Study on 21st century relevance of learning content

Country report Germany

Multidisciplinary, Project-based Digital Learning Content for VET

VETPROFIT

Content

Author:	Heide Reimer, Anja Wolff-Guillouet, DEULA Nienburg
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Introduction

This document was prepared in the VETProfit Erasmus+ project for providing information about the state-of-art situation related to the project aims as follows:

- *Decrease the skill-gaps between VET and the labour market*
- *Prepare teachers for 21st century education*
- *Starting collaborative development of learning materials for VET – teachers, students' companies*

The aim is to perform a thorough analysis of learning outcomes, curricula, learning materials and applied methods of the initial/basic training of IT and telecommunications sector in Germany.

The document has 4 parts:

(1) *Introduction of our company DEULA-Nienburg*
(2) *A short introduction to the VET system in Germany*
(3) *Results of the interviews in Italy*
(4) *Description of the selected standard curricula, subject and topics*

Short introduction of the partner organisation

DEULA-Nienburg is a modern educational center for all agricultural and certain handcraft and technical professions. Professionals from the agricultural sector can deepen and improve their knowledge. DEULA-Nienburg offers educational programs in the spheres of agriculture and particularly in agricultural engineering.

The DEULA institution exists at Nienburg since 1962 (after moving here from Hannover). It has been run as a non-profit limited company since 1992. The three shareholders are the Lower Saxony Chamber of Agriculture (60%), the district of Nienburg (25%) and the Lower Saxony/Bremen Association of Garden, Landscape and Sports Ground Construction (15%). DEULA-Nienburg has become an international partner for agricultural education projects. It works together with institutions and organizations in other countries on questions of professional training and takes part in projects aimed at the profit optimization in agriculture.

DEULA-Nienburg has a modern training and educational center, on a territory of approximately 9.000m² of training facilities and a total attendance of about 80.000 training days per year.

At present the DEULA-Nienburg staff consists of about 80 employees. The center has 6ha of land where various modern technologies of cultivation and tillage are demonstrated. There are 29 well-equipped classrooms in the DEULA, 3 conference halls, a hotel residence with 230 beds, a canteen, and a small gym. The variety of workshops is very wide: you can choose the training among more than 11 spheres (Horticulture/Floristry, Livestock farming, Plant production, Agricultural machinery, Renewable energy).

VET systems in *Germany*

The German dual VET system is a model for structuring the transition from school to working life and VET graduates profit from a high employment rate. It attracts a high number of learners with a university entrance diploma. Companies provide the work-based training part and so play an important role in the dual system. Several measures and initiatives have been launched to support them in this role, most targeting small and medium-sized enterprises (SMEs); in 2018 around 99% of companies were SMEs offering a training place to around 90% of all apprentices (BiBB 1018a). In Germany, there is still a high number of potential learners available; people with an own migration background have much higher representation in this group. Several programmes are in place to facilitate the transition to VET for all interested learners and ensure successful completion.

Responsibility for the education system is shared between the Federation and the Federal States (Länder). While the Federal Ministry of Education and Research (BMBF) is responsible for VET-related issues, the Federal States are in charge of general education in schools, which leads to differences among the Federal States in such aspects as programme titles, duration and curricula. Compulsory full-time general education begins at the age of six and lasts 9 years (10 years in five Federal States).

After that**, learners have to choose to follow either general or vocational education**. The following education levels are available: (a) primary education (ISCED level 1; grade 1 to grade 4 or 6); (b) lower secondary education (ISCED level 2; until grade 9 or 10); (c) upper secondary education (ISCED level 3; until grade 12 or 13); (d) post-secondary and non-tertiary education (ISCED level 4-5); (e) tertiary education (ISCED level 5-8).

Learning on the job is a traditional component of the German education system and work-based learning (WBL) plays a major role in most of the VET programmes at secondary and tertiary levels. The VET system comprises initial and continuing education and is seen as a successful model, largely based on the dual system (apprenticeship) leading to high-quality vocational qualifications. **Progression through the system is possible through various regulated VET programmes at post-secondary and, increasingly, tertiary levels** (Cedefop and BIBB, 2019).

Various **initial vocational education and training (IVET) programmes** are available at upper secondary level; some are offered in full-time schools, some are acquired for the most part in WBL. **The apprenticeship programme has been offered for decades and is the core of the German VET system.**

For learners who face difficulties accessing VET programmes qualifying them for the labour market, various **transition programmes** leading to qualifications at European qualifications framework (EQF) levels 1-2 (ISCED level 254) are in place: (a) pre-vocational training year (Berufsvorbereitungsjahr): a one-year training course (usually full-time) offered at vocational schools, designed to prepare young people for the demands of vocational training and give them the possibility to acquire the lower secondary school leaving certificate; (b) basic vocational training year (Berufsgrundbildungsjahr): a one-year course which can be completed either full-time at a vocational school or in alternation with an enterprise. Learners receive basic educational knowledge in a specific occupational field. Completion can be credited as the first year of vocational training which focuses on the same field; (c) introductory training (Einstiegsqualifizierung): a 6 to 12 months traineeship in an enterprise combined with training in a vocational school. Learners can get acquainted with the specific occupation and

enterprises can get to know these young people. Completion of this programme can be credited as a qualifying period for a subsequent apprenticeship.

General education programmes with vocational orientation (ISCED level 344, EQF level 4, duration 2-3 years) are offered at full-time vocational schools (berufliches Gymnasium). The duration depends on the specific programme and learners can acquire a higher education entrance qualification. Graduates can then enter certain university programmes linked to their specialisation. General education programmes focus on various fields, such as agricultural economy, technology or economics themes. Entry requirement is the intermediate secondary school certificate. Short traineeships in enterprises are recommended but not mandatory.

School-based VET programmes (ISCED level 354, EQF level 4, duration 1-3 years) are offered at full-time at vocational schools (Berufsfachschule) and prepare learners to work in many occupations. The duration differs depending on the occupational field and the level of qualification. Work-based learning is offered directly in schools or/and in form of traineeships. If these programmes do not offer a full vocational qualification, attendance can be credited as the first year of training in the dual system. Full qualifications can be gained in areas such as the household and caring, commercial or health sector (for example physiotherapist). Entry requirement is the lower or intermediate secondary school certificate. Under certain conditions, and in addition to the vocational qualification, learners can also gain the higher education entrance qualification (double qualification).

Apprenticeship programmes (ISCED level 354, EQF level 3-4, duration 2-2,5) **are the main pillar of the German VET system**. They take place in at least two learning venues: companies and vocational schools. **Entry requirement is the completion of compulsory education**, although without a school leaving certificate young people have low prospects of finding a training company (in 2018, only 3.5% of the new apprentices had no school leaving certificate). High-school graduates can reduce training duration to about 12 months, which makes it an attractive alternative to higher education. The share of these among apprentices increased from 2009 to 2018 by 9.6 percentage points to 29.6% (BIBB, 2020).

Enterprises and public institutions offer apprenticeship places and sign a contract with apprentices. They bear the costs of the in-company training and pay the apprentice remuneration; this increases with each year of training and differs in amount across occupations. SMEs have an important role as providers for vocational training due to their high number. However, they face various difficulties in this role, as they often lack up-to-date infrastructure and competent and qualified trainers. Several measures support SMEs to overcome these obstacles.

In addition, **apprentices attend vocational school for one or two days per week or in blocks**, such as one week per month; at school they gain mainly theoretical and practical knowledge related to their chosen occupation. To guarantee a uniform standard, learning is completed by final exams that are regulated by law and executed by the chambers. Learners have to demonstrate an array of competences and perform practical tasks (Vocational Training Act, Berufsbildungsgesetz, BBiG)). At the end of apprenticeship, graduates are awarded a vocational qualification, giving them access as a skilled worker to the labour market; these qualifications are highly valued by employers.

Various specialised programmes are available at post-secondary level (ISCED level 444, 453, 454, EQF level 4-5, duration 1-3 years); these are regulated by Federal State legislation. Admission to such programmes requires the leaving certificate from intermediate secondary school or a qualification recognised as equivalent; sometimes also a vocational qualification or a certain number of years of practical experience are required. **Many of these programmes provide the possibility to acquire both**

a vocational and general education qualification at the upper secondary level, granting access to higher education (some programmes only a subjects-specific higher education entrance qualification, fachgebundene Hochschulreife). Certain programmes also include a traineeship in a company, for example the programme offered at the Fachoberschule (specialised upper secondary school). Other schools offering these specialised programmes are Berufsoberschule (senior vocational school), Berufsfachschule (full-time vocational school), and Fachgymnasium (specialised grammar school). Programmes include education in technical skills, business, agronomy, nutrition and home economics, social affairs and design. School-based vocational programmes in the health sector (ISCED 453, duration of 2-3 years) are among those with the highest enrolment among the specialised programmes. Healthcare schools (Schulen des Gesundheitswesens) provide training for non-academic occupations in the healthcare sector, for example nursing and paediatric nursing, midwifery or social helpers. Many of these schools are attached to hospitals providing both theoretical and practical training. These programmes offer no access to higher education. Due to demographic changes, a high demand for graduates from these programmes is foreseen. Various measures have already been introduced to increase the attractiveness of these programmes.

Advanced vocational qualifications at tertiary level are nationally recognised vocational qualifications at EQF levels 5 to 7; they can be acquired through exams and are equivalent to academic qualifications: (a) professional specialist (Geprüfte Berufsspezialist) (EQF level 5, ISCED level 554); (b) bachelor professional: master craftsperson, specialist (EQF level 6, ISCED level 554, 665); (c) master professional: management and expert (EQF level 7).

If no federal training regulation has been issued for a training qualification in a specific occupational field, the competent bodies (chambers of industry and commerce, chambers of skilled crafts) may issue training examination regulations (Vocational Training Act and the Trade and Crafts Code (Handwerksordnung)). **The examinations are valid nationwide**; however, the responsibility (implementation, testing, monitoring) lies solely in the issuing chamber's district (BMBF, 2012). Access to master professional qualifications (EQF level 7) requires the completion of a bachelor professional qualification (EQF level 6), though access to the bachelor qualification does not require completion of a professional specialist qualification (EQF level 5). A candidate can start preparing for the examination after completion of an IVET qualification providing access to a recognised occupation and work in parallel in the relevant profession; this allows some professional experience to be gained by the time s/he is ready to take the exam. The advanced vocational qualification of a master craftsperson (Meister) entitles holders to run their own business, to employ and train apprentices or to take over a higher position in an enterprise. It also provides access to courses at craft academies, universities of applied sciences (UASs, Fachhochschulen) and universities.

Advanced vocational programmes (ISCED level 655; EQF level 6, duration 1,5-4 years) are offered in trade and technical schools (Fachschulen), which are regulated according to the Federal State Law. Entrance requirements include: (a) either qualification in a recognised training occupation relevant to the chosen subject and one year of relevant work experience; (b) or qualification from a full-time vocational school and five years of relevant work experience. Students fulfil management functions at the workplace. Advanced vocational programmes are offered as part-time or full-time programmes in the following occupational fields: (a) agriculture; (b) design; (c) technology; (d) business; (e) social care. They lead to a vocational qualification (for example educator, technician) and some programmes also to a formal entrance qualification for universities of applied sciences, where prior education may be recognised and affect programme duration (KMK, 2019).

Dual study programmes leading to bachelor and master qualification (ISCED level 645, EQF level 6, duration 3-4 years, and ISCED level 747, EQF level 7, duration 1-2 years) combine work-based training and academic education at the education institution. Enterprises bear the costs of in-company training and pay the trainee remuneration for training, which mostly includes also the theoretical training phase in the higher vocational training institution. The following **three pathways** are in place:

(a) **dual study programmes with an integrated vocational training component** (Ausbildungs-integrierender dualer Studiengang) combine vocational training in a recognised occupation with academic studies. **This is the only dual study pathway where graduates obtain an academic degree and a formal IVET qualification** and is the most popular. However, in addition to the training in a company and studies at university, learners also need to attend a vocational school. Access requirements are a higher education entrance qualification (Allgemeine Hochschulreife or Fachhochschulreife) and an employment contract;

(b) **dual study programmes with a work experience component** (Praxisintegrierender, kooperativer dualer Studiengang) combine academic studies with systematic, organised and extended practical placements in the form of a traineeship or employment. Students obtain a university degree but no recognised vocational qualification. Access requirement is a higher education entrance qualification (Allgemeine Hochschulreife or Fachhochschulreife);
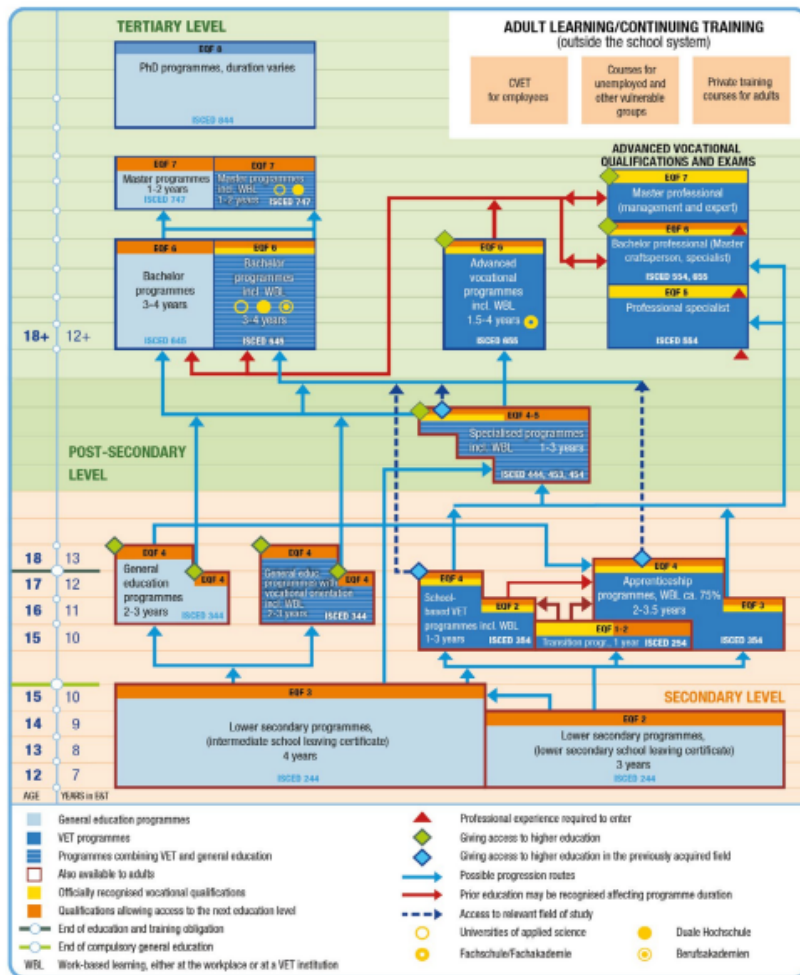
(c) **dual work-study programme with an integrated career component** (Berufsintegrierender dualer Studiengang). These continuing vocational education and training (CVET) programmes are designed to offer further professional development in the field. No higher education entrance qualification is required. The study programme takes place alongside carrying out the profession. The employer is informed about the studies of the employee and either agrees to reduce overall working time or provide opportunity for special leave. If the programme sits alongside carrying out a full-time profession, classes often take place in the evening or as distance learning. These programmes mainly focus on economic science, engineering technology and computer science. Lately the offer of dual study programmes in the field of welfare, education, health and care has been increasing. Training providers offering dual bachelor and master programmes are private and public institutions. The main providers are: (a) universities of applied sciences; (b) dual universities (Duale Hochschulen); (c) universities; (d) universities of cooperative education (Berufsakademien) (BIBB, 2019).

Continuing training is becoming increasingly important considering the ageing of the population and changing skill needs through developments such as digitalisation and automation. Alongside regulated continuing training there is a wide range of less regulated continuing training offered outside the school system. Non-formal continuing training is designed, organised and offered by different training providers. Many collective agreements on the provision of continuing education and training have been set up in recent years. About 25% of all working contracts include continuing education and training regulations in different models and forms (BIBB, 2012). Two-thirds of in-company continuing training is either offered by employers directly (46%) or by other companies (21%). The participation rate in continuing training is higher for employees in larger companies, mostly followed due to professional needs. In such cases, continuing training usually takes place during working time and is paid by the employer (BMBF, 2019a). Participation rates rise with the level of school-leaving certificate and with the level of vocational qualification. **Considering the shortage of skilled workers and the**

outlook that unskilled jobs are becoming increasingly automated, it is important to increase the participation rate of low-skilled adults, migrants and foreigners.

Overall, the **governance of the VET system is defined by a strong partnership between the Federation, Federal States, employers and trade unions**; any VET regulation is issued in consensus with the social partners. The Vocational Training Act of 2005 defines which institutions are in charge of organising, developing and monitoring VET in Germany.

VET is based on nationally recognised occupations and vocational training regulations, which guarantee a national standard.

The federal government is responsible for the non-school part of VET and ensures that vocational training is always up to date. The Federal Ministry of Education and Research is responsible for general VET policy issues; it coordinates and guides VET policy developments for all training occupations. It implements strategies and

Figure 5. **VET in the German education and training system in 2020**

NB: ISCED-P 2011. This is a simplified chart, based on the unified approach used for the spotlights on VET in all EU-27 countries plus Iceland and Norway.
Source: Cedefop ReferNet Germany.

programmes to promote and improve VET. BMBF is responsible for monitoring developments in VET and presenting their findings in annual reports. BIBB's four-party board, consisting of representatives of employers, trade unions, Federal States and the Federal Government, is an executive body and acts as the statutory advisory organ of the Federal Government. Its mandated tasks include developing VET, identifying future challenges in VET, conducting research and providing advice and services to the Federal Government.

At regional level, the Federal State ministries of education and cultural affairs are in charge of general and vocational education at schools, the higher education sector, adult education, as well as continuing professional development of VET school teachers. This results in differences among the Federal States in aspects such as programme names, duration and curricula of certain programmes. To ensure a certain degree of uniformity, the State ministers participate in the standing committee (Standing Conference of the Ministers of Education and Cultural Affairs, Kultusministerkonferenz,

KMK), where recommendations are brought forward; these need to pass individual State parliaments before becoming legally binding. Vocational training committees, in which members equally represent employers, employees and the highest State authorities, advise the State government on vocational training issues.

Employer organisations and trade unions have a major influence on the content and form of IVET and CVET and guarantee that the needs of employers and employees are taken into account. Their representatives are members of the BIBB's main board, of the vocational training committees at Federal States level and in the competent bodies. Their contributions at different levels are important, as they ensure that vocational training responds to labour market needs.

Interviews with teachers, students, and companies in Germany

The survey was focused on identifying the needs of teachers and students regarding textbooks and digital learning materials and asking companies (from the selected two sectors) as well about their requirements against young professionals applying for their vacancies.

Our main preliminary assumptions to clarify by the interviews were as follows:

- *if there are textbooks existing, they were not prepared for the new professions, they are not up to date, not fit for the learning-outcome oriented approach; methodologically they are not suitable for active learning and the development of soft skills;*
- *content is not always motivating; few examples are practical or real-life;*
- *the learning content has gaps - it does not always correspond to the needs of the labour market (new technologies are not reflected in the curriculum).*

This document includes a short summary about the VET system of our country, it presents the circumstances of the interviews (place, date, duration), the profile of the respondents and the conclusions of the interviews.

Methodology

The consortium developed agreed in a few basic rules to follow the interviews as follows:

- *Contact the persons, send them invitation explain how the process will work and ask for dates/times that are appropriate for the interviews.*
- *Deliver the interviews according to the agenda. Make sure someone – other than the interviewer – takes detailed **notes**.*
- *Welcome and **say thanks** for joining. Do not record the meeting.*
- *Establish a **friendly atmosphere**, assure the participants that you are not there to assess them in any way. It should rather be an informal, "coffee break" type of discussion. **Do not evaluate** what they say.*
- *State at the beginning that **time is limited**, perhaps not all of them will have the chance to speak. Ask them to be "to the point".*

We developed common interview plan with suggested topics, but we agreed that the leader of the interview can make some modifications when it is needed to adapt to the special character of the respondents.

Suggested topics

Interview with teachers

- *Knowledge content taught (based on learning outcome criteria), skills expected (development of professional and "soft" competences based on learning outcome criteria)*
- *Applied books, professional materials, free-to-use learning materials, curricular elements*
- *Tools used (digital and traditional) teaching*
- *Centrally developed model projects, self-designed projects*

- *Applied teaching and learning methods, own practices (if any)*
- *What are the gaps in terms of textbooks, digital learning materials (in general and for a given subject)?*
- *What (tools, methods) would best support teaching and learning in the school or for a given subject?*
- *Methods (other than grading) and tools used to measure and assess students' knowledge and competences in the institution and/or in the subject.*

Interview with students

- *On what basis (literature, books, teaching materials) do students learn theoretical knowledge?*
- *What tasks, projects, practical demonstrations, etc. help to develop practical competences?*
- *What tools (traditional, digital) support learning?*
- *How is the learning material processed - by what methods?*
- *What is most lacking in order to learn effectively?*
- *What is most lacking for you to obtain adequate practice in this subject?*
- *Do your teachers use other types of assessment methods than grading?*
- *Are you satisfied with the teaching and assessment methods used by your teachers?*
- *What suggestions would you make regarding teaching? (method, teaching material, teaching tools, cooperation, etc...)?*

Interview with companies

- *What do you expect from a new employee who has studied and passed the exam of the qualification of ………,?*
- *What are the competences the company is missing when employing young people who have just obtained a professional certificate?*
- *Do you see an opportunity to make a real change in the quality of vocational education and training and to make young people take responsibility for their own learning and be motivated to develop?*
- *In what ways can and will you help to ensure that young people are better prepared for their profession?*
- *Would you cooperate with schools in the development of digital curricula?*
- *Would you be open to define a project task for students, what prepares them for acting more effectively in a workplace, and what could help you as well to get a picture about the knowledge, skills and competences of a newly certified young person who just passed the exam?*

Summary of the interviews in Germany

Interview with teachers

Basic figures

The institution conducting the survey: DEULA-NIENBURG
Place: BBS Stadthagen, DEULA-Nienburg, JVL BS Hannover
Date (period): 09/06/2022-15/06/2022
The survey was conducted by: Anja Wolff-Guillouet
Number and profile of teachers (subject, qualifications they teach for)
Maria Geers: teacher for German as foreign language (EQF-level 1), Ramona Heine: dito (EQF-level 1 to 4), Sandra Kühnast: teacher for English and Business administration/economy (EQF-level 1 to 4), Christa Sahlfeld: teacher for care-giving and home-economics (EQF-level 1 and 2), Hendrik Kruse: teacher for all subjects concerning the technical side of agriculture (EQR-level 4 and 5), Cordula Poppe JVL (EQF-Level 4 and 5)

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1. Knowledge, skills, competences based on learning outcome

Teachers convey hard skills as defined in the curriculum. This includes the **use of professional materials** such as tractors, dictionnaries, digital devices,.

They agree on the importance of soft skills. They want their participants to develop their **communication skills (oral/written)** with different target groups (boss, collegues, clients, suppliers,). Moreover, they want them to develop critical awareness and logical thinking to assess critically a professional action: What do I expect? Is the outcome as expected? If not, what should I change? Last not least every day skills are important in each profession, for example how to organize a daily routine, a budget, etc.

2. Applied books, learning materials

Only two of the interviewed teachers use above all paper-based material such as textbooks and copies (which may come from the internet). Two teachers mix their tools between paper-based and digital tools, but with a surplus of digital materials (85%). One teacher uses about 100% digital materials, only the written exams are on paper.

3. Tools used (digital and traditional) teaching

Digital materials used of the teachers are professional websites, videos, copy templates, self-created material, eLearning-tools, LMS

4. Projects

Concerning projects, the interest of teachers varies greatly. One teacher does not like projects at all, another one does each year more projects in adapting them always to her class and the local conditions. Other teachers would be interested in carrying out projects, but have difficulties in doing so because of a lack of time, colleagues not being interested in working together on a project, topics not fitting, …

5. Teaching and learning methods

One teacher does about 100 % face-to-face teaching and individual work, with sometimes partner work (but very few). One teacher understands himself rather as a facilitator, meaning that his participants learn self-discovering with the help of eLearning tools, the teacher helps only in the case that there are problems in understanding/manipulation of work-materials for example. The other teachers estimate their face-to-face teaching and individual work as 30% against 70% of partner or teamwork.

6. Gaps in terms of textbooks, digital learning materials

There are gaps concerning the digital equipment of students in schools, which need to be improved. Moreover, there are too often problems with internet/software. And teachers need more trainings on internet tools/hardware (e.g., smartboards).

7. Suggested tools, methods support teaching and learning

Suggestions of teachers to improve teaching and thus learning: There should be more media bundles, also more eLearning tools should be developed. A digital platform with project ideas for teachers interested would be an interesting thing, but the projects would have to be easily adapted to regional and local conditions. As for the language teachers: They see a need for an internet site explaining the same grammatical structures but embedded in vocabulary matching different professions.

8. Methods of assessments

Teachers assess the learning improvement/the achievement of learning goals by different methods: They assess the verbal participation: All kind of participation during lessons enter in this assessment: What quality has homework/individual tasks/presentations at school? How regularly/often and in which quality does a participant contributes to questions/discussion topics?

There are written exams and in the case of the teacher of DEULA-Nienburg also online single choice exams with online evaluation.

Oral and written assessments enfold in a grade 1 to 6 (1 being the best).

Moreover, in German schools there are some soft skills evaluated. These are in vocational schools in Lower Saxony social behavior (behavior towards peers, teachers, readiness to help others, engagement in social activities in school,) and work behavior (are the homework done regularly, does the participant need multiple invitations to start his/her work,

9. Conclusions

Many teachers use already eLearning tools and internet-based learning material because they see the advantages: For example, everybody can learn in his/her own speed, and even repeat contents they did not understand as often as necessary. Most teachers also see the chances of digitalization for their work. But there are some big problems in Germany: The digital development has been overslept, many schools don`t have an adequate digital equipment yet, neither do so all students/participants.

Interviews with students

Basic figures

The institution conducting the survey: DEULA-Nienburg
Place: BBS Nienburg, BBS Sulingen, BBS Hildesheim (vocational school for people with hearing problems up to deafness)
Date (period): 25/05/2022 and 01/06/2022
The survey was conducted by: Anja Wolff-Guillouet
Number and profiles of students (grade, qualification they learn for, EQF level)
No 1, 3. year of apprenticeship in agriculture, EQF level 4
No 2, 3. year of apprenticeship in agriculture, EQF level 4
No 3, 3. year of apprenticeship in agriculture, EQF level 4
No 4, 3. year of apprenticeship in ornamental horticulture, EQF level 5
No 5, 3. year of apprenticeship in Horticulture and Landscaping, EQF level 4

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1. Resources students learn theoretical knowledge

To learn **theoretical knowledge**, in class are used above all scripts and working sheets, both annually updated and for the latter often in relation to practical tasks. They also use some books, but they are either out of date and therefore usable just for few topics, or for subjects that are basics such as plant physiology or process and civil engineering.

Working sheets are used to work on in groups or with a partner, comparing the results in a final discussion in class.

2. Tasks, projects for developing practical competences

Concerning projects and practical lessons in school, there are some differences between the different vocational studies:

In agriculture/ horticulture: there is a little practical training in the first year, none in 2nd and 3rd year. This must be seen in the context, that these two professions are learned according to the German dual system on farms/in companies. This means, apprentices stay 2 days per week in school during the 1st year of their apprenticeship, 3 days on the farm/in the company. During the 2nd and 3rd year they stay even 4 days on the farm/in the company and only 1 day in school. Thus, not practical lessons are conveyed at school but almost only theoretical knowledge.

In ornamental horticulture, the situation is a little different. This profession is learned in a vocational school with each year a 3-month internship in a company. Thus, theoretical, and practical knowledge is conveyed in school and therefore this student told us, that there are many practical lessons and projects carried out in the school-owned garden.

3. Tools the teachers use for support learning

Most tools are already mentioned above (see point 1). During the pandemic situation also digital learning tools were used and in the vocational school at Hildesheim, due to the hearing problems of the students, they use iPads and sign language.

If possible, visual aids are used, too. For example, if you work on the technology of a tractor motor, it is useful to have models available to link theory and practical knowledge.

4. How is the learning material processed - by what methods?

The **teaching methods** teachers use are a mixture of self-discovering learning, guided learning and blended learning.

Overall, **the ratio** of face-to-face-teaching to group- and partner-work is estimated by the apprentices as being **1:1**.

5. What do students need to learn effectively?

Asking the apprentices, what kind of learning form (paper-based, digital) they prefer, three of them answered that they prefer paper-based learning, because the scripts they receive are always up-to-date and there is a lot of important information which they need for their final examination, on just some pages – so very compressed.

One apprentice said that for school, paper-based learning is OK (for the reasons given above) and that he searches himself for more information on the internet if he deems it necessary. So, he does a sort of mixed learning by himself.

One student (the one with hearing problems) prefers digital learning forms. He himself can hear with a hearing help, we did not have problems in communicating, but in his class, there are also deaf people, so digital tools are very important in their case.

6. What do students need to obtain adequate practice?

The apprentices did not complain at all about the pratical contense of their studies. (Under point 2, the question of practical competences and how they are conveyed has been discussed already.)

7. Assessment methods the teachers use

The assessment-methods used by the teachers are rather classical: In the 1st year, they give grades on oral participation and written tests (grades 1 to 6, 1 being the best) – only at the BBS Hildesheim, teachers write a text, which analyses where an apprentice has his strengths and lacks. In the 2nd and 3rd year, there are written exams at school and a practical examination before an examination board. Moreover, several times per year there is the possibility of a personal discussion with the teacher/trainer to get an overview of the performance level.

8. Satisfaction of students with the teaching and assessment methods

There was no negative feedback concerning teaching or assessment methods.

Nevertheless, the apprentices would like more standardization of curricula in the 16 German states (this was a crucial point for No 2, who changed several times his vocational school, with a new curriculum if he changed the state: In our federal republic there are sixteen ministries of education, each one responsible for the curricula in its own German state. This leads to the situation, that in one state a given topic deals with for example at the end of year 2 of apprenticeship, but in another state only in the beginning of year 3. So, an apprentice changing from one state to another may not go through this given topic).

They would like more interdisciplinary teaching at school because it is more interesting to learn like this (only in No 1's first year there had been a project day with interdisciplinary teaching, and she did really like it).

Conclusion

To conclude, the dual system of apprenticeship strengthens the practical competences, so that the apprentices feel rather well prepared for professional practice. As they work mostly in companies/on farms, to do projects in school does not seem to be important. Problems arise above all, if an apprentice needs to change school.

Interviews with companies

The institution conducting the survey: DEULA-Nienburg
Place: Husum, Stolzenau
Date (period): 23/05/2022 and 10/06/2022
The survey was conducted by: Anja Wolff-Guillouet
Number and profile of companies (main divisions, geographical place, type (number of employees, SME, micro, etc.)

We interviewed two farmers: **Rust Holsteins** and **Biolandhof Meyer-Borcherding**. Both have similarities, e.g., they are family-owned cattle farms, Rust Holsteins is a dairy farm, whereas Meyer-Borcherding is elevating cattle for meat production. Both have a farm sale – Rust sells milk and home-made cheese, Meyer-Borcherding beef, poultry, eggs, potatoes.

Rust Holsteins is a father/son-farm, and has moreover one full-time employee from Rumania, 2 part-time milkmaids and (hopefully) one apprentice – the young man left the day before the interview, three months before his final examination (after 3 years of apprenticeship). Mr. Rust wanted to try to convince him to come back, but the day of the interview it was not clear if he succeeded.

Moreover, there is a trainee on the farm now.

Meyer-Borcherding changed to organic farming in 2018. He is working together with his father, currently he has 2 trainees in addition.

In our region (north of Germany) young people starting an apprenticeship in or even studying agriculture, in general do this to have afterwards their own farm, not to be employed. So, the question of which expectations farmers have on employees just graduated did not really make sense and we changed to expectations on apprentices just before their final examination.

Additional to the profile of the farmers Holger Meyer-Borcherding and Torsten Rust: Both are trainers und according to the AEVO (Instructor Aptitude Ordinance) they need a certificate that gives them permission to train apprentices.

_____

1. Expectation against the employee just graduated

The points important to the farmers were:

Reliability, interest in personal development, critical faculties, perseverance, practical skills.

It is interesting that practical skills were mentioned as the last point and only when we asked explicitly for them. This may be due to the dual system of apprenticeship practiced in Germany, where there is a big concentration on practical learning.

Perseverance and being able to accept even negative critics are important skills if you ask Mr. Rust, because of his newest experience with his apprentice. The reason the young man left Mr. Rust explained like this: The apprentice had made a mistake, Mr. Rust told him about it, the young man had the impression that Mr. Rust thought him not to be talented…. And even if Mr. Rust told him that he thought him to be one of the best apprentices he had ever had, the young man left and did not to continue his apprenticeship until the examination 3 months later.

(I did not speak to the young man, but he had some doubts already about his choice before this and profited from the situation to leave…)

2. Competences the company is missing

Regarding the question of skills which need to be developed**,** there are above all soft skills the farmers mentioned:

Perserverance, management skills related to leadership (as the young people will have to manage their own farm later with employees), **communicative skills.**

Communication skills are especially important in the opinion of Mr. Meyer-Borcherding because farmers must communicate with clients, suppliers, employees, …. But he emphasized the importance of generation-related communication. After this interview we spoke with other farmers about this question and it seems, that in Germany there are often problems when one generation is passing the farm to the next. The new farm-manager wants to modernize/organize things in another way… These situations seem to lead to tension.

3. Suggestions for improvement

Things that should be better prepared in school are:

Communication skills, perseverance, management skills, earlier specialization (e.g., in each animal species), and young people should learn less contents they will not need in their professional life (e.g., to calculate food rations by hand if afterwards they do this only with the help of computer programs).

It is interesting to note that we asked teachers and apprentices in the interviews conducted with them afterwards if they think these calculations to be a loss of time. They were all the opinion that you should know how these calculations are made by hand, e.g., to get an idea of mistakes which can appear in a result if you enter not the right datasets.

Concerning early specialization, they agreed in the fact that it is better to get first an overview of possible professional activities. In beginning their studies, they very often do not know in which sector (e.g., with which livestock) they will work later on.

4. Activities to find students with the right skills

Farmers choose their apprentices/workers only after trial work. They will have a look on the grades from school, too, but to get an impression if they can work together for almost one year (in the case of apprentices), trial work is the tool. They can see the motivation, the practical skills, the sympathy (important in terms of good teamwork), ….

5. Cooperation with schools in curriculum development

As for the question of taking part in the development of a curriculum**,** the answer is no, because it is the ministries of education (we have sixteen of them in Germany due to our federal system) which are

responsible of school curricula. The farmers do not have links to these ministries and moreover they do not see much to be changed at school.

6. Openness for defining project task for students

The only task where Mr. Rust would involve himself is the development of a project, concerning the use and interpretation of the data of a cow-manager. Mr. Meyer-Borcherding is – due to a lack of time – not able to take part in a project-definition.

Conclusions

In Germany, practical skills needed in agriculture are not lacking (dual vocational training)

The farmers interviewed work on family-owned farms, they often are members of professional and other organizations, thus they do not have time to invest in other items such as curriculum development. To participate in the development of a project may be easier, as they are related to everyday work.

Country level summary

Concerning the practical skills conveyed during the three years of apprenticeship in agriculture/(ornamental) horticulture, due to the dual system of vocational education, these seem not to lack. Companies and students seem satisfied with the practical competences learned…

There seems to be a need of soft skills which should taught and trained, for example regarding communication skills.

Regarding digitalization in vocational education and training, Germany has certainly any progress to make. This is due on one side to a digital infrastructure not sufficiently developed (but there should be nation-wide implementation now), and therefore on the other hand lacking equipment and trainings on the necessary materials in the schools on the other hand.

Regarding the openness of farmers to participate in the development of a curriculum and/or in projects, it is not very developed. Only in one project one farmer could imagine participating under certain circumstances.

Conclusions on soft skills

Explanation: after recognising the strong needs for soft skills from the interviews with companies, we put the extra questions as follows:

   (1) *Are the teachers aware of such demands of the labor market?*

If you look at our dual training system, trainers and vocational schoolteachers are often inadequate informed about the other place of learning. Although most of them want to expand cooperation with the other places of learning and a variety of forms of intensification of cooperation consider self-organization to be meaningful, at the same time there are the classic prejudices against the other place of learning (cooperation partner has too little time; teachers are difficult by phone to reach; teachers know too little about the operational process; instructors are not interested in school concerns). However, general guidelines for the design of the cooperation are set. In addition, there are interest groups that promote this cooperation.

Lernortkooperation_WEB.pdf (foraus.de)

(2) How far are they trained in the teacher-education for developing soft skills, are such methods included into their university program?

In the KMK framework agreement on training for a teaching profession (professional subject), the training of teachers in pedagogical, psychological, and scientific competences is clearly anchored. The entire teacher training program usually comprises the following parts:

Specialist sciences within the first discipline as well as specialist sciences of the second subject. Educational and Social Sciences: These areas vary from state to state. They usually include:

- *General educational science,*
- *Vocational education,*
- *Psychology,*
- *Sociology,*
- *General didactics and subject didactics*

(3) If they are aware of these demands, what kind of methods they use now-a-days to develop soft skills of their students!

Soft skills or key qualifications are skills of a person that, in addition to technical knowledge, make a decisive contribution to productive professional activity. Just like technical skills, however, these "soft" skills must only be developed gradually.

The following characteristics belong to the soft skills or key qualifications

- Independence in learning and work processes
- Ability to work in a team
- Ability to communicate with people from other professions
- Ability to proceed systematically (e.g., in planning, troubleshooting or problem solving)
- Willingness for constant further education
- Review and evaluation of own learning / work results
- Training in verbal complaint techniques and direct negotiation
- Support self-confident presence
- Concentration on the clear and conclusive presentation of the facts
- Promotion of written expressiveness (letter / fax)

Methods of resolution are in general

- Feedback discussion
- Target agreement
- Role-plays

Feedback discussion

Feedback talks have a controlling function. Daily coordination meetings inform your trainee at the end of the working day to what extent the tasks have been completed well. The answers give you feedback as to whether your trainee has gained experience and knowledge through processing the work assignment. Especially the short and targeted coordination discussions during the handover and the debriefing of the operational assignment serve the close management and targeted development of the young person.

Quarterly perspective talks have a different meaning. Here the trainee learns what progress you think has been made in coping with operational tasks. In quarterly discussions you show development perspectives, underline the potential of your trainee, but also where there is still room for improvement. You conclude a quarterly meeting with a target agreement to underline your wishes and expectations and to regulate them in a binding manner. If you start the quarterly discussion with unanswered questions, you will find out how your trainee thinks about yourself and the training company and to what extent the training could be better organized.

Feedback talks allow a comparison between self-image and external image. Your trainee sees himself as interested, industrious and conscientious, while you only notice disinterest or deficient performance. On the other hand, there are also apprentices who rate their satisfactory performance very critically. Here your feedback helps to develop self-confidence and to be more courageous. Self-image and external image can therefore deviate from one another in different directions. Usually, it is body language first that shows you how your trainee thinks about himself and the performance.

Feedback meetings can be inconvenient. It is often difficult to express perceptions and known truths. In addition, a poorly prepared feedback discussion can get out of hand. That is why careful observation or measurement as well as the reliable evaluation of your trainee's performance, is the indispensable basis of a valuable feedback discussion.

o   *How do I properly conduct a feedback session?*

So that your trainee is ready to respond to performance feedback and uses the feedback specifically to correct performance or behavior, here are recommendations:

o   *How do I formulate my feedback as an offer?*

I do not force feedback on my trainee. I make sure that my trainee can listen carefully to me and consider my feedback: "Can we talk for a moment in private? I have to discuss something with you. "

o   *How do I give my feedback immediately?*

If my trainee is receptive, I give my feedback promptly after the performance shown or the behavior to which I refer. If too much time passes between performance and feedback, the memory fades. The advantage of feedback goes then to zero.

o   *How do I relate to measurable results or specific behavior that I have observed myself?*

"In the last week you showed up for work three times 15 minutes late." In this way I avoid error-prone generalizations ("You always come out of break late!") And interpretations such as the attribution of characteristics ("You are something of lazy! ").

o   *How do I describe the consequences of the performance or behavior?*

"The customer was pissed off that he couldn't pick up the rolls he had ordered today." This way I avoid personal accusations. Over time, my trainee learns to anticipate the consequences of behavior.

o   *How do I speak in the first person?*

"I cannot understand why you did not measure the rollers after turning them. A programming error can happen but must be discovered by you after unclamping the first roller." This is how I clarify the relationship with my trainee. I am not hiding behind a We-statement ("We have stipulated that finished work pieces are to be measured").

o   *How do I address my trainee directly?*

"Frank, the order for our customer Schmidt went completely wrong. I must speak to you in private for a moment." If I give the feedback in the group, it is unnecessarily derogatory. If I give the feedback in the third person ("Our Frank has probably not yet understood how to use the caliper!"), this is exclusive, or my trainee does not feel addressed at all.

o   *How do I communicate my wish for the future?*

"Frank, I expect you to check every workpiece for dimensional accuracy without exception. You always have that time." An expressed wish increases the clarity and commitment of the conversation. It is a good basis for a concrete agreement.

o   *How do I ask my trainee in the quarterly meeting to give me feedback on the training situation?*

"Frank, how did you experience your apprenticeship in the last few weeks? What is going well and what would you personally want to change?" The answers not only show how self-critical the young person is about himself and the training, but also what I could organize differently within the company. I know if my trainee is over- or under-challenged, whether the expectations are or are not clear to him, and if I and the colleagues lead/have organized too tight or too loose.

o   *How do I cultivate my feedback discussions?*

When I discuss and agree on the rules of the game for valuable feedback discussions with my trainees, the discussions develop into a partnership-based dialogue. Suitable rules of the game are: "Feedback is a development opportunity for both sides" (basic attitude). "We listen carefully to each other. We ask if something is unclear. We do not need to justify ourselves. We process your feedback at rest and then decide what we want to implement. "Development "is voluntary advance.

The implementation of these feedback recommendations gradually increases the likelihood that feedback discussions will become more cooperative. The focus is no longer on the one-sided formation and change of your trainee, but on a two-sided development process. This means that we can also use feedback discussions to learn more about the young person and ourselves.

Conclusion: Giving and receiving feedback means for both sides to embark on a common change process.

What are target agreements?

Clear and specific performance goals are a basic requirement for successful work in the training company. They show which services are important and urgent in day-to-day operations. Concrete goals are an indispensable basis for performance assessment and feedback discussions.

Target agreements - also with your trainees - should be SMART: Only when a goal is specific (formulated in concrete terms), measurable, attractive for the person conducting the work, realizable with available resources and scheduled for a review date, the performance target motivates your trainee to do the best give.

Performance goals give the job meaning and direction. If performance goals are discussed and agreed, three aspects must be brought into agreement: Ability, willingness, and permission. The coordination of ability and willingness touches on the question of how demanding the performance goals are. Permanently overburdening your trainee should be avoided as well as fundamentally

under burdening. A mix of routine tasks and a few affordable challenges is helpful. Unpleasant tasks should be divided evenly within the team.

The coordination of willing and allowed sheds light on the scope for action. For most trainees, it is motivating when they can plan their operational work independently, carry it out independently and check their quality themselves. The faster and more reliably the increase in skills in your trainee, the sooner you can rely on the work planning and self-monitoring and delegate further tasks to your trainee. On the other hand, permanently narrow room for maneuver makes trainees passive. As a result, there is only a weak awareness of quality, deadlines, and costs.

How can I implement a target agreement in training?

So that target agreements really give orientation and motivate, they should be SMART:

Specific: I formulate the target agreement as specific as possible. In doing so, I use countable results (e.g., tailor-made production of the requested components) and observable behavioral characteristics (e.g., careful coordination of the procedure before starting work). This allows my trainee to understand the performance standards and evaluate the quality of work himself. I put the target agreements down in writing so that I do not have to rely on my memory for the wording of the agreement.

Measurable: I give criteria to my trainee, so that s/he can clearly see whether the agreed target is reached. If I formulate qualitative goals (for example a friendly, binding acceptance of a customer request), this is a demanding task. Instead, I could record how many customer contacts were so precisely and extensively documented (given as a percentage) that a colleague can contact the customer well-informed in the next step.

Attractive: I only agree on goals that are important. If my trainee can understand the significant consequences of reaching the target for the customer, I set a clear and permanent incentive with the target agreement. The incentive is stronger if a state is defined that is to be achieved (instead of a state that is to be avoided).

Real: I define only targets that can be reached by my apprentice. If my trainee is heavily dependent on colleagues or framework conditions (e.g., available machines), I should not be surprised if I hear excuses if my trainee has not achieved the agreed goal.

Time: I give the exact time at which the achievement of the goal will be checked and discussed. I keep an eye on the vocational school and vacation times of my trainee. I agree on periods that are neither too short nor too long. Short periods of time build up more pressure, with extended periods of time I risk losing sight of the agreed goal.

When the opportunity arises, I inquire about the progress of the work and ensure that there is a timely proximity between the review and discussion of the achievement of goals. This shows that I am interested in achieving the goal and in the success of my trainee. On the other hand, tasks and goals produced "for the bin" are permanently demotivating.

Roleplay

Role play is an educational method in which participants assume a certain role and act out and improvise that role. The guidelines of this game are usually established with realistic criteria, what

brings the participants as close as possible to reality. Research on the benefits and consequences of implementing this practice dates to the 1970s; moreover, in recent years, with the rise of active methodologies and the active role of students in their learning, role-play has been promoted as a highly effective tool to implement in any discipline, with special emphasis on its application.

Advantage: The trainers are in a moderating role and only introduce into the role play.

Disadvantage: The difficulty is the creation the role plays as real as possible. Otherwise, they will lose the seriousness.

Positive aspects of Role Plays: With the help of role play, trainees learn more playfully - this is not about rigid, theoretical, but practical learning. A role play promotes empathy and makes it easier for the trainees to understand situations and emotions, as they must empathize with a foreign role. However, the role-play method can only be successful if there is enough time to carry it out and the trainees really take the role-play seriously.

When should I choose a role play for my trainees? A role-play is suitable to bring the trainees closer to a certain business situation with the associated behavioral possibilities. If there are situations in your company that shape day-to-day business and that should be prepared for the trainees, then role play is a good option. The young people can actively evaluate their skills without having to take responsibility for mistakes, as this is only a simulation, and the trainer can also take corrective action immediately if necessary.

Please write a summary about answering the questions as a teacher and as a principal.

Summary about answering the questions as a teacher:

The training of teachers of pedagogical, psychological, and scientific competences is clearly anchored in the KMK framework agreement on training for the teaching profession (professional subject). Depending on the federal state, this is weighted differently.

The training in Germany takes place at different learning locations and so a lack of soft skills on the part of the trainees can occur at the learning location vocational school as well as learning location company. As a result, both teachers, and trainers in the companies can also use the opportunities to improve soft skills. If the cooperation between the learning locations works well, the vocational schoolteachers also notice that the companies see potential for improvement in soft skills in the trainees. Feedback discussions, goal agreements and role plays prove to be useful tools to improve soft skills. The improvement on soft skill depends on the enthusiasm of the teachers and trainers.

(KMK=Kultusministerkonferenz/ Conference of Ministers of Education)

Summary about answering the questions as a principal:

After finalizing their studies, it takes additional one year teacher traineeship to become a vocational teacher. During this phase, the teacher trainees get an overview what exactly it means to be a teacher and they learn extra educational and pedagogical skills in practice. The teachers are committed to do further educational courses in pedagogic once a year. If companies have problems with apprentices' soft skills, the teachers can only get information about when the network between chamber, vocational school and company has an actively exchange.

If the teachers have difficulties to improve the apprentices' soft skills, they can use tools for feedback discussions, target agreements or role plays. In profoundly serious cases, they may also provide external assistance and discussions with the training advisers of the chambers.

Description of the standard curricula, subject and topic

Qualification: Farmer

Qualification type: Dual vocational training (3 and 3 1/2-year training)

DQR/EQF level 4

What type of qualification is it?

This qualification is a dual vocational training (3- and 3 1/2-year training). In Germany, the vocational education and training system is of immense importance. Training in the dual system plays a leading role here, providing access to many occupational fields of activity for which training at a university is planned in other countries. The system is referred to as dual because the training is conducted at two independent learning locations: in the company and in the vocational school. It combines the acquisition of theoretical knowledge and practical skills with operational practice. The successful completion qualifies for the direct exercise of a profession as a qualified specialist in a state-recognized training occupation. In addition, a wide range of career advancement training courses are built on this.

Graduates have the professional skills, knowledge, and abilities necessary for the exercise of a qualified professional activity (professional ability to act). They have the skills to independently plan and work on technical tasks in a comprehensive, changing professional field of activity.

Which competent body issues the qualification certificate?

Bodies responsible for vocational training in agriculture.

What are the admission requirements?

There are no formal entry requirements. However, the general compulsory education of nine or ten full-time school years must be fulfilled. The training relationship is established by concluding a vocational training contract with a company in the economy or with a comparable institution.

How is the qualification obtained?

The training takes place in the company and school: In the company, the trainees acquire practical skills in a real working environment. On one to two days a week or in blocks for one to two weeks, the trainees complete the vocational school, in which general and vocational learning content of a theoretical nature is interlinked to practical training in the company. The training concludes with an examination before the examination board of the competent authority.

The final or journeyman's examination can also be taken by anyone who proves that he or she has worked in the profession or in another relevant training occupation at least 1 1/2 times the prescribed training period or can credibly demonstrate by means of certificates or other evidence that he/she has acquired professional capacity to a sufficient extent (so-called "external examination").

What are the connection options?

After completing vocational training and corresponding practical experience, graduates can acquire a state-regulated degree in advanced training. After usually at least three years of professional experience and successful completion of an aptitude assessment procedure, they receive a subject-specific university entrance qualification in accordance with the decision of the Standing Conference of the Ministers of Education and Cultural Affairs (KMK) of 06.03.2009.

Source: Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research)

As already described above, the dual training system applies to the profession of farmer in Germany and two framework plans are decisive for this. On the one hand the training framework plan, which regulates the training in the companies, and on the other hand the framework curriculum of the KMK for the subjects which matter at the vocational schools. Regarding the VETPROFIT project, the further statements refer to the framework curriculum KMK. Attached you will find the training framework plan and framework curriculum.

The learning objectives and learning contents of the framework plan are coordinated with the corresponding training regulations issued by the federal ministries in agreement with the Federal Ministry of Education, Science, Research and Technology.

The framework curriculum is structured according to years of training. It includes learning areas, learning objectives, learning content and time guidelines. According to the framework curriculum, soil cultivation occurs as a learning content in all three years of training.

https://www.kmk.org/fileadmin/Dateien/pdf/Bildung/BeruflicheBildung/rlp/Landwirt94-10-27.pdf

file:///C:/Users/Reimer/Downloads/0110101%20(3).pdf

Short summary of the subjects, requirements, and available textbooks

Description of the selected subject and reasons why it was selected.

Selected subject: GPS conducted chopping robots.

Reason why it was selected:

One of the objectives of the European Green Deal is to increase organic arable land. Another funding factor of the European Union is digitization.

In the framework curriculum for farmers in Lower Saxony, one learning field is explicitly: "Justify measures of special soil care as a prerequisite for alternative farming."

By the use of hacking robots, contents of the framework curriculum concerning sustainable agriculture and digitization can be reconciled.

Under the term Agriculture 4.0 we find lots of examples of digitized agriculture. The textbooks (in this case the textbook for farmers in the second year of training as a standard training book) contain little information on digitally supported working methods. A teacher survey showed that an application of standard textbooks as teaching materials is rarely used and that teaching materials from the internet are used.

As already explained in the general description of the VETPROFIT project, it is important to close the gap between traditional and new teaching formats, which are necessary due to the fast-moving development. One element to do this are the microlearning modules we propose.

Annexes

Annex 1: Glossary

BBIB - Federal Institute for Vocational Education and Training
BBiG – Vocational Training Act
BMBF – Federal Ministry of Education and Research
CVET – Continuing Education and Training
IVET – Initial Vocational Education and Training
KMK – Standing Conference of the Ministers of Education and Cultural Affairs
SMEs – small and medium sized enterprises
UASs - Universities of Applied Sciences
WBL – work-based learning

Annex 2: REFERENCES

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Annex 3: Selected curriculum, textbook, subjects, topics

Agriculture and forestry (HU, DE)
IT and telecommunications (HU, IT)

Partner	Curriculum	Textbook	Subject	Topic	EQF	Company
JAC	Web Development	"Programming PHP, 4th edtion", by K. Tatroe and P. MacIntyre, O'Reilly Media Inc., 2020	Web programming	Back-end programming with PHP 1	Tertiary VET, EQF 5	???
PREMO	Foundation training for IT students	NONE	Introduction to programming	Python prog.	IVET EQF 3-4	DRDC
DEULA	Web Development	Fachstufe Landwirt (Subject Level Farmer)	Agriculture 4.0 Smart Farming	Soil work Chopping robots	CVET, EQF 4-5	????
MAKE-SZISZ	Foundation training for agriculture students	Introduction to agriculture, Introduction to horticulture, Technology in Horticulture (Ornamental horticulture)	Smart Greenhouses, linking weather station to greenhouse automation, drone soil testing	?	IVET, EQF 3-4	DRDC

Project Summary

Multidisciplinary, Project-based Digital Learning Content for VET

Basic data

Title: Multidisciplinary, Project-based Digital Learning Content for VET
Acronym: VETPROFIT
Project ID: 2021-1-HU01-KA220-VET-000025350
Partner countries: Germany, Italy, Hungary
Coordinator: iTStudy Hungary Ltd.
Duration: 01 November 2021 – 31 October 2024.

Background

Vocational education and training (VET) has a key role to play in preparing young professionals for the challenges of a rapidly evolving global and digital economy. However, education often operates in isolation from the business world, with a widening gap between the skills provided by schools and those required by employers.

The labour market needs practical knowledge, and textbooks tend to be dominated by theory. Textbooks are not motivating enough for students born into the digital world and contain very few real-life examples from work situations. While most workplaces expect staff to work in a project-oriented way, the project approach and its associated forms of work are still not integrated into training, and a significant number of trainers are not yet prepared to apply the project approach. The multidisciplinary approach is difficult to integrate with traditional teaching methods, even though young graduates need to apply knowledge and skills from different subjects at the same time to solve workplace problems. While employers expect prospective employees to work in teams and on projects, the project method and related forms of work are not widespread in VET and project-based teaching methods are often missing from the toolbox of VET teachers.

Target groups
- VET- schools' leadership
- VET teachers/trainers
- Companies (Agriculture and IT sectors)

Beneficiaries
- VET students
- Employers

Objectives

The aim of the project is to reflect the needs of the labour market in vocational education and training, to prepare teachers to work with companies to develop project tasks for students and future employees to solve real problems proposed by them. To achieve this objective, the partnership:

- *review the curriculum, learning materials and teaching methods used in the initial training of IT and Agricultural sectors in the partner countries;*

- *train VET teachers of these sectors about the project method, related digital tools, innovative assessment practices and digital content creation;*
- *assign real-life project tasks for VET students, in close collaboration of teachers and labor market representatives;*
- *create a repository of project-based, re-usable, high-quality, motivating digital learning contents with an interdisciplinary approach;*
- *prepare students for successful project implementation by designing and delivering mini-courses for them;*
- *create a model to be published as a guide for teachers of other VET institutes.*

Results

R1 – A study on 21st century relevance of textbooks and learning content

R2 - PBL with interdisciplinary approach – blended course for VET teachers

R3 - Labor market-oriented projects for students

R4 - Repository of re-usable digital micro-learning content for VET

R5 - Mini-courses and projects for VET students

R6 - Methodology of developing, publishing and re-using digital micro-learning contents – a guide for VET expert teachers

Partners

iTStudy Hungary IT Education and Research Centre. Hungary

DEULA - Nienburg GmbH, Germany

Fondazione ITS – JobsAcademy, Italy

Association of Hungarian Horticultural Vocational Training Institutions, Hungary

Premontre Vocational High School, Technical School and College, Hungary

Discovery Center Nonprofit Ltd., Hungary