge to active producers of knowledge.[54]

[54] Halfpap, 2000

References

Autorengruppe Bildungsberichterstattung (2018) *Bildung in Deutschland 2018. Ein indikatorengestützter Bericht mit einer Analyse zu Wirkungen und Erträgen von Bildung*. Retrieved April 2024 from: https://www.bildungsbericht.de/de/bildungsberichte-seit-2006/bildungsbericht-2018/pdf-bildungsbericht-2018/bildungsbericht-2018.pdf

Baethge, M., Wolter, A., (2015) The German skill formation model in transition: from dual system of VET to higher education? *J Labour Market Research*. 48 pp.97–112.

BIBB (Bundesinstitut für Berufsbildung) [Federal Institute for Vocational Education and Training] (2013) *German EQF Referencing Report* Retrieved April 2024 from https://europass.europa.eu/system/files/2020-06/German%20Referencing%20Report%20.pdf

BIBB (2019a) Data report on the Vocational Education and Training Report, 2019 (*Datenreport zum Berufsbildungsbericht 2019. Informationen und Analysen zur Entwicklung der beruflichen Bildung*.) Retrieved April 2024 from: https://www.bibb.de/dienst/publikationen/de/10335

BIBB (2019b) *The new Vocational Training Act (Berufsbildungsgesetz – BBiG)*. Retrieved April 2024 from: https://www.bibb.de/dokumente/pdf/bmbf_The_new_Vocational_Training_Act.pdf

BIBB (2024) *Vocational Education and Training report, 2024*. Retrieved April 2024 from: https://www-bmbf-de.translate.goog/bmbf/de/bildung/berufliche-bildung/strategie-und-zusammenarbeit/der-berufsbildungsbericht/der-berufsbildungsbericht.html?_x_tr_sl=de&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=sc

Blossfeld P (2018) Social background and between-track mobility in the general education system in West Germany and in East Germany after German Unification. *Zeitschrift Für Soziologie* 47(4): 255–269.

Boreham, N. (2002a) Work process knowledge in technological and organizational development, in: N. Boreham, R. Samurçay & M. Fischer (Eds) *Work process knowledge* (London, Routledge), 1–14.

Brockman, A., Clarke, L., Winch, C. (2008) Knowledge, skills, competence: European divergences in vocational education and training (VET)—the English, German and Dutch cases. *Oxford Review of Education* 34 (5) pp. 547–567.

CEDEFOP, 2020, *National Qualifications Online Tool: Germany, 2020*. Retrieved May 2024 from: https://www.cedefop.europa.eu/en/tools/nqfs-online-tool/countries/germany-2020

Erudera (2023) *What is the German abitur?* Retrieved April 2024 from: https://erudera.com/germany/what-is-the-german-abitur/

Federal Ministry of Labour and Social Affairs and Federal Ministry of Education and Research (2019) *National Skills Strategy: Continuing education and training as a response to digital transformation*. Retrieved April 2024 from: https://www.bmas.de/SharedDocs/Downloads/EN/Topics/Initial-and-Continuing-Training/national-skills-strategy.pdf?__blob=publicationFile&v=1

Federal Statistical Office of Germany (2024) *Migration and Integration*. Retrieved May 2024 from: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Migration-Integration/_inhalt.html#233658

Forster A, Bol T, van de Werfhorst H (2016) Vocational education and employment over the life cycle. *Sociological Science* 3(21) pp. 473–494.

Greinert, W.-D. (2007) The German philosophy of vocational education, in: L. Clarke & C. Winch (Eds) *Vocational education: international approaches, developments and systems* (London, Routledge).

Grotlüschen, A., Riekmann, W. (eds.) (2019), *Funktionaler Analphabetismus in Deutschland.* Ergebnisse der ersten leo.-Level-One Studie, Waxmann: Münster, 2012, and statements made by the University of Hamburg to mark the publication of the second leo. – Level One Study, Grotlüschen, A. et al. (2019) LEO – Leben mit geringer Literalität.

Haasler SR (2014) The impact of learning on women's labour market transitions. *Research in Comparative and International Education* 9(3) pp. 354–369.

Haasler, S. R. (2020). The German system of vocational education and training: challenges of gender, academisation and the integration of low-achieving youth. *Transfer: European Review of Labour and Research.* 26 (1), 57–71.

Halfpap, K. (2000) Curriculumentwicklung im Rahmen der dualen Berufsausbildung in Deutschland, *European Journal of Vocational Training* 21 pp. 37–44.

Krueger, D. and Kumar, K. B. (2004). Skill-specific rather than general education: a reason for US-Europe growth differences? *Journal of Economic Growth*. 9 pp. 167–207.

Müller W, Shavit Y (1998) The Institutional Embeddedness of the Stratification Process: A Comparative Study of Qualifications and Occupations in Thirteen Countries. In: Shavit Y, Müller W (eds) *From School to Work*. New York: Oxford University Press, pp. 1–48.

OECD (2018) *Education at glance. OECD Indicators*. Retrieved April 2024 from: https://www.oecd-ilibrary.org/education/education-at-a-glance-2018_eag-2018-en

OECD (2020) *Education Policy Outlook: Germany.* Retrieved April 2024 from: https://www.oecd.org/education/policy-outlook/country-profile-Germany-2020.pdf

OECD (2023) *A return to strong, resilient and sustainable growth for Germany requires future focused investment and reform*. Retrieved April 2024 from: https://www.oecd.org/newsroom/a-return-to-strong-resilient-and-sustainable-growth-for-germany-requires-future-focused-investment-and-reform.htm Accessed 15.6.23

Rauner, F. (2006) Berufliche Bildung—die europäische Perspektive, in: P. Grollmann, G. Spöttl & F. Rauner (Eds) *Europäisierung Beruflicher Bildung— eine Gestaltungsaufgabe* (Hamburg, Lit Verlag) pp. 127–153.

Rubery J, Grimshaw D (2003) *The Organization of Employment. An International Perspective.* Basingstoke, Hampshire and New York: Palgrave Macmillan.

Studying in Germany (2024) *Germany's Education System*. Retrieved May 2024 from https://www.studying-in-germany.org/german-education-system/

Thelen K (2014) *Varieties of Liberalization and the New Politics of Social Solidarity*. Cambridge: Cambridge University Press.

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