DEAL WITH DIGITAL WBL

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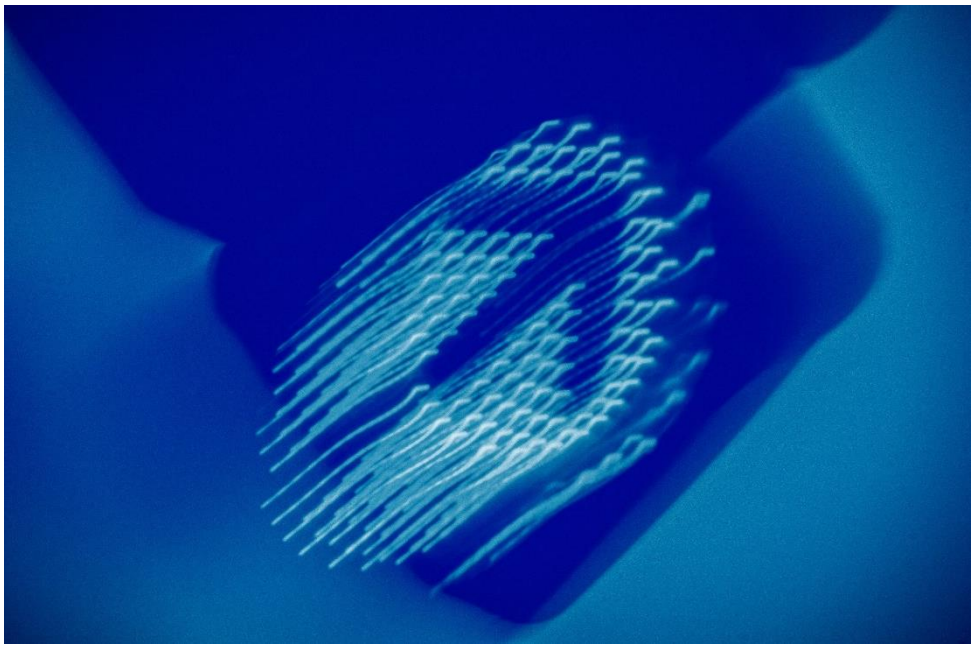

Guidelines for designing Digital WBL & Remote Experiential Activity

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INTRODUCTION

Deal with digital work-based learning (DIGITAL WBL) is an Erasmus+ project developed by an international Consortium made up of 8 partners from 5 European countries, centers of excellence in the areas of digitisation applied to Work-based Learning and Vocational Education and Training (VET) systems:

SFC, Sistemi Formativi Confindustria
PANKO, Panevėžio kolegija/Panevėžys University of Applied Sciences
IPOSZ is the Hungarian Association of Craft Cooperatives with independent legal personality
Dinamo 3d is an SME composed of three business units: Dinamo 3D, Dinamo Lab and Dinamo ADV
CIS, Scuola per la gestione d'impresa
UOC, the Universitat Oberta de Catalunya
DHBW, Baden-Wuerttemberg Cooperative State University
Hanse-Parlament, Network for Small and Medium Enterprises

The focus of the project is on providing training opportunities for the design of Digital WBL experiences. The aim of this guide is to assist all people involved in Vocational Education Training to understand, reflect on and improve practices in Digital Work-Based Learning.

For this, we have had the collaboration of multiple stakeholders from different countries. Their contributions allow us to answer some questions from new challenges in VET on its way to a more extensive and deep digitization.

Through the guidelines you can find a brief theoretical overview about Digital WBL, collecting the main content of the knowledge generated in the research process: literature review and stakeholders experience give shape to five sections related to the five main topics on which DIGITAL WBL is based:

"Compentences in DIGITAL WBL for VET", "Teaching-learning methodologies", "Interaction-networked community", "Content and resources" and "Assessment".

After these theorical background, the guidelines links to an online tool to evaluate a specific digital VET practice. This VET Practice Evaluation Tool (VPET) will help you to reflect on a VET practice that you are developing or implementing.

Finally, the guidelines present a set of existing good practices from different countries and contexts, and examples of how to use VPET to evaluate some of these good practices.

Thanking you in advance for your interest in this guideline, we hope that it can contribute to the development of best practices in Digital Work Based Learning.

1. GUIDE AND PROJECT OVERVIEW

1.1. THE DIGITAL WBL PROJECT

Deal with digital work-based learning (DIGITAL WBL) is an Erasmus+ project developed by an international Consortium made up of 8 partners from 5 European countries, centers of excellence in the areas of digitisation applied to Work-based Learning (WBL) and Vocational Education and Training (VET) systems. The consortium led by SFC and joined by strategic partners, including representatives of enterprises, universities specialized in innovative pedagogy, vocational training centers engaged in the fields of Mechatronics and Green Economy, works to promote the capacity of VET trainers from Italy, Germany, Spain, Hungary, and Lithuania to use innovative pedagogical approaches.

The focus of the project is on providing training opportunities for the design of Digital WBL experiences. The project is aimed at innovating and making work-based learning experiences more accessible through digital tools. Our purpose is to encourage VET trainers to acquire specific competences through Digital WBL experiences. By studying the innovative pedagogical approaches and by recollecting best practices from our stakeholder community, we will define the quality and the methodological framework for designing VET training courses. Starting from this, we will produce a list of the competences and soft skills that teachers need to implement. So, we will define the Blueprint for VET trainers' development of competences to design, deliver, evaluate, and certificate online and blended courses. In addition, a cross-media platform to train the project's target groups will be designed. The e-learning platform will provide the course "Deal with Digital Work-based Learning" to allow field testing to enrich the digital teaching-related skills of VET trainers. The project's final output will be a toolkit for the implementation of Digital WBL in VET students' learning pathways to ensure the transferability and sustainability of the project approach and results.

The project direct target group is composed by:

- VET system trainers, coming both from companies and VET training centers. The partnership aims to enhance the capacity of VET trainers to design and differentiate digital work-based learning methodologies and approaches. It intends to make work-based learning more sustainable, also by expanding the opportunities for WBL best practice exchange and distance learning. 200 Trainers of VET institutions will be involved, and 50 Trainers of VET institutions will be formed.
- Students: 50 students will benefit from the "Deal with Digital Work-based Learning" course.

- NEET: Not in Education, Employment or Training (NEET) is a young person who is no longer in the education system and who is not working or being trained for work. 60 NEET will be informed about the learning opportunity developed in deal with Digital WBL project.
- Centers/person of interest: HR managers, Experts in Management and coordination of employability and lifelong learning services, Experts in Guidance counselling and support to job placement. 60 Strategic centers and persons of interest will be informed about the “Deal with Digital Work-based Learning" course.

Deal with Digital WBL pursues the following objectives:

- To develop a competence framework on emerging digital skills for the VET trainer needed to innovate Work-based Learning methodology, laboratory, and experiential online learning.
- To encourage VET trainers to acquire specific competences to design how deliver, evaluate and validate skills learned through Digital Work-based Learning experiences.
- To develop a training course to enrich the digital skills of VET trainers, available at a distance on the "Deal with Digital Work-based Learning" platform, to integrate the use of Digital Technologies in Work-based Learning experiences.
- Create stimulating and inclusive opportunities for VET trainers to further their professional development.
- Enrich and make more attractive to learners the training opportunities based on Digital Work-based Learning.
- To innovate and make more attractive the cooperation between training stakeholders and enterprises, making WBL experiences more accessible through digital tools.

The project stakeholder community

Based on the challenging objectives of the project, the "Deal with Digital Work-based Learning" initiative intends to guide a collaboration between strategic partners, including representatives of enterprises, universities specialized in Innovative Pedagogy, vocational training centers engaged in the fields of Mechatronics and Green Economy, with the aim of producing impacts on:

- VET trainers
- Training Centers and professional universities
- Business representation organizations
- Public administration
- Students

1.2. ABOUT THIS GUIDE AND HOW TO USE IT

The aim of this guide is to assist all people involved in Vocational Education Training (VET) to understand, reflect on and improve practices in Digital Work-Based Learning.

For this, we have had the collaboration of multiple stakeholders from different countries. Their contributions allow us to answer some questions from new challenges in VET on its way to a more extensive and deep digitization.

Section 1.3 briefly presents the research methodology, in which the participation of stakeholders from all the countries involved in the project as the cornerstone to connect the proposal with real contexts.

Section 2 offers a brief theoretical overview about Digital WBL, giving answers to the following four questions that are present throughout the guidelines:

- What do we mean by digital WBL?
- What is "good" digital WBL good practice?
- What (good) practices are there of digital WBL?
- What are digital WBL scenarios?

Section 3 develops the key question: What is "good" in the digital WBL good practice?

This section collects the main content of the knowledge generated in the research process: literature review and stakeholders experience give shape to five sections related to the five main topics on which DIGITAL WBL is based. Based on the 10 key components for online teaching, WBL and VET-particular considerations, this guideline selects five components and between three to five elements of each of them. These **5 components** are:

- Compentences in DIGITAL WBL for VET
- Teaching-learning methodologies
- Interaction-networked community
- Content and resources
- Assessment

Once the components and their elements are presented, section 4 provides a tool to evaluate the degree of concordance between a specific digital VET practice and each element. This **VET Practice Evaluation Tool (VPET)** will help you to reflect on a VET practice that you are developing or implementing.

To evaluate a practice, VPET selects five components and elements presented in section 3. For each one of these components, VBET proposes a sentence to evaluate its most relevant aspects in scale from 1 (strongly disagree) to 5 (strongly agree).

Once the evaluation is done, VPET shows the results graphically, providing a quick picture of the evaluated practice. It should help to identify where efforts might be focused to improve the strength and quality of practices.
Finally, section 5 presents a set of existing good practices from different countries and contexts, and examples of how to use VPET to evaluate some of these good practices.

One suggestion to use the DIGITAL WBL guidelines in a profitable and agile way can be to use the VPET to analyze a practice. It can be a practice that is already working or one that you are developing to performance. The VPET can be used by the different people involved in the practice (teachers, students, entrepreneurs).

With the picture obtained using the tool, teamwork can focus its efforts improving those aspects less valuated.

To see how these aspects can be improved, each of the points of section 3 briefly develops each of them.

1.3. GUIDELINE ELABORATION METHODOLOGY

This work is based on two cornerstones of qualitative social sciences research: collecting established concepts through literature review and gathering heterogeneous key stakeholders' contributions: literature offers us well-anchored knowledge, while stakeholders share their knowledge, particular experiences and expectations.

Based on the collection of good practices, stakeholders' experiences and literature insights, a VET Practice Evaluation Tool (VPET) has been designed to easily address quality features of DIGITAL WBL practices.

Below, we offer a brief description of the methodology followed in the guideline elaboration:

STEP 1: BEST PRACTICES AND BEST PRACTICES SELECTION CRITERIA

Once a first literature review was done where the most important concepts onDIGITAL WBL were identified, we asked partners to gather a set of Good Practices in DIGITAL WBL. Some related VET teaching-learning professionals of each partners' country filled a template with the most relevant information about a Good Practice that they know, including a summary and selection criteria to consider the practice as a good practice.

17 good practices and selection criteria from Lithuania, Italy, Spain, Hungary, Germany and Estonia were gathered. Some examples of them can be found in section 5 of this guideline.

STEP 2: FOCUS GROUPS WITH LOCAL STAKEHOLDERS

Literature and stakeholders' inputs generated a set of questions to go forward with DIGITAL WBL good practices. Questions were classified in six blocks. Each block was opened with general questions about the topic.

For example, in the block COMPETENCES the introduction question was:
"What do you think about how competences should be integrated in a GP? You can talk about methodologies, kinds of competences or skills, etc."

Below these introductory questions, some key elements or concepts were provided to avoid forgetting any important aspect. For example, if nobody mentioned European Digital Competence frameworks, the moderator could invite them to tell something with the question:

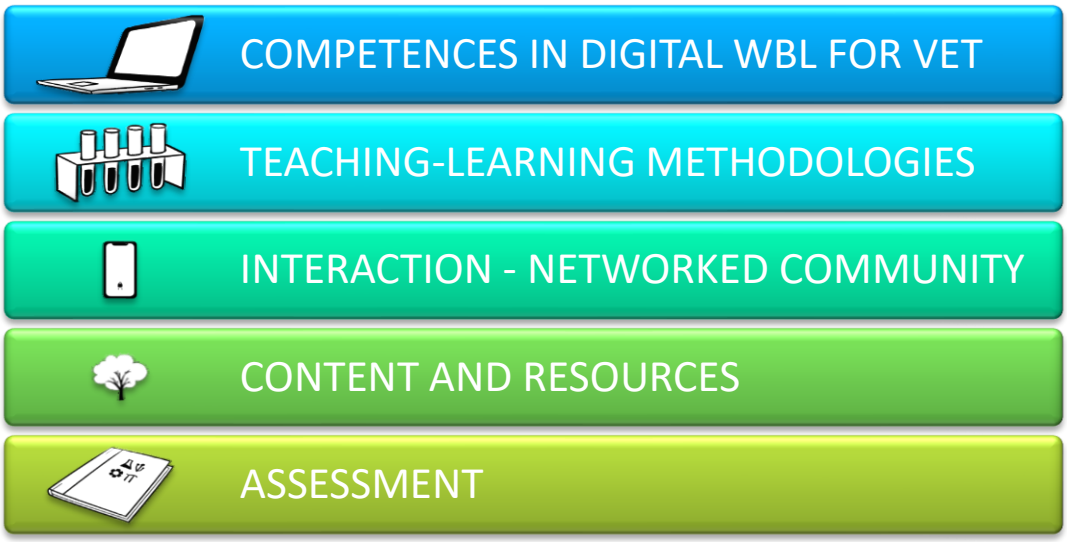
"And do you know DigCompEdu? Do you think it is a good reference to use?"

Each Digital WBL partner carried out local focus groups. The table below shows the stakeholders description and the number of participants of each local focus group:

Local Focus Group	PANKO Lithuania	SFC Italy	IPOSZ Hungary	DHBW Germany	HP Germany	UOC Spain	CIS Italy
Students: of the last/final courses, ideally with experience in internships in companies.	2	3	4	2	-	3	-
Teachers: with different years of experience	3	1	1	2	2	3	4
Coordinator/Center director: From centers with different characteristics (by number of students, type of studies, etc.)	-	8	3	2	2	2	3
Administration/Government, Stakeholders: From local and country level, if it is possible.	-	2	1	-	2	1	1
Entrepreneurs: From different sectors, with WBL experience	-	3	3	1	1	2	1

STEP 3: DATA PREPARATION AND ANALYSIS

Once the focus groups were performed and recorded, each partner shared the transcription in English. For the analysis, each contribution was classified into five categories. These categories were used as thematic blocks in the focus groups, responding to fundamental elements of the teaching-learning processes.



A first open codification was carried out with all the contributions to each category. For example, in the category ASSESSMENT emerged the following topics:

FORMATIVE ASSESSMENT
ACTIVE FEEDBACK 360°
LEARNING GOALS
COMPETENCES: COMMON
THEORETICAL KNOWLEDGE (TESTS)
DIFFERENT PRACTICE EXPERIENCEs (NO TEST)
PERSONAL CONTEXT (TENSION)
FAIRNESS
TRANSPARENCY
OBJECTIVE
PLANIFICATION
After the axial codification and literature review, the category ASSESSMENT was set up with three topics, as follow:

- COMPETENCE-BASED ASSESSMENT
- FORMATIVE ASSESSMENT: 360° FEEDBACK
- PLANIFICATION AND TRANSPARENCY

STEP 4: VET PRACTICE EVALUATION TOOL DESIGN

To assess whether a practice responds to these categories and to what degree, a question was formulated for each of its topics. Following with the same example:

COMPETENCE-BASED ASSESSMENT	The analysed practice integrates assessment as part of competence-based learning.
FORMATIVE ASSESSMENT: 360° FEEDBACK	The analysed practice includes 360° feedback as an element of formative assessment.
PLANIFICATION AND TRANSPARENCY	Assessment elements are planned and known by all the people involved in the training process.

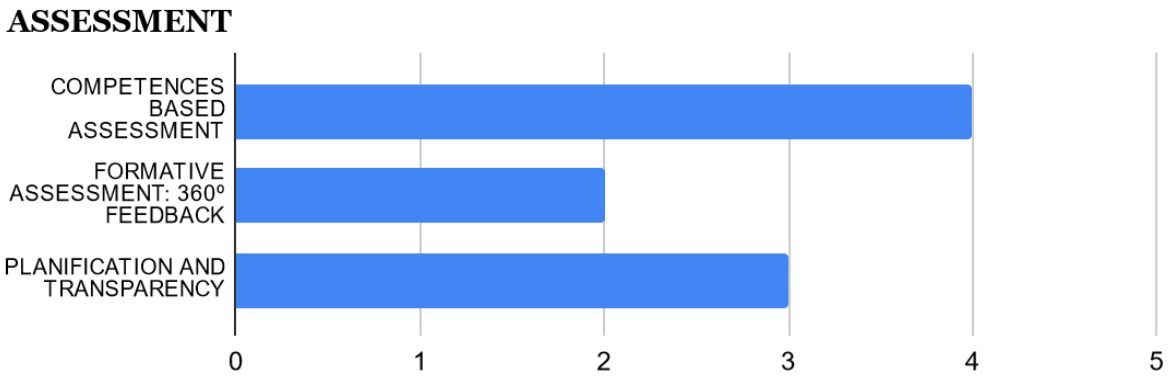
User of this guideline can evaluate how a practice is close to a good practice in Digital WBL and which aspects can be improved, assessing these final questions with a simple scale:

Please, indicate your degree of agreement with the following statements using a scale from1 (strongly disagree) to 5 (strongly agree) as follows:

Strongly disagree (1)

Moderately disagree (2)
Neutral (3)
Moderately agree (4)
Strongly agree (5)

Finally, the VET Practice Evaluation Tool generates a graphic showing the results:



2. DIGITAL WBL APPROACH

As mentioned in the introduction, the development of this guideline is based on gathering good practices, collect stakeholders' experiences and literature insights a VET Practice Evaluation. All this knowledge goes hand in hand with the answer given to four key questions local focus groups:

a) What do we mean by digital WBL?
b) What is "good" digital WBL good practice?
c) What (good) practices are there of digital WBL? and
d) What are digital WBL scenarios?

We can find below a brief answer to these questions, that are presented throughout the guidelines.

a) What do we mean by digital Work-BL?

Digital support, provision and/or enhancement of practical experiences in a vocational context for knowledge and skills development as well as integration of theory and practice.

Based on this definition, we can say that digital WBL includes various learning situations in which two specific elements can be distinguished:

- the use of a **learning approach based on practical experience** (including laboratory activities, work-based learning, experiential learning, etc.)

- the use of **digital solutions to support the implementation of hands-on learning**. The presence of digital can thus be of different types and intensity: from the communication platform to computerized systems and tools to support the implementation of practical work, to virtual environments where experiential learning takes place through the use of simulators.

b) What is a "good" digital WBL good practice?

There is no simple single answer to such a complex question. It depends on several context factors, and each one (or better, each team) must find their specific and well-based answer.

This guideline can help to narrow answers and to improve DIGITAL WBL practice experience.

Section 3 gives a panorama of the principal good practice characteristics, emerging from literature and stakeholders contributions. This section allows interested people *to go in depth into all the relevant topics for digital VET, such as what are stakeholders and conditions for successful WBL implementation or who and what do we need to take into account.*

Section 3 prepares the field to Section 4, where the VET practice evaluation tool (VPET) is presented.

The VPET wants to be a useful tool to realize how a digital VET practice is designed and implemented, highlighting those aspects that could be improved. Section 5 provides some examples of application of VPET to real practices, chosen as good practices by international stakeholders, allowing this guide to answer the following question as well:

c) What (good) practices are there of digital WBL?

Section 5 presents a first collection of **17 good practices**, gathered from different European countries, with a brief description of them and some criteria used to consider each one as a good practice.

It is precisely the variety of contributions and experiences that feed this work that leads to the argument mentioned above: a good practice depends on several context factors.

But the principal aim of the DIGITAL WBL project and of this guide is to boost VET practice experiences. So, we have *defined three scenarios, and we would like to invite all the readers of this guide to go a step further through them to improve their experience in DIGITAL WBL:*

d) What are digital WBL scenarios?

The acceleration given by the pandemic situation to the digitisation of learning systems has opened up new development scenarios, to the point where it is difficult to imagine a downgrading of the developments achieved so far.

In the vocational and adult education system, new challenges and complexities are rapidly emerging with respect to the way digital learning is designed, delivered, managed and certified.

The area of experience-based learning (into which the work-based learning methodology is included) has been one of the areas most affected by the challenges and, at the same time, most urged to experiment with new technological solutions to virtually re-create the work environment.

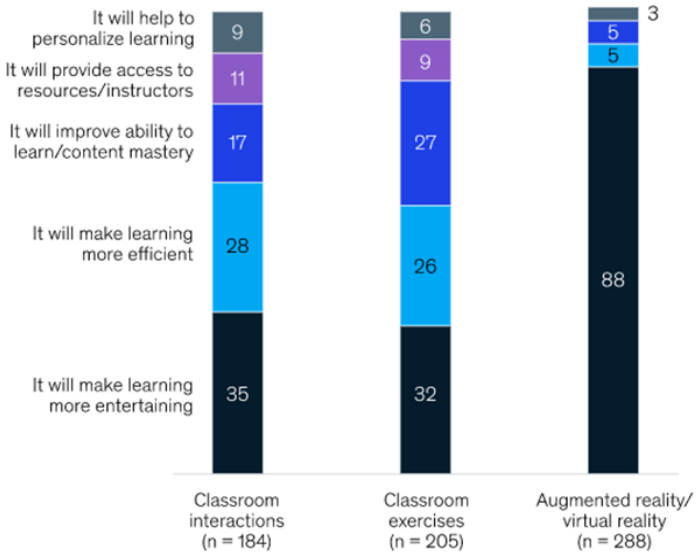
Virtual reconstruction must be careful to configure both the hard component of the work environment (i.e. the tools, the industrial machinery, hence the object of the work), and

the more socially dynamic components (the work environment as a learning environment through observation of the behaviour of more experienced colleagues, exchange of solutions among peers on possible problems to be solved, corporate knowledge management, etc.).

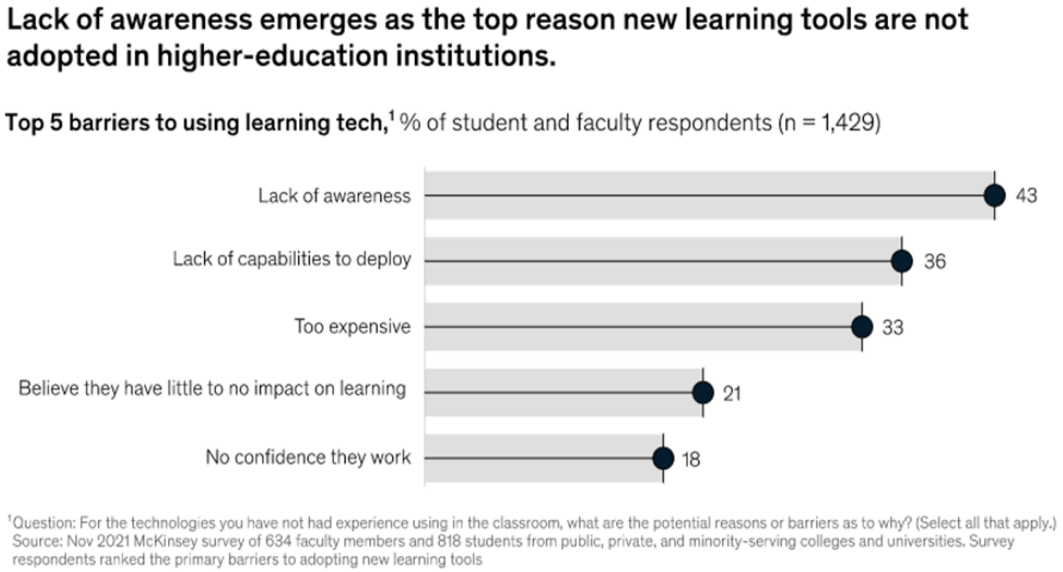
While on the one hand there are solutions to virtually recreate and make accessible any working environment from 'remote' (there are technologies such as augmented reality, virtual reality, metaverse to reconstruct such environments) and innovative pedagogies can support the teacher to use such environments in learning processes, on the other hand, in the practice of distance learning, the solutions do not seem to be within everyone's reach.

Recently, the survey conducted by McKinsey (2022) on "How technology is shaping learning in higher education" highlights some of the reasons why students may prefer educational offerings using advanced technological solutions in the future, and why these are not widespread.

Why students are excited about using learning technology in the future,[1] % of student respondents[2]



Note: Chart shows data for three of the eight technologies studied.
[1]Question: What is the primary reason you are excited about the technologies you selected?
[2]Figures may not sum to 100%, because of rounding.
Source: Nov 2021 McKinsey survey of 634 faculty members and 818 students from public, private, and minority-serving colleges and universities



Source: Mc Kinsey & Company "How technology is shaping learning in higher education" [1]

According to the partners of the Digital WBL project profiles, and thanks to the stakeholder's contribution given during the Focus Groups, the need to consider different scenarios of applicability of digital solutions for the delivery of work-based learning is evident.

To make the project results effectively sustainable in the different contexts, the project staff outlined three possible application scenarios of digital WBL results, considering the different levels of development of some macro factors as outlined below.

Macro factor 1: Connectivity and Technologies

It means having an adequate degree of digital maturity locally to support the use of digital systems in education. Indicators for this factor could include: the presence of fibre optic infrastructure, 5G coverage, no. of available digital devices per inhabitant, no. of mobile broadband take-up (compare DESI - Digital Economy and Society Index https://digital-strategy.ec.europa.eu/en/policies/desi). This factor allow to profile the technologies currently available at the training centers, the investments that the training center is interested in making for technology improvement.

Macro factor 2: Teachers' and students' skills

including digital skills to govern digital and virtual learning environments and the ability to apply innovative pedagogies and training approaches, centered on the learning objectives and the learning that the student can achieve, rather than on the curriculum.

Macro factor 3: Culture of innovation supported by the Training organization.

It means how the training center supports teachers, students in bringing innovative elements into teaching. It can be measured by identifying the n. of extra-curricular projects that are carried out in a year, the n. of collaborations that the training center

activates with local players for the realization of curricular or extracurricular projects (companies, research and territorial development centers, Digital Innovation Hubs, etc.), the networks between "Education - Enterprise and Research" the Training center manages.

Based on the level of development that each macro-factor presents, we have identified 3 'ideal' levels of applicability.

With respect to these three levels, the guidelines will report different levels of applicability of solutions to achieve the objectives of the Digital WBL project and will invoke differentiated commitments and resources with which the different partners can address and develop their own levels of digital WBL.

Possible scenario for the development of Digital WBL	Macro factor		
	Technologies	Trainers' Digital and Pedagogical skills	Innovation culture
Depowered: There is no immediate applicability of digital WBL solutions, but they are interested in actively contributing to the results of the Project, to be promoted at the VET center and local institutions.	The technological infrastructure in the area is modest in terms of network power, connection speed, availability of devices for teachers and students. The use of online training can be assumed to be sporadic, to cover emergencies.	Teachers' digital skills enable them to perform the main functions of online training delivery, knowing the main functions of digital platforms. They are not able to use individual strategies to combine content, technology, and teaching approaches.	The cooperation is instrumental in developing already defined content of the educational programme. The network of co-operators outside the school does not vary easily.
Promising There is national/European program & funding for, the interest among the parties involved (Training, Enterprise, Research Ed Tech), there is a need to enhance the growth of eLearning	The level of distribution, availability and use of technology supporting online training is adequate to support systematic distance learning. The training centre periodically develops its online training offering.	Trainers are autonomous in producing digital contents (i.e. Video recording for asynchronous lesson) They are also able to actively use Learning Platforms, designing training offers using a variety of contents. They know how to apply innovative learning approaches	Collaboration between education and labour systems has several outlets. The cooperation with external stakeholders can develop content not foreseen in the curriculum, which has an innovative character. There are programmes that encourage the adaptation of training and work-based training delivery and certification methods.
Advanced The resources and interests of the parties (Training, Enterprise, Research and Tech) are adequate to anticipate digital changes in the field of Enterprise Training.	The technologies in use by stakeholders are adequate to experiment with new online training solutions ensuring real-time synchronous interaction (with reliable cybersecurity systems) The training center is interested and willing to experiment with new technologies to support online and universal training.	Trainers can select technology to use enhanced teaching, Trainers can help others in the use of technology.	Companies, with in-house academies, Ed Tech companies and training centers (public, private, universities and VET) activate collaboration programmes to emancipate training systems (e.g., COMAU in Italy).

3. GOOD PRACTICES IN DIGITAL WBL

Digital Work-Based Learning combines digital teaching-learning with digital activities in the labour market. But the complexity to deal within the place where students, teachers, entrepreneurs, and workers meet is a big challenge.

The table below presents 10 key components of online teaching and learning and their main characteristics.

These 10 key components emerge from the work done by Universitat Oberta de Catalunya (UOC) and International Association of Universities (IAU) which "has resulted in the launch of the online IAU-UOC series of six chapters discussing: Innovative Education for Unshaped Futures (IE4UF) and in an accessible series of articles and recommendations for the design and implementation of quality online teaching and learning" and in the publication "Improving Online Teaching. Practical Guide for Quality Online Education" (Sangrà et al., 2022), "covering topics ranging from the organization of online education models to their assessment, including the design of courses, activities and teaching strategies, collaboration between teachers and students, mediation and interaction, feedback, digital tools, and the generation of critical attitudes of the students themselves towards technology".

1	Students	Active role
2	Competences	Cross and specific
3	Methodologies	Activity-centred learning
4	E-activities	Active and collaborative
5	Communication	Asynchronous and synchronous
6	Resources	Selection criteria
7	Assessment	Continuous, formative, diversified
8	Teachers	Guidance and continuous presence
9	Planning	Different time management
10	Learning environment	To allow and facilitate T&L

Based on these 10 key components, WBL and VET-particular considerations, this guide selects 5 components and between 3 to 5 elements of each of them. For example, as the network in VET involves students, teachers, administration and entrepreneurs, component 1 (Students) and component 8 (Teachers) from 10 key components of online

teaching and learning are now under the common umbrella of component INTERACTION - NETWORKED COMMUNITY.

Table below shows the five components and the 17 elements that a good practice in DIGITAL WBL should incorporate. These components emerge from the analysis of scientific literature and the DIGITAL WBL participants' experience: students, teachers, administration staff and entrepreneurs, all of them with experience in DIGITAL WBL.

COMPETENCES IN DIGITAL WBL FOR VET	SOFT SKILLS
	HARD SKILLS
	BALANCE BETWEEN SOFT AND HARD
	DIGITAL COMPETENCE
	USEFUL SKILLS FOR ALL INVOLVED
TEACHING-LEARNING METHODOLOGIES	COLLABORATIVE / TEAMWORK
	BASED ON ACTIVE METHODOLOGIES
	MEANINGFUL CONNECTED TO REALITY ACTIVITIES
INTERACTION - NETWORKED COMMUNITY	SKILLS DETECTION AND INTEGRATION
	WORKPLACE DIGITALIZACION STATE
	MENTORING AND COMMUNICATION
CONTENT AND RESOURCES	VARIETY OF TOOLS AND FORMATS
	LEARNING OBJECTIVES AND CONTEXT
	AVAILABILITY AND REPLICABILITY
ASSESSMENT	COMPETENCE-BASED ASSESSMENT
	FORMATIVE ASSESSMENT: 360º FEEDBACK
	PLANIFICATION AND TRANSPARENCY

In the following pages, each component is briefly explained, and some selected literature or participants' contributions are presented as examples.

Once the components and their elements are presented, section 4 provides a tool to evaluate the degree of concordance between a specific digital VET practice and each element.

3.1. COMPETENCES IN DIGITAL WBL FOR VET

"Twenty-First Century Skills", "Employability skills", "Generic and Core skills" "Future skills" or "Soft and Hard skills" are some of the wide ranges of terminology used in the literature to refer to skills.
Sometimes, the concepts "Skill" and "Competence" are used interchangeably adding confusion to the conceptualization of what competences and what skills are more important to develop in each case.
This guideline adopts a practical approach, after the participation of stakeholders from different countries that mostly refer to soft and hard skills.
So, we will talk about Soft and Hard skills, to simplify the analysis of our practices. Despite this "easy" solution to the complexity of the involved concepts, we recommend going in depth, consulting for example some chapters of the "Handbook of Vocational Education and Training" (McGrath et. al, 2019).

Before focusing on the topics of this section, we will also briefly share a new perspective of skills conceptualization, which will be integrated through the different of the project DIGITAL WBL in which this guideline is developed:

Future Skills are competences that allow individuals to solve complex problems in highly emergent contexts of action in a self-organized way and enable them to act (successfully). They are based on cognitive, motivational, volitional, and social resources, are value-based, and can be acquired in a learning process and embedded in the discourse around the goal of (higher) education and employability as the goal of any educational process.

Two emerging understandings and usual applications of the term Future Skills:

- additive-enrichment-oriented comprehension that understands Future Skills as additional components for educational processes that would enrich actual knowledge transfer processes to qualify students for future fields of activity and
- emphasises the importance of digital competences or so-called soft skills such as communication or presentation skills.

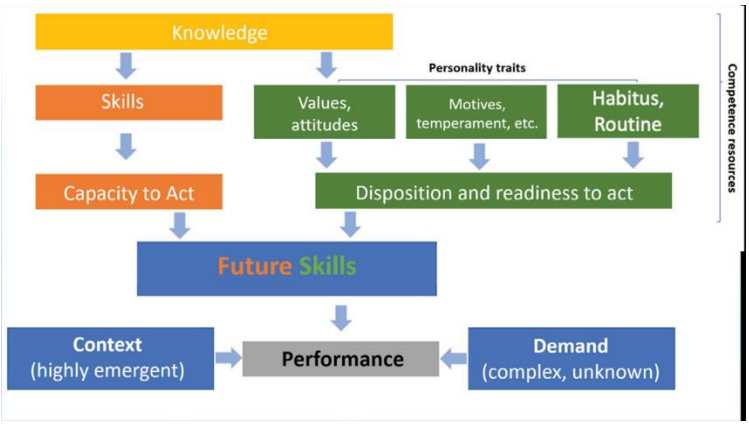


Fig.: The Future Skills concept from a competence perspective (Ehlers, 2020)

3.1.1. SOFT SKILLS

The development of soft skills is essential in a labour world in constant change and where interactive relations are increasing. The ability to work in a team, facilitating communication and common understanding, or support creativity are some of the learning outcomes that students should acquire. As Thianthai, & Sutamchai, K. (2022) states:

> "Soft skills … are also crucial for high-tech domain workers, both in terms of their professional success and for personal fulfilment (PwC EU Services, 2020; Cinque et al., 2021). These types of skills are more related to individual patterns of behaviour, attitudes, traits, and personality that are not directly related to individuals' knowledge and not directly connected to a specific task (Cimatti, 2016). For example, communication, teamwork, problem-solving, leadership, self-motivation, creativity, willingness to learn, emotional intelligence, social ethics skills, as well as the ability to work with people of different backgrounds (Balcar, 2016; Shmatko and Volkova, 2020).

The stakeholders involved in the DIGITAL WBL project confirm the importance of acquiring this type of skills:

> Really, throughout my internships, I picked up valuable skills needed for my future career. I learned how to prioritize properly, how to confidently speak up and be part of a discussion. Most importantly, I learned how to collaborate with a team, which will not only help me in my professional life but also in life outside of work (PANKO Student).

> You must have a high degree of independence and problem-solving skills, and I think that in terms of social competences, you must be able to work with the person with whom you are doing the training (IPOSZ Director).

> They learn in a challenging system. That enhances motivation and curiosity, and when they manage to beat a challenge, they feel good with the work they've done. Most of the challenges require creativity, methodical analysis, and critical thinking. Sometimes they do it in groups, so they also develop skills for group work (UOC Teacher).

EVALUATION QUESTION:

The analysed practice integrates the development of at least two of the soft skills included in table below:

Teamwork
Problem solving
Creativity
Communication
Strategic thinking
Critical thinking
Leadership
Learning mindset
Be able to take initiative

3.1.2. HARD SKILLS

Rainsbury et al. (2002) defines hard skills as skills that are related to technical aspects for carrying out several tasks at work (Putra et al, 2020).

Hard skills are acquired through formal education and training programs, including college, apprenticeships, short-term training classes, online courses, and certification programs, as well as on-the-job training.

Due this kind of skills are closely related to specific tasks, each practice in VET must define them according to the course topics.

We can just take two examples from the literature to better clarify what Hard Skills are:

> Hard skills tend to be embodied in formal acquired qualifications and they are usually relatively easy to train for and measure (Balcar, 2016). For example, English grammar, accounting, programming, welding, robot operating systems, and the ability to regulate and control a machine, etc. (Thianthai and Sutamchai, 2022).
>
> The Department of Homeland Security's National Initiative for Cybersecurity Careers and Studies (NICCS) developed a Cybersecurity Workforce Framework (Newhouse et al., 2016) to provide a base set of work roles for the cyber workforce…This collection includes nine work-role categories, 31 specialty areas, and over 1000 types of knowledge, skills, and abilities…such as: "identifies, analyzes, and mitigates threats to internal information technology (IT) systems and/or network" (Dawson and Thompson, 2018).

And one more from the stakeholders involved in the DIGITAL WBL project:

Digital skills, for example Building Information Modelling, this will probably be the case, so we should anticipate this, so that we can prepare ourselves for this and pass on this knowledge, because those who are already familiar with these tools at some level will have a huge advantage in the labour market. Even those who have not been

introduced to these tools and who have not left school and should learn them somewhere out there, will be at a huge disadvantage because they are not familiar with them (IPOSZ Teacher).

EVALUATION QUESTION:

The analysed practice integrates the development of at least two of the most relevant hard skills related to the specific topic/task to perform.

3.1.3. BALANCE BETWEEN SOFT AND HARD SKILLS

Literature and DIGITAL WBL stakeholders agree that a balance between soft and hard skills must be promoted in VET practices. The enhancement and integration of both kinds of skills is fostered by working them in an integrated way.

> The importance of combining both hard and soft skills together has, for some time now, been demonstrated as a vital component for professional competence (Kauffeld, Grote & Frieling, 2003). This entails an indissociable interdependence of these competences for the successful performance of future informatics engineers (Torres, 2020).

I must admit that it is important that students also can develop general skills and competences covering 'whole professions' and ensuring their general employability in view of future job opportunities. Hence, it is necessary to strike the right balance between the company-specific skill needs of the employer and the general employability of the students (PANKO Director).

EVALUATION QUESTION:

The analysed practice integrates both hard and soft skills in a balanced way.

3.1.4. DIGITAL COMPETENCE

The development of Digital Competence is certainly one of the milestones of DIGITAL WBL. It is part of the necessary knowledge to perform DIGITAL WBL, while it is part of the knowledge to acquire or improve in VET.

The complexity of Digital Competence (DC) can be found in the definition done by Ferrari (2012) while she was developing the DigCompEdu framework:

> "The set of knowledge, skills, attitudes (thus including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform

tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming, and empowerment".

We take DigComp.Edu as a competence framework to choose DC in VET education, widely adapted and due the EU context of DIGITAL WBL project, choosing some of the competences that this framework defines, emerging from the DIGITAL WBL stakeholders' contribution.

To provide space for reflection and practical application, Competence Areas and Competences from the DigCompEdu framework will be collaboratively selected for this training and associated with each activity. The areas of DigCompEdu that will be considered are the following:

EVALUATION QUESTION:
The analysed practice integrates at least two sub competences from Digital Competence included in the European framework DigCompEdu.

3.1.5. USEFUL SKILLS FOR ALL INVOLVED

Where should we focus when choosing the skills to acquire?
In those skills that are required to do a specific task in the company? In skills that can be transferred to other work environments?. In those that will help the student's personal growth?
Can they be developed in an integrated manner?

The debate is open and complex, for example with "tensions that can emerge between training design intentions and training delivery outcomes when training delivery is marketized" (Gekara and Snell, 2018).

Participants in the DIGITAL WBL project also express these different points of view that can be summarized in:

> I must admit that the purpose of VET study programmes is to develop professional, social, and personal competence. These are important prerequisites for employability, identity formation and social integration. (PANKO Administration)

The local context is also a determinant factor when we design practices because each case has to respond, ideally, to the needs of all the people involved. So, we can try to design practices to respond to all these requirements.

EVALUATION QUESTION:
The analysed practice integrates specific workplace, employability and education focused skills

3.2. TEACHING-LEARNING METHODOLOGIES

In our experience as students, all of us have known good teachers. However, it is not easy to give clues about what a good teacher is, among other things because there are many ways to be one. How to define the ability that some teachers show to motivate and engage their students?
Despite this apparent impossibility, it is possible to find some teaching-learning keys that will help everyone involved to make the practices as profitable as possible.

For example, the following section "INTERACTION - NETWORKED COMMUNITY" gives us some indications about how to improve DIGITAL WBL practices thanks to network management. Teaching-learning methodologies could integrate learning from practices in theoretical teaching and provide moments and places to share experiences. Online teaching-learning gives the possibility of having the participation of experts without having to move to educational centres or companies.

The two previous examples show how teaching-learning is linked to the rest of the axes presented in this guide (Competences, Interaction-Networked community, etc.).

3.2.1. COLLABORATIVE / TEAMWORK

As the work of Schwendimann et al. (2018) states:

> "Future workplaces require collaboration skills in which members of different work communities use technologies to solve complex problems. Vocational education and training (VET) programs need to meet the challenge to prepare students to be part of a competent workforce. Particularly initial vocational education is under pressure to develop learners' collaboration skills and abilities".

Participants in the DIGITAL WBL project express some advantages as well of working collaboratively based on their experience. They also propose to combine individual and collaborative work.

> For me, the important thing is that when I get a placement, I can be part of a team and work as part of a team... and we can manage teamwork not only by being in one place and everyone sitting together in the office, but also by connecting to a Zoom meeting from home or from work and everyone can see each other there, or even through online platforms where we can work on a document at the same time, etc. (IPOSZ Student)

> Whether learning in groups or individually depends, depending on the topic. For example, if I want to train cooperation, then group work makes sense. And if I want to teach other things, I can also do private lessons. (HP Entrepreneur)

Collaborative work is much more than “work together” or “work by groups”. So, before making the decision to include collaborative work in our practices, it’s important to have didactical tools to manage VET students' work development in collaborative groups. For example, it is important to highlight here that a well-designed collaborative proposal includes moments and tasks to perform individually.

EVALUATION QUESTION:
The analysed practice integrates individual and collaborative work.

3.2.2. BASED ON ACTIVE METHODOLOGIES

Active methodologies are closely related with collaborative work. Promoting active methodologies in VET practices is also a challenge for the whole network involved. This kind of methodologies can improve students' learning and motivation, demanding a higher level of commitment from all participants.

> “Drawing the students’ attention and keeping them engaged are essential points to the learning process. Active methodologies place the students at the center of this process and make them the protagonists of discovery, rather than just passive information receivers. There are different teaching strategies to create an active learning environment and to engage the students to it. Current evidence indicate that active learning improves understanding and information re-tention.” (Konopka, C. , Adaime, M. and Mosele, P. (2015).

Three of the most used active methodologies are *Challenge-Based Learning*, *Problem-Based Learning* and *Project-Based Learning*. All of them are focused on the student's active implication, but with significant differences that allow us to implement each one depending on the context.

DIGITAL WBL participants experiences confirm the advantages of active learning:

> In my opinion, based on the objectives and the expected learning outcomes, priority should be given to activity-based methods. For example, problem-based learning, project-based learning, flipped classroom, experience learning, etc. - all methodologies that allow for better involvement of the learner in the learning process, greater responsibility, better social skills, self-management, creativity and entrepreneurship. (PANKO Teacher)

> Challenge-based working method... to put the kids around a work problem and make them work in team working. To solve this problem though, here's this thing. In my opinion, before letting the kids do it, the teachers themselves should be able to develop the competence of a real teamwork, therefore to overcome the barriers of disciplinary skills and also this strong attitude to problem solving (SFC Administration)

EVALUATION QUESTION:
The analyzed practice is based on active methodologies.

3.2.3. MEANINGFUL CONNECTED TO REALITY ACTIVITIES

Collaborative teaching-learning and active activities need to be connected as closely as possible to real workplace requirements in VET environments. Activities should be meaningful for students, but also for the workplace.

Literature and stakeholders agree in this point as well:

> "According to both situated cognition and cognitive apprenticeship, investigating decontextualized learning processes is irrelevant. These theories stress that it is important to investigate what learning environments evoke in students, because it is not the task that is most important for effective learning, but the task being anchored in a meaningful and realistic context" (Gulikers, Bastiaens and Martens, 2005).

Basically, we never allow technical content that is detached from a context of reality, but in a way that any technical content is behind the organization of work with civil society. (SFC Administration)

You have to make people work on real things. In my experience, juniors learn more effectively, faster and more satisfactorily when they are allowed to get their hands on projects (CIS Teacher)

EVALUATION QUESTION:
The analyzed practice proposes meaningful and connected to reality activities.

3.3. INTERACTION - NETWORKED COMMUNITY

Each one of the parties involved in the VET system (Students, Educators, Companies representatives, Local authorities for the Labour and Education sectors, etc) must participate, to a greater or lesser degree, in all parts of the VET process (design, deliver, certificate, assess, etc) so that all of them can achieve their objectives in the best possible way.

When the students start their practices in a company, the previous learning is activated in a specific workplace. Good practice should be able to adapt the general aspects of the educational process to a particular context.

> What I also see is the wish to, when you approach something in the company, in the sense of work-based competence development, you would like to link it to the study process or the curricula. It is not so easy, also because practice and theory phases are different between study programmes, but this is something I perceive from the conceptional position (DHBW Entrepreneur).

> Should the training be based on the needs of the company, the employer, or the needs of students?... I must create a balanced combination of the interests of the students and the interests of the company or the economy (HP Entrepreneur).

Without forgetting that VET practices are part of the students' educational process:

> It is important to be aware of the role of the school as an educational institution. We must promote education, the development of our students as responsible citizens, and look after all the aspects of any personal development in society. (UOC Teacher)

So, each network needs to find its own balance to transform possible tensions between interests or points of view into new inputs to enrich all the participants with the proposed practice and its performance.
The elements to be analysed by the network involved could be:

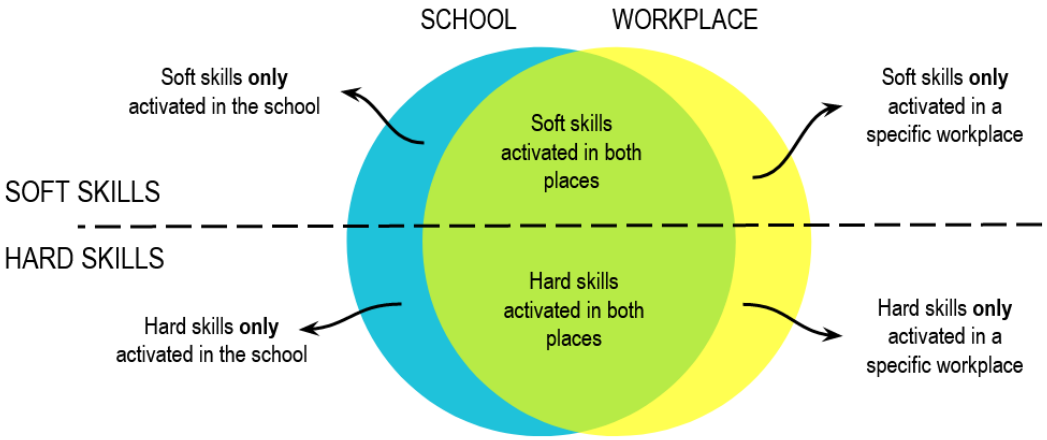
- SKILLS DETECTION AND INTEGRATION
- WORKPLACE DIGITALISATION STATE
- MENTORING AND COMMUNICATION

Each element is dealt with as follows.

3.3.1. SKILLS DETECTION AND INTEGRATION

If we focus on the skills, the figure below shows three differentiated areas:
The blue zone: those skills that are enhanced/addressed at a VET institution but that are not activated in a specific workplace.
The yellow zone: are those skills that are enhanced/addressed at a VET institution but that are not activated in a specific workplace.
The green zone: are those skills that are worked on in both sites.

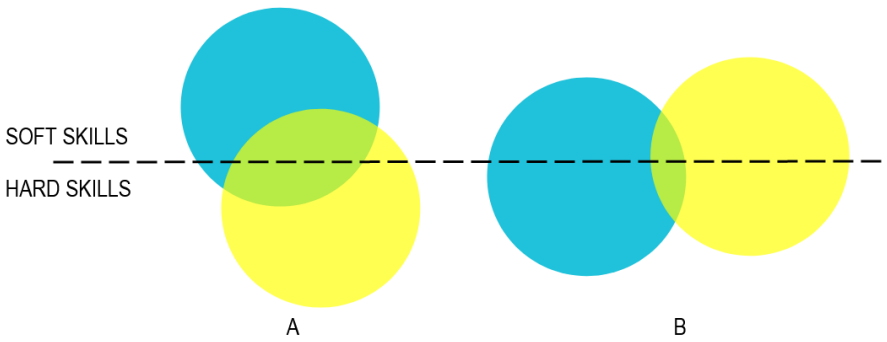
The network coordination of those involved must allow the detection of the three different areas.



The next figure shows two examples that we can find in a practice:

Figure A shows a situation where many soft skills have been worked in a school, but few of the hard skills needed in the workplace.
Figure B shows a school and a practice where both types of skills are worked in a balanced way, but they are very different in both places.

A and B show two situations where it is necessary to coordinate efforts to allow a better integration of the training needs in practice.



EVALUATION QUESTION:

The analysed practice allows the detection of soft and hard skills involved in a workplace and promotes the best integration of them through the network coordination.

3.3.2. WORKPLACE DIGITALISATION STATE

Another important aspect in which we can apply the same analysis shown by the previous figures is the state of digitalization of a company or a VET institution.

Stakeholders have revealed how in many companies manual work or personal interaction is essential, which could keep them away from a model based on digitalization:

> On the other hand, I am very sceptical that the practical part of the company can hardly be communicated digitally, at least in the trades. The practical skills, which I must learn in the company, that is not digital (HP Entrepreneur).

> In the building trades this is terribly difficult to do in trades where they sit behind a desk it is much easier because think of a painter or a carpenter when they are up on the roof or up on the scaffolding then they can't even go up in glasses and then I could go on and on about these things unfortunately, unfortunately not everywhere (IPOSZ Entrepreneur).

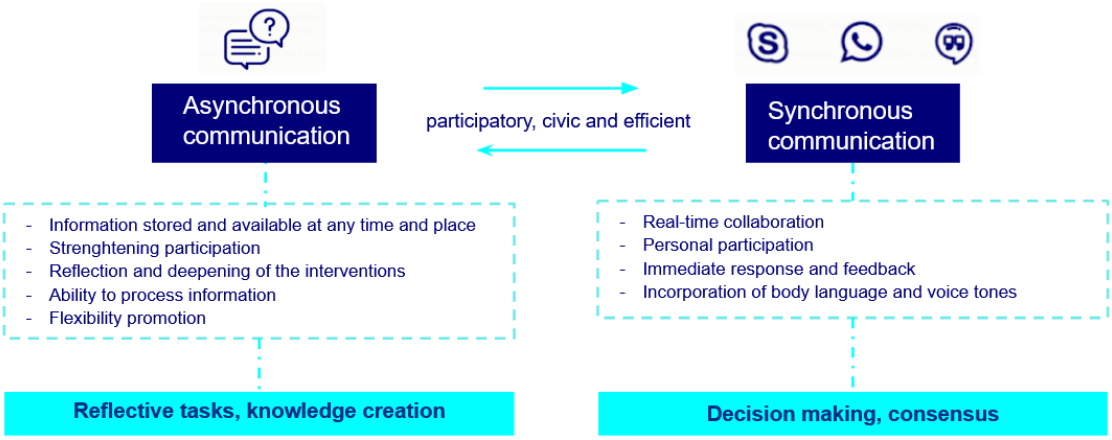
EVALUATION QUESTION:
The digital aspects of the analysed practice are well developed in the workplace.

3.3.3. MENTORING AND COMMUNICATION

Successful interaction between the parties involved requires communication planning for each stage of the process: moments, topics, and tools of communication are some of the most important elements of the communication plan.

> - Very important is the interaction in the design phase and the digitized interaction in the evaluation phase.
> - What is important is to govern the interaction of communication. If you don't create interaction or community, you should not assume that it won't create itself... Communication supports the engagement of the pupils and their psychological security. (CIS Teachers)

Both types of communication, synchronous and asynchronous, should be integrated in the communication plan. The following image shows the principal characteristics of each of them:



A good DIGITAL WBL practice should define moments, participants, topics, and type of communication during the practice development. For example, it is very useful to have a synchronous meeting at the beginning of the practice to clarify any question and to generate a positive work environment.

> All people involved must ensure that all they understand the concept and the importance of relationships. Training and awareness workshops can facilitate this. An important factor in all this is that while the internal training workshops will educate people within an organisation, a fully integrated approach would require cross-organisational workshops (PANKO Entrepreneur).

The figure of a mentor is also an important element to ensure the good coordination and collaboration between all the people and institutions involved. A mentor guides the student when necessary and is the cornerstone of the collaborative development of a good practice.

> The knowledge that the trainee comes with may not be the same as the knowledge that is likely to be needed to solve a particular programme. But that's what a mentor is for. And we have mentors and at some point, not one mentor but two (IPOSZ Administration).

EVALUATION QUESTION:

The analyzed practice includes a communication plan and a mentor, both of them focused on the collaborative development of the practice.

3.4. CONTENT AND RESOURCES

Digital learning resources are digital tools, resources and materials used for learning. This includes digital content, software tools and internet services that allow the production, usage, and distribution of content, and implementation resources (e.g. copyright licenses).

In addition to the resources that each institution can create, we have at our disposal an infinite number of Open Education Resources (OER): "are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others" (UNESCO).

Examples: CDs and DVDs, educational programs and videogames, internet audio and videos, simulations and animations, blogs, web pages wikis, WebQuests and treasure hunts, video conferencing, chat, forums, online courses, collaborative platforms, etc.

The quantity and diversity of resources for learning is nowadays incomprehensible. Likewise, companies use tools that can be of general use, but also very specific to their task. DIGITAL WBL stakeholders mentioned several resources as relevant, which we can group into:

USUAL DEVICES: "Like laptops, DVDs, interactive whiteboards or digital video cameras and PHYSICAL ELEMENTS: 3D printers, avatars, joysticks, oculus…" (PANKO Teacher)

COMMUNICATION/COOPERATIVE TOOLS: "Working in a project, … I remember one statement especially well, which is that the students, concerning digital tools for communication, working together, learning, work with their own infrastructure, through easily usable tools" (DHBW Teacher).

The use of DIGITAL PLATFORMS (E-PORTFOLIO) is mentioned as a good solution to bring together and manage the teaching-learning process among all the people involved.

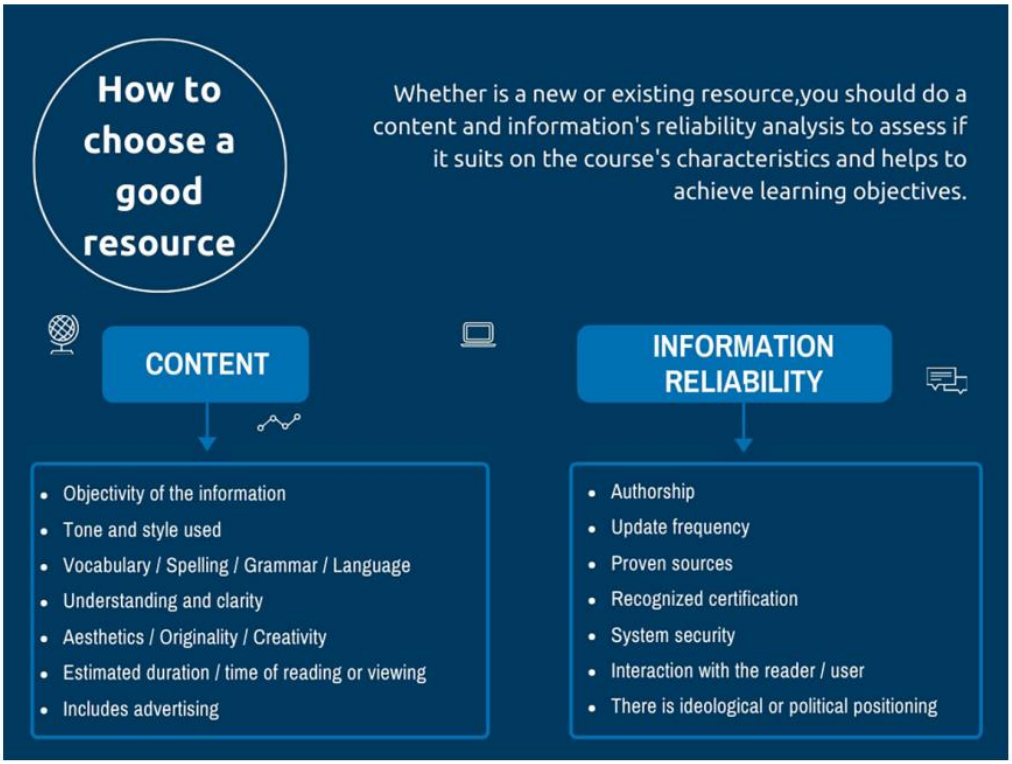
SIMULATORS: "The digital environment offers the great advantage of being able to make mistakes, it consumes pixels and not physical materials…The concept of interaction, immersiveness and thus creating the conditions for the user in a virtual training to have similar experiences to those in a real environment is a big challenge" (CIS Teacher).
Simulators can be used for technical knowledge as Electronic/Electric Network Simulator, but also for other disciplines, such as simulation of conflicts. social or economic processes.

VIRTUAL AND AUGMENTED REALITY: "augmented and virtual reality have great potential to help students visualize abstract scientific concepts" (PANKO Teacher).

VIDEOGAMES: "Game-based learning, the use of videogames is a major new trend. Digital gaming, however, can be costly, involving significant investment in design and may struggle to engage learners used to the immersive, highly realistic, and sophisticated world of commercial videogames (PANKO Entrepreneur).

Due to the amount and variety of options, it is therefore essential to **establish criteria to select the most appropriate content and resources in each case.**

Following Guitert and Romeu (2020), "during the conceptualization of a course it is necessary to **define what learning resources will be used and how they will be presented in the classroom**. It is also necessary to **assess whether they are new resources or are already on the network**. When it comes to choosing, it is necessary to *be selective and effective it is necessary to show only those resources that are adapted to the contents of the course and provide quality, accessible and intelligible content, considering the level and context of the students*.



How to choose a good resource: parameters to analyse. From Guitert and Romeu (2020).

From the stakeholder's participation in the DIGITAL WBL, raised some key elements to consider when creating or selecting Content and Resources, such as:

- VARIETY OF TOOLS AND FORMATS
- LEARNING OBJECTIVES AND CONTEXT
- AVAILABILITY AND REPLICABILITY

Some guidance on each point is shared below.

3.4.1. VARIETY OF TOOLS AND FORMATS

The use of a variety of tools and formats helps the global acquisition of digital skills at the time makes the learning process more attractive.

> In one subject the teacher was very creative, and she gave us different tasks during the semester which developed our digital skills, so there were gamification and playful exercises. (IPOSZS3)

But it's also necessary to avoid the excess of tools, searching an equilibrate use of them:

> "It is important not to overload the classroom -and therefore the study of the participants- with tools that simply adorn the course content and do not add any value and that, instead of facilitating study, hinder the learning process of the students" (Guitert and Romeu, 2020).

EVALUATION QUESTION:
The analysed practice proposes the use of varied tools and resources in a balanced way to the dedication they entail.

3.4.2. LEARNING OBJECTIVES AND CONTEXT

It is also important to keep the attention into the learning objectives and context in which it will be applied and its integration into the virtual learning environment, thinking also in the applicability of the resources in the internships.

> "The quality of a learning resource depends on context, such as time, place, and human relationships. This means that quality is not only dependent on the properties of the learning resource. Quality in this context is also closely connected with how the resource is used, when it is used in the individual learning situation and in relation to whom" (Senter for IKT i utdanningen, 2018).

> I think teachers should choose teaching material format according to the learning objectives and outcomes, target group and content. (PANKOT1)

EVALUATION QUESTION:
The proposed resources are accessible, replicable to different contexts, and the learning investment in them is cost effective.

3.4.3. AVAILABILITY AND REPLICABILITY

There are many characteristics that common sense tells us a good resource should have, such as: ease of use, intuitiveness, free to use, cost-effective, etc.

Let's see more examples of this general characteristics from the research and stakeholders contributions:

> "Technological reusability: Interoperability (i.e. metadata accuracy; compliance with the main import/export standards) … Cultural and learning diversity (i.e. adaptability, flexibility, possibility to modify, … design of controls and presentation formats to accommodate disabled and mobile learners)" (Kurilovas, E., Serikoviene, S. and Vuorikari, R., 2014).

Open digital resources for VET are very useful. Teachers and trainers can use, adapt and share these resources. Open digital resources increase access to learning materials, promotes and enables personalized learning. Unfortunately, there are not many resources for VET. (PANKOT3)

EVALUATION QUESTION:

The proposed resources fit with the learning objectives and are suitable with the teaching-learning context.

3.5. ASSESSMENT

The extensive and detailed work of Rüschoff (2022) "Methods of competence assessment in vocational education and training (VET) in Germany" offers an overview of the methods and instruments currently developed in vocational education and training in Germany. In its overall conclusion, the referred work states that

> "The acquisition of vocational competence as the primary goal of vocational education and training has been increasingly emphasized in recent years, both in policy and research. However, this competence orientation implies the availability of valid procedures to assess whether trainees have obtained the competencies targeted in their training",

The complexity and relevance of the assessment requires to consider at least the following crucial elements in the evaluation process:

- COMPETENCE-BASED ASSESSMENT
- FORMATIVE ASSESSMENT
- PLANIFICATION AND TRANSPARENCY

3.5.1. COMPETENCE-BASED ASSESSMENT

Stakeholders highlight the tension they find when evaluating both the results of theoretical or disciplinary learning and those related to the learning of soft skills.
As mentioned in section 4.2.1, it's important to have in mind that practices should be designed based on competencies, and the assessment is part of this process.
If we are aware of this pedagogical point of view, then tension disappears.

> "For competence-based learning to succeed, it is necessary to use different kinds of assessments in which learners are not tested solely on their remembering of knowledge, but more on their ability to interpret, analyze and evaluate problems and explain their arguments" (Sluijsmans, Straetmans and van Merriënboer 2008).

The assessment should be designed to evaluate theoretical learning outcomes and also its practice performance, individually and in teamwork.

There are many ways to assess theoretical knowledge that can be easily adapted to online teaching and learning, and applied by digital technologies, such as multiple-choice tests or writing exams.

Rubrics are good instruments to evaluate soft skills and can be managed online and allow asynchronous communication as well. Formative assessment with reflective feedback can help to achieve an evaluation process based on competence.

EVALUATION QUESTION:
The analyzed practice integrates assessment as part of competence based learning.

3.5.2. FORMATIVE ASSESSMENT: 360° FEEDBACK

E-assessment (see for example Guerrero-Roldán and Noguera, 2018) with these or similar instruments are designed to generate a mark, which are usually a mandatory assessment condition in VET.

But also, for the educational process we need to generate space and time for formative assessment, feedback and continuous improvement involving all the participants.

> "While many educators are highly focused on state tests, it is important to consider that over the course of a year, teachers can build in many opportunities to assess how students are learning and then use this information to make beneficial changes in instruction. This diagnostic use of assessment to provide feedback to teachers and students over the course of instruction is called formative assessment" (Boston, 2002).

There are different strategies for providing feedback to students or between them. Continuous feedback is a key element to ensure the formative assessment. You can find more information about formative assessment and feedback in, for example:

The concept of formative assessment
Boston, Carol (2019) "The Concept of Formative Assessment," Practical Assessment, Research, and Evaluation: Vol. 8, Article 9.
DOI: https://doi.org/10.7275/kmcq-dj31
Available at: https://scholarworks.umass.edu/pare/vol8/iss1/9

Strategies for Providing Feedback in Online Courses
University of Illinois
Available at : https://www.uis.edu/ion/resources/tutorials/pedagogy/feedback-strategies

We can find most of the feedback characteristics in the participant argument as well:

> How students analyse, discuss and act on feedback is as important as the quality of the feedback itself. Through the interaction students have with feedback, they come to understand how to develop their learning. This definition marks an important shift in thinking about feedback not in terms more of a process, a conversation, a dialogue between staff (entrepreneurs also) and students. This means that feedback does not necessarily have to come from the teacher but can be generated by their peers and

by themselves through self-assessment which guides students to become independent and self-reflective learners, and better critics of their own work, stimulate reflection, interaction, and dialogue about learning improvement. Furthermore, feedback must be given to VET centers to follow up the content of the course, ensure the mentor (entrepreneur) is competent to formulate adequate tasks for the development of student's both professional and personal competences. (PANKO Teacher)

EVALUATION QUESTION:

The analyzed practice includes 360º feedback as an element of formative assessment.

3.5.3. PLANIFICATION AND TRANSPARENCY

> "In any educational modality, the conceptualization, design and planning of the course are of paramount importance. In an asynchronous virtual environment these elements demand more attention at this preliminary point of the teaching action, considering the impact they have on the learning objectives, the tasks to be carried out, the contents to be developed, the learning resources to be consulted, and the interaction and evaluation criteria" (Guitert and Romeu, 2020).

Closely linked to the Competence-based assessment and Formative assessment, it is also important that assessment strategies, conditions, moments, participants, criteria, and instruments are clear from the start. The transparency of the assessment plan and its requirements adds substantial aspects to the educational process such as mutual confidence, awareness development, motivation, or implication.

EVALUATION QUESTION:

Assessment elements are planned and known by all the people involved in the training process.

4. VET PRACTICE EVALUATION TOOL

Gathering good practices, stakeholders' experiences, and literature insights a VET Practice Evaluation Tool (VPET) has been designed to identify areas of development of good DIGITAL WBL practice.

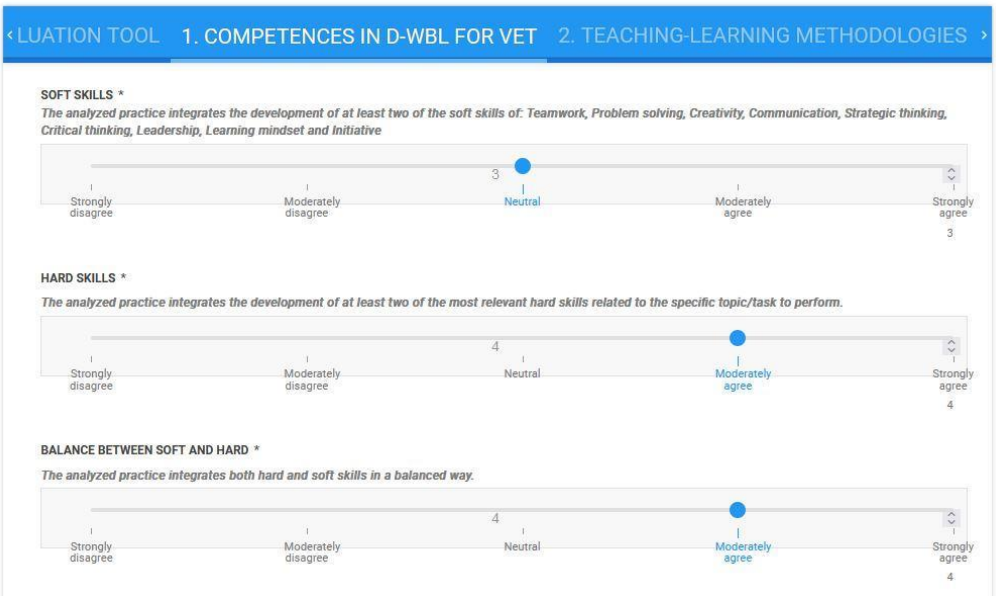
The VPET will help VET Educators to reflect on a VET practice that they are developing or implementing. It should help to identify where efforts might be focused to improve the strength and quality of practices.

To evaluate a practice, **VPET selects five dimensions and a set of components for each dimension**. For each one of these components, VPET proposes a sentence to evaluate its most relevant aspects in scale from 1 (strongly disagree) to 5 (strongly agree).

Once the evaluation is done, VPET shows the results graphically, providing a quick picture of the evaluated practice.

This will support you to identify what is working well and the challenges within each element.

You can share these results with the rest of the network involved in the practice performance, which can help you to find collaborative ways to improve it.



VET PRACTICE EVALUATION TOOL COMPONENTS

DIMENSION	ELEMENT	EVALUATION QUESTION
COMPETENCES IN DIGITAL WBL FOR VET	SOFT SKILLS	The analysed practice integrates the development of at least two of the soft skills of: Teamwork, Problem solving, Creativity, Communication, Strategic thinking, Critical thinking, Leadership, Learning mindset and Initiative
	HARD SKILLS	The analysed practice integrates the development of at least two of the most relevant hard skills related to the specific topic/task to perform.
	BALANCE BETWEEN SOFT AND HARD	The analysed practice integrates both hard and soft skills in a balanced way.
	DIGITAL COMPETENCE	The analysed practice integrates at least two sub competences from Digital Competence included in the European framework DigCompEdu.
	USEFUL SKILLS FOR ALL INVOLVED	The analysed practice integrates specific workplace, employability and education focused skills.
TEACHING-LEARNING METHODOLOGIES	COLLABORATIVE / TEAMWORK	The analysed practice integrates individual and collaborative work.
	BASED ON ACTIVE METHODOLOGIES	The analysed practice is based on active methodologies.
	MEANINGFUL CONNECTED TO REALITY ACTIVITIES	The analysed practice proposes meaningful and connected to reality activities.
INTERACTION-NETWORKED COMMUNITY	SKILLS DETECTION AND INTEGRATION	The analysed practice allows the detection of soft and hard skills involved in a workplace and promotes the best integration of them through the network coordination.
	WORKPLACE DIGITALIZACION STATE	The digital aspects of the analysed practice are well developed in the workplace.
	MENTORING AND COMMUNICATION	The analysed practice includes a communication plan and a mentor, both focused on the collaborative development of the practice.
CONTENT AND RESOURCES	VARIETY OF TOOLS AND FORMATS	The analysed practice proposes the use of varied tools and resources in a balanced way to the dedication they entail.
	LEARNING OBJECTIVES AND CONTEXT	The proposed resources fit with the learning objectives and are suitable with the teaching-learning context.
	AVAILABILITY AND REPLICABILITY	The proposed resources are accessible, replicable to different contexts, and the learning investment in them is cost effective.
ASSESSMENT	COMPETENCES BASED ASSESSMENT	The analysed practice integrates assessment as part of competence-based learning.
	FORMATIVE ASSESSMENT: 360º FEEDBACK	The analysed practice includes 360º feedback as an element of formative assessment.
	PLANIFICATION AND TRANSPARENCY	Assessment elements are planned and known by all the people involved in the training process.

5. GOOD PRACTICES EXAMPLES AND VPET APPLICATION

Project partners shared some examples of good practices in DWBL and the reasons why they choose them (selection criteria). They also evaluated these proposals using the VET PRACTICE EVALUATION TOOL, providing a set complete example of international experiences.

In section 5.1 some examples of good practices with their evaluation using the VPET are presented, while section 5.2 presents the whole set of gathered good practices.

5.1. DIGITAL WBL GOOD PRACTICES ASSESSED THROUGH THE VPET

1. FLIGBY.COM – THE LEADERSHIP GAME

Country	Hungary	Language	English
Title (EN)	FLIGBY.COM – THE LEADERSHIP GAME		
Type of BP	Simulator		
Format of BP	Hybrid		
Reference (URL)	www.fligby.com https://www.youtube.com/@Fligby		

Summary:

Fligby is a soft-skills leader simulator with video game like learning experience in interactive movie format.

FLIGBY has won the Gold Medal of the „International Serious Play Awards" in the category of Corporate Games. A global panel of experts selected FLIGBY as the best digital game for managers of the year 2012.

An example of a more technically and content-wise complex form of serious games is FLIGBY, which uses Professor Mihály Csíkszentmihályi's flow theory to test and measure basic leadership skills in a family winery management simulation.

Selection Criteria

In practical life, the analysis of complex systems (such as a business organisation or a management dilemma) is a complex task. Simulations support this by providing the possibility to model the system in a flexible way. In other words, simulation is an analytical tool that allows controlled experiments to be carried out. They are used to build a simplified model of reality that allows the events and processes describing the original system to be investigated.

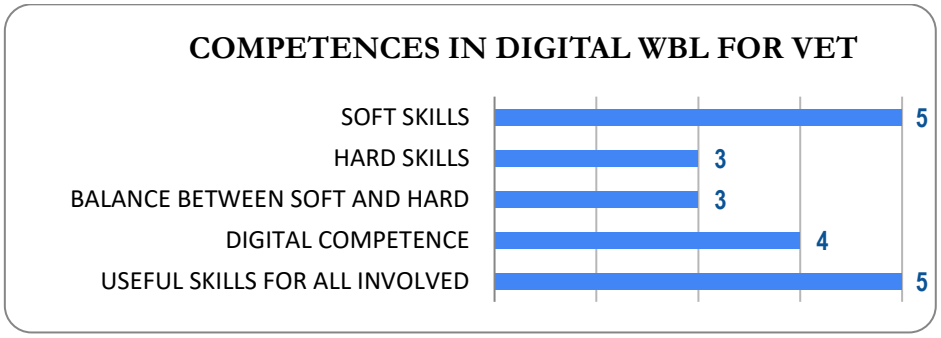
The premium solutions in the simulation business are special interactive films that can create complex behavioural profiles based on the user's choices. The resulting "big data", by combining psychology and data analytics, can go beyond profiling to predict the organisational and environmental impact of a behaviour pattern.

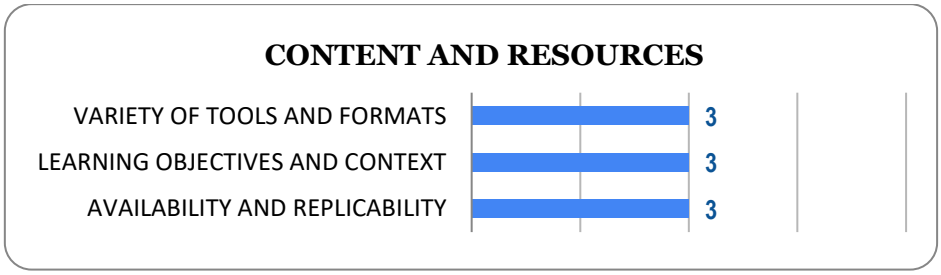
Involved Institutions/ Interaction cooperation of relevant stakeholders

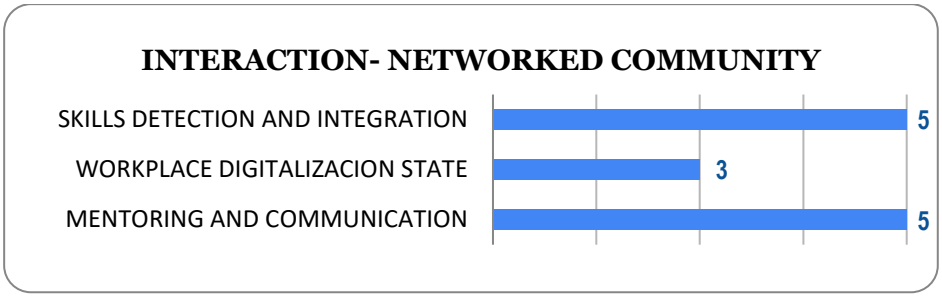
Mihaly Csikszentmihalyi, University of Chicago

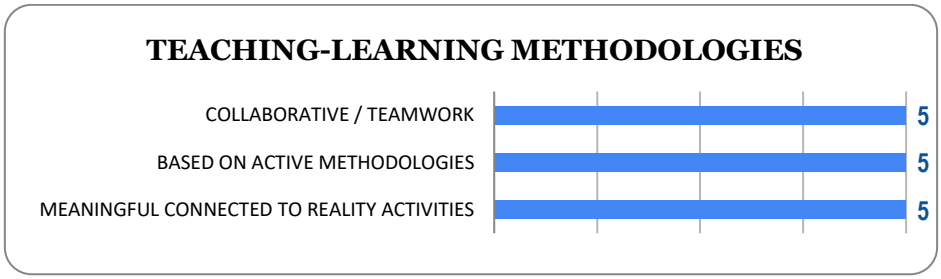
ALEAS Simulations

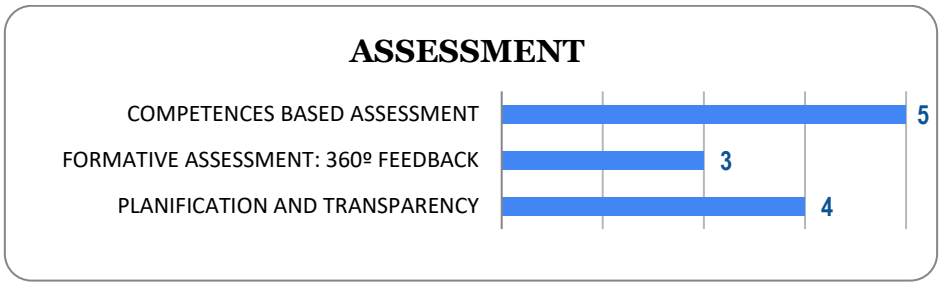
FLIGBY.COM – VPET SCORE











2. STUCOM CYBERSECURITY COURSE

Country	Spain	Language/s	Catalan, Spanish, English
Title (EN)	Cybersecurity		
Type of BP	Course		
Format of BP	Hybrid		
Reference (URL)	https://www.youtube.com/watch?v=YmRDV0JR4qg https://tryhackme.com/		

Summary:

Learning technics in cybersecurity is something that students can't do just listening to a teacher in a classroom or reading articles in a web. They must practice it in real cases, they must try to hack machines and study how to defend from these attacks. And this is a world that changes very fast, it's hard to be up to date.

So, in our cybersecurity course we work with hacking platforms (Hackthebox, Tryhackme), websites where you can use virtual machines prepared to try different hacking technics, as much for attack (red team) as for defense (blue team). We inscribe our students in this platform and the teacher chooses the challenges to beat according to the issues he wants to work. The machines and challenges are often renewed, so they can practice current technics, and are directly applicable to real cases.

This methodology, in addition, is very attractive for the students. They find it a very stimulating way to learn.

It is interesting to comment that many cybersecurity companies look at the scores in this platform to assess candidates for a job.

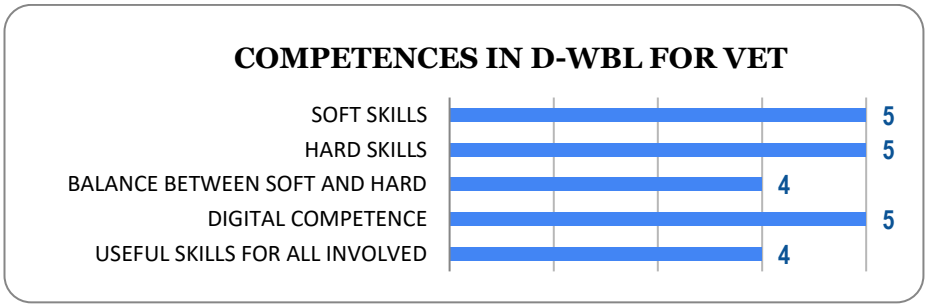
Selection Criteria (why do you select it as a BP?)

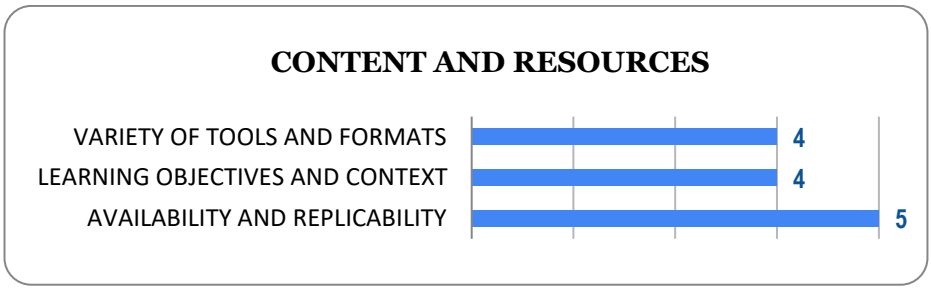
This practice connects students directly to the kind of real problems they'll have to deal with in their jobs. In addition to cybersecurity, doing this practice they learn many other digital skills, like how to work with virtual servers or to develop web services.
They learn in a challenge beating system. That enhances motivation and curiosity, and when they manage to beat a challenge, they feel good with the work they've done.
Most of the challenges require creativity, methodical analysis, and critical thinking. Sometimes they do it by groups, so they also develop skills for group work.
They can add their profile in these platforms to their curriculum vitae. Most cybersecurity companies know very well these platforms and it helps students to be higher rated in an interview.

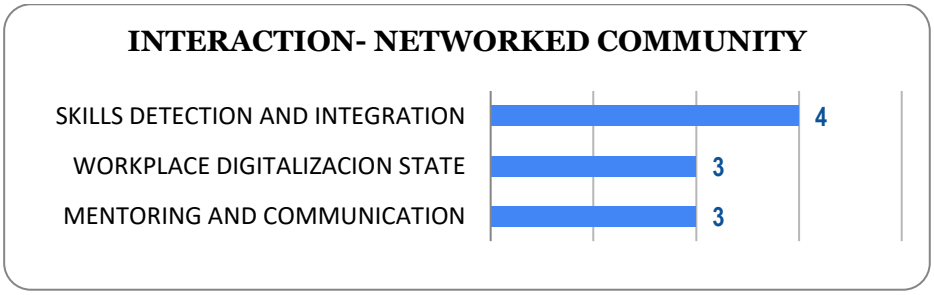
Involved Institutions/ Interaction cooperation of relevant stakeholders

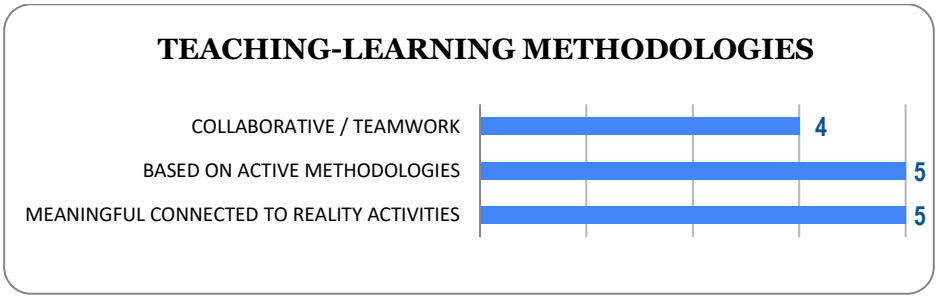
UOC University of Oberta

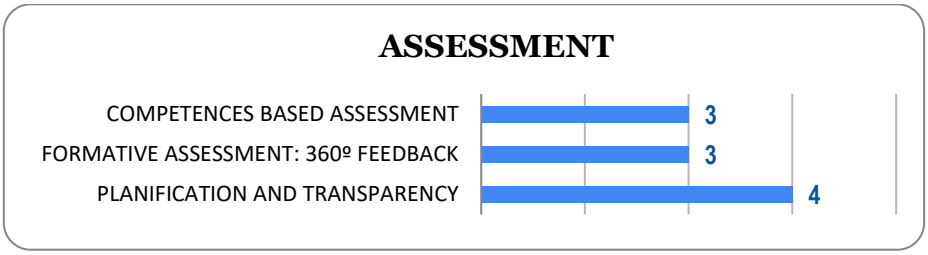
STUCOM CYBERSECURITY - VPET SCORE











3. DIGITALIZATION OF PRACTICAL SKILLS GAINING: CASE OF LOGISTIC MANAGERS TRAINING

Country	Lithuania	Language/s	LT
Title (EN)	Logistic Managers Training		
Type of BP	Tool and concept		
Format of BP	online		
Reference (URL)	https://www.4logist.com/en/		

Summary:

Digitalization of Logistics Manager 's workplace - implementation of information systems for electronic business process management. Development/adaptation of a digital instrument (CRM 4logist) in simulation of Logistics manager 's work/responsibilities in teaching the students of Panevėžys University of Applied Sciences.

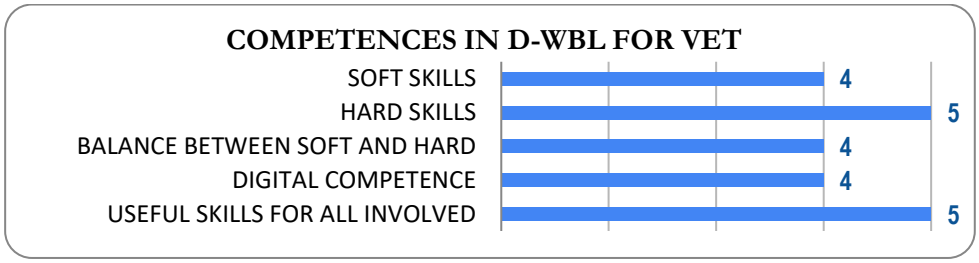
Selection Criteria

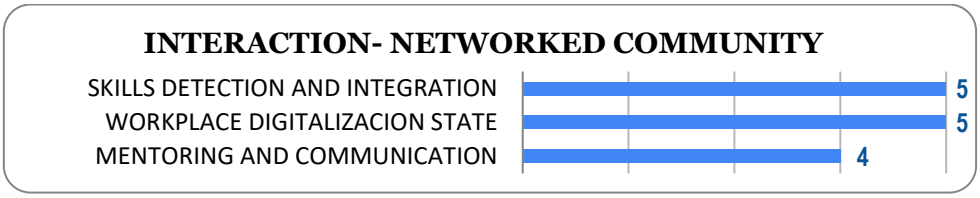
1. Level completed relevancy and quality.
2. Previous Experience in the field.
3. Technology relevancy and quality of information technology training experience
4. Recalls/recommendations of businesses, implemented the technique.

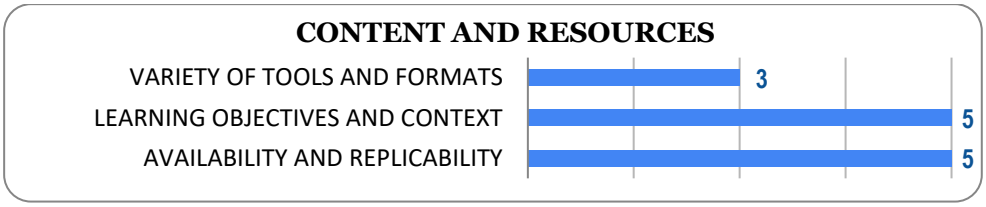
Involved Institutions/ Interaction cooperation of relevant stakeholders

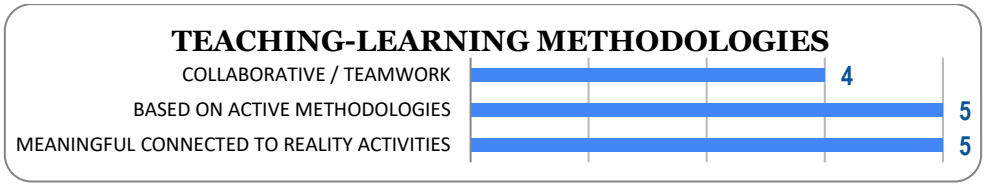
Association of Transport Innovations
Panevėžys University of Applied Sciences

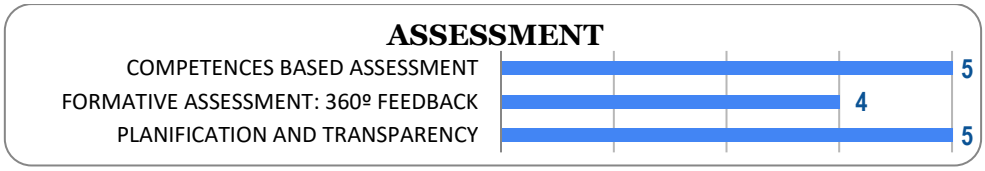
LOGISTIC MANAGERS TRAINING VPET SCORE











4. DIRK DUAL - DIGITALES REFLEXIONSTOOL ZUR KOMPETENZENTWICKLUNG IM DUALEN STUDIUM

Country	Germany	Language/s	German
Title (EN)	DIRK Dual - digital reflection tool for competence development in dual study programmes		
Type of BP	tool and concept		
Format of BP	hybrid		
Reference (URL)	https://www.dhbw.de/projekte/dirk-dual		

Summary:

To strengthen the interlocking of theory-practice learning experiences in the dual study programme, a study-accompanying digital tool is being developed to effectively support the action competences in the practice phase of the dual study programme. Beyond professional competences, the tool focuses on the development of important future skills throughout the entire student lifecycle and expands the existing strongly activity-oriented practical reports. In addition to the ePortfolio tool, a mentoring/coaching concept is being developed to accompany and support students in their competence development. In this way, experiences within the practical phases are not only documented, but also made useful in relation to their own professional competences as well as individual personality development. Systematic reflection and self-assessment regarding certain future skills will enable improved competence development in the dual study programme. The long-term goal of the project is thus the interactive interlocking of the actors in the knowledge triangle of university, students, and dual partners (see graphic) through the possibilities of digitalisation. In addition, the science-practice cooperation will be deepened even further, while the learning processes in the practical phases will be researched and their quality sustainably improved.

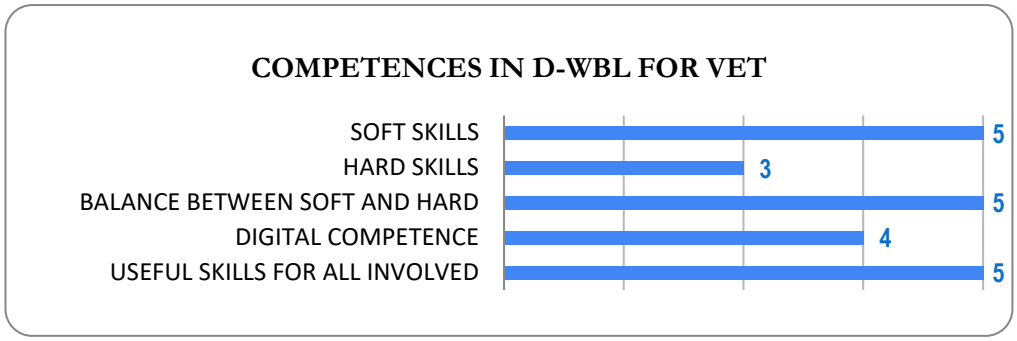
Selection Criteria (why do you select it as a BP?)

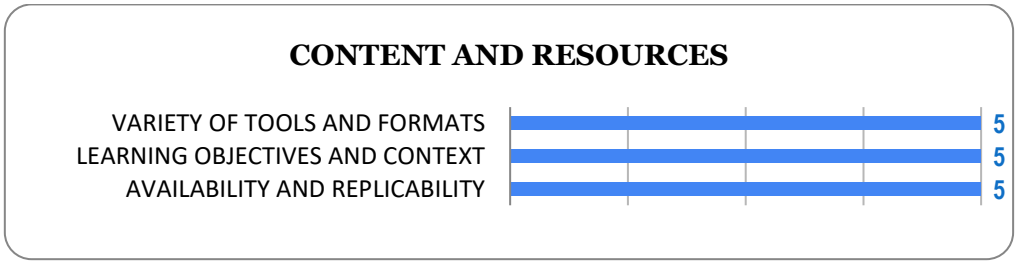
- aimed at enhancing the learning experience with a digital tool
- digital tool deepens, accompanies, and enhances the learning experience rather than to replace it
- integrated hybrid concept accompanying the whole study phase with the aim of going beyond
- tool and accompanying concept

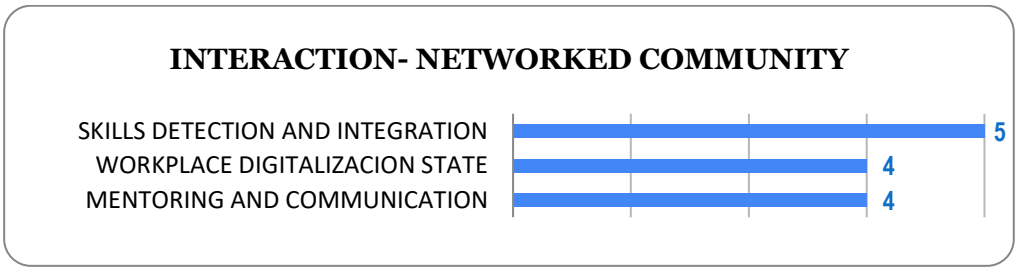
Involved Institutions/ Interaction cooperation of relevant stakeholders

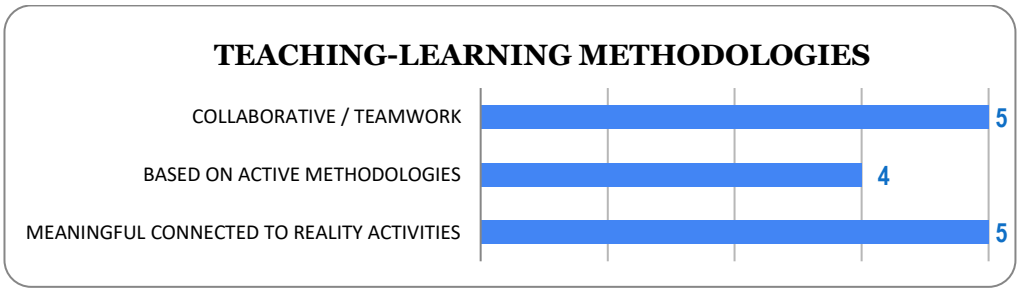
DHBW (2 locations), 7 project partners - dual partners, chambers of commerce

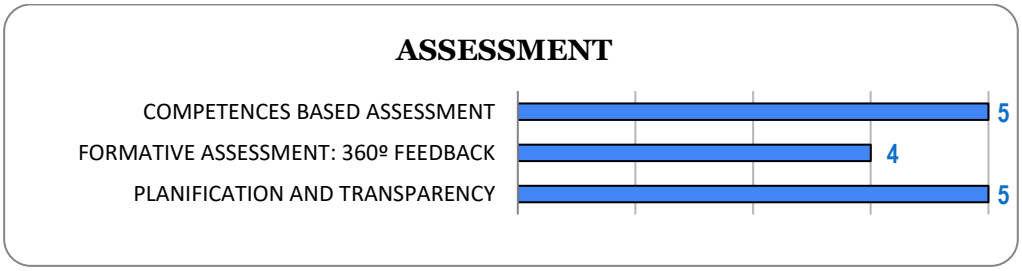
4. DIRK DUAL – VPET SCORE











5. VIRTUAL WELDING: DIGITAL WELDING AT THE ELBCAMPUS IN HAMBURG

Country	DE	Language/s	
Title (EN)	Digital Welding at the Elbcampus in Hamburg TEACHING PLATFORM		
Type of BP	Course		
Format of BP	In presence		
Reference (URL)	https://www.youtube.com/watch?v=YbUYMKXweUY https://www.slv-nord.de/aus-und-weiterbildung/praktische-schweissausbildung/virtuelles-schweisstraining/		

Summary:

Virtual welding training is a state-of-the-art, particularly effective training method in welding technology. Virtual and real worlds are closely interwoven: The participant works with a welding torch, which is handled identically to a real torch, on a workpiece dummy. Meanwhile, the system simulates the arc and weld seam as well as the metallic properties of the workpiece - and you see all of this through your welding helmet as if it were real.

While the participants are welding, the DVS-certified learning software precisely analyses all data of your welding process. Via displays in the welding helmet (green for "correct" and red for "incorrect"), participants receive permanent and immediate feedback on what still needs to be improved.

Selection Criteria (why do you select it as a BP?)

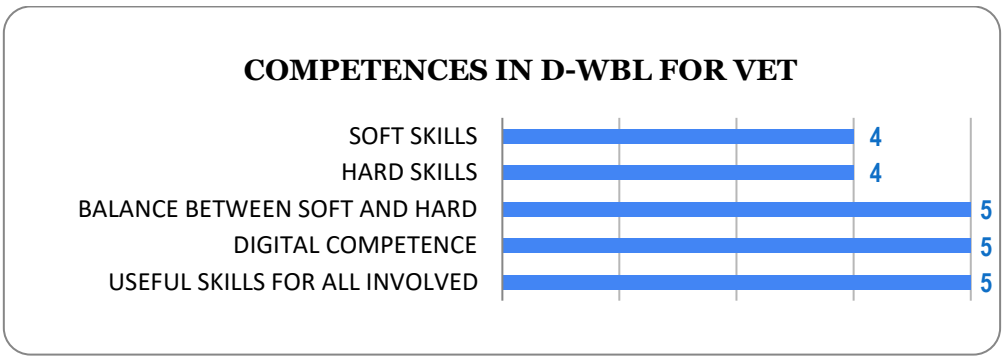
Virtual welding is a new WBL format in which participant can get a virtual experience of real welding processes. It is mainly used for first training experiences in the field of welding. Virtual welding has several advantages.

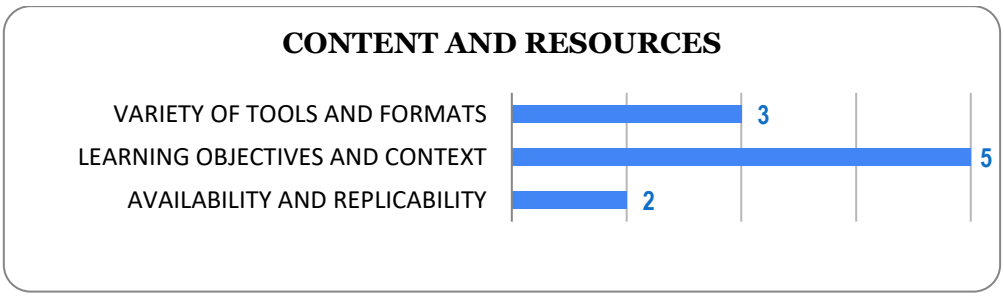
- No materials like aluminium or steel, but also no gases are necessary for this training experiences, hence is more environmentally friendly.
- Energy consumption is lower than with arc welding.
- The training process is much more safe, especially important for inexperienced trainees.
- Trainees get valuable first experiences, like the right-hand position. When they move to the “real” welding spaces later they learn much faster.

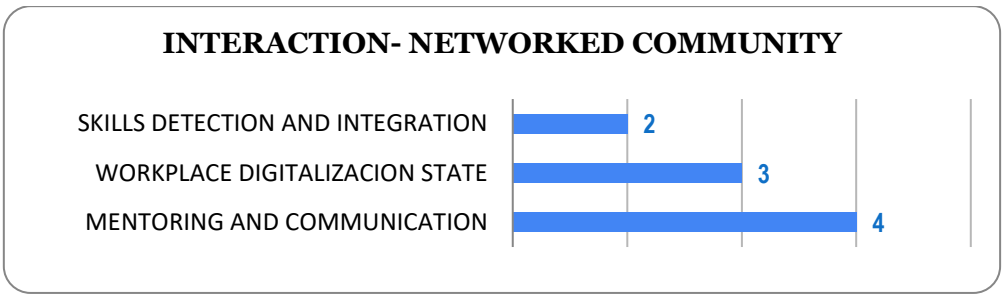
Involved Institutions/ Interaction cooperation of relevant stakeholders

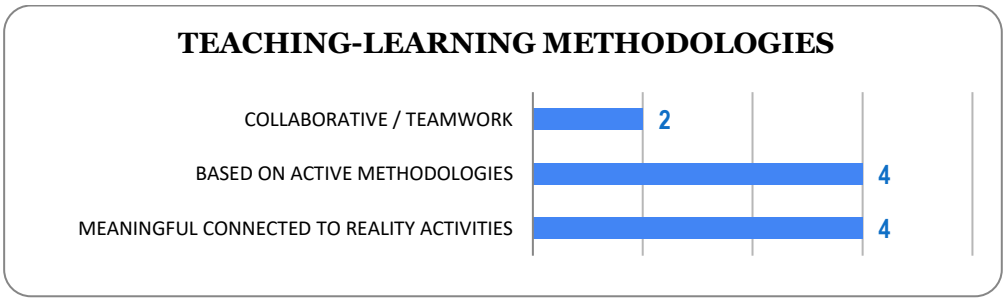
- Schweißtechnische Lehr- und Versuchsanstalt Nord gGmbH
- ELBCAMPUS Hamburg

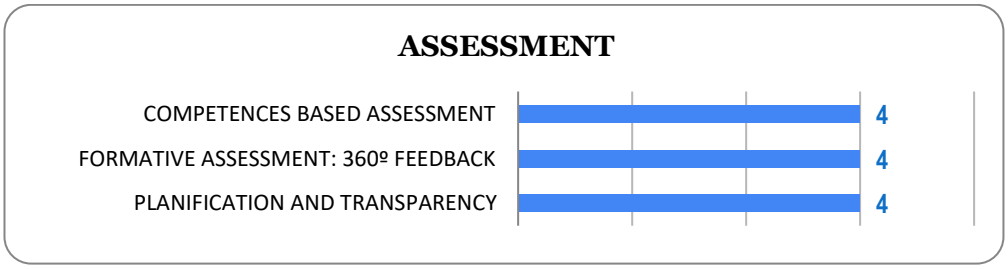
5. VIRTUAL WELDING VPET SCORE











6. LEARNING IN HIGH-RISK SITUATIONS TASKS IN A VIRTUAL ENVIRONMENT - FONDAZIONE ITS MECCATRONICO DEL LAZIO

Country	Italy	Language/s	Italian
Title (EN)	Learning high-risk situations tasks in a virtual environment		
Type of BP	Course		
Format of BP	hybrid		
Reference (URL)	https://itsmeccatronicolazio.it/		

Summary:

The ITS (Istituto Tecnico Superiore) in Mechatronics course in Italy (5 EQF) provides learning experiences that are strongly oriented towards the use of technologies used in the company. The costs of building and maintaining laboratory facilities, as well as the implications in terms of work safety, make it necessary to provide digital solutions to simulate practical learning.
At ITS Mechatronics Lazio, a partnership has been set up with COMAU to make some practical learning sustainable with digital machinery, developing a VR laboratory.
This is the case of digital welding. The welding machine integrates a welding gun with a dashboard measuring quality indicators. The student wears oculus and operates in a virtual welding laboratory.
The practical experience lasts just a few minutes, leaving plenty of time for the trainer to comment on the results achieved and redirect the performance to improve the results.
The result is a highly engaging learning experience, developing in the student the technical skills to perform different types of welding, increasing the peer review methodology and becoming an ideal moment for VET training.

Selection Criteria (why do you select it as a BP?)

Great efficiency: the automated weld quality control dashboard promotes the student's self-awareness in carrying out the action
Reduced operating costs: huge material savings, zero waste
Reducing laboratory maintenance costs for the school, but activating collaborations with specialised technology partners
Greater consistency with the technologies used in the company, meaning lowering of the skills gap between school and work.
Long-term advantages in terms of flexibility, scalability and affordability of investment in EdTEch

Involved Institutions/ Interaction cooperation of relevant stakeholders

ITS MECCATRONICO LAZIO (VET Provider)
COMAU (Technical Partner)

7. LE COMPETENZE "SOFT" PER LA VIGILANZA

Country	Italy	Language/s	Italian
Title (EN)	Soft skills for supervisor expert		
Type of BP	Seminar		
Format of BP	Hybrid		
Reference (URL)	https://www.youtube.com/watch?v=LbPTWkirJ_4		

Summary:

The CONSOB (Commissione Nazionale per le Società e la Borsa) is the public authority responsible for regulating the Italian financial markets. Coherently to one of its main missions, to investigate with respect to potential infringements of insider dealing and market manipulation law, CONSOB annually organises a training programme on soft skills for its employees.
In 2020, to cope with the limitation of face-to-face training during the pandemic period, CONSOB had to reinvent its training offer.
Generally, the training programs for soft skills foresee a high level of interaction among participants. They though on how to provide online training also for soft skills, how allow to people coming from different places to be fully involved in a training session.
The Metaverse environment represented a valid alternative.
The webinar in Metaverse environment participated by 10 employees and 1 coach. They have been organised into 2 teams: 5 Station Controllers and 5 Researchers, which is the only authorised to use a rover to move on Mars. Each participant used oculus, joystick, profiling an avatar. In the metaverse platform, audio and visibility experiences are realistic.
The training experience included: an introduction to Problem Solving concept, carried out by the coach in a virtual room in the Metaverse environment. Then a methodological tool has been presented (Canvas in the form of a Mobius Loop) to support decision making process and identify solutions.
The training experience is based on a role playing, figuring Station controllers and Researchers involved respectively in guiding/be guided to come back to the base after a sandstorm.
Main results are the high effectiveness of the learning experience, the participant satisfaction, the opportunity to control such a stimulating environment as the Metaverse is, to enhance learning-friendly environments.

Selection Criteria (why do you select it as a BP?)

- Combination of virtual technologies for education and soft skills development increasing the efficiency and effectiveness of learning
- Use of physical elements facilitate the immersive digital experience (avatars, joysticks, oculus, etc.)
- Accuracy of training design with respect to training goals (use of the Martian extraneous environment emphasised the training goal, i.e. to activate collaborations between participants to solve problems)
- Blended ways of referencing ("metaverse" with coach in video as support)

Involved Institutions/ Interaction cooperation of relevant stakeholders

Commissioner:
CONSOB - The COmmissione Nazionale per le SOcietà e la Borsa is the public authority responsible for regulating the Italian financial markets.
Developer:
Technical partner: Network in VR (start-up) https://www.g3clabs.com/?avia_forced_reroute=1
Researcher in Social Innovation and Soft Skills' Training consultant: Prof. Patrizia Cinti

8. LEARN VIRTUAL EUROPA LTD.

Country	Hungary	Language	
Title (EN)	Learn Virtual Europa Ltd		
Type of BP	Training online		
Format of BP	hybrid		
Reference (URL)	https://learnvirtual.eu/		

Brief summary:

On their website you can see simulators for different professions. The detailed description of these simulators are also available in English, German, etc. In cooperation with the Learn Virtual Europa Ltd. we have already tested two of these simulators in vocational training institutions, one for the painter profession: https://learnvirtual.eu/en/44-simspray-the-painting-simulator and the other is for the metal industry, the welding simulator: https://learnvirtual.eu/en/49-wave-ng-lite-the-welding-simulator .

Selection Criteria

Since there are not enough training places for small businesses, practical training needs to be modernised through digitisation.

Based on our experience so far, the use of simulators in different professions is a good practice. There are already specialised companies in Hungary for the operation and teaching of the use of simulators.

These simulators are already used in many vocational training institutions in Hungary, there are well-educated teachers who know exactly how many hundreds of training hours are necessary, how long it takes to acquire professional skills in vocational education and in adult education.

Involved Institutions/ Interaction cooperation of relevant stakeholders

IPOSZ - Hungary

9. CORNELSEN ECADEMY

Country	Germany	Language/s	German
Title (EN)	Digital learning for in-company training		
Type of BP	digital learning platform		
Format of BP	online		
Reference (URL)	https://www.ecademy-learning.com/		

Summary:

Cornelsen eCademy provides digital learning content for companies of all sizes, education providers and public institutions such as vocational schools. We cover the major industrial-technical professions and prepare your trainees for the future.
Combine face-to-face teaching and digital learning in a sensible way! Use eCademy to prepare your trainees, in the classroom itself or for follow-up.
Use the training app to compile content in learning lists, provide individual support for trainees, track learning progress, identify gaps in knowledge at an early stage and achieve better learning results: eCademy can do all that!
Cornelsen eCademy offers your trainees multimedia learning content in the form of interactive elements, realistic simulations, and videos to convey theoretical knowledge.
With extensive options for exam preparation, learning content and an exam simulation, you can prepare your trainees for the final exam in a targeted manner.

Selection Criteria (why do you select it as a BP?)

- blended learning approach
- Future orientation
- broad target groups
- encompassing all aspects of vocational training (digital simulations,exam preparation …)
- mobile training app for better integration of theory and practice

Involved Institutions/ Interaction cooperation of relevant stakeholders

Cornelsen eCademy & inside GmbH

10. PHOENIX CONTACT: DIGITALES PRAKTIKUM

Country	Germany	Language/s	German
Title (EN)	Digital Internship		
Type of BP	internship		
Format of BP	digital		
Reference (URL)	https://blog.phoenixcontact.com/hr-de/digitales-praktikum-wer-nicht-wagt-der-nicht-gewinnt/		

Summary:

"Even in these times, we must continue to advertise our apprenticeships and dual study programmes and get students excited about technical professions," says trainer Marion Dittrich. "We therefore sat down with our apprentices and dual students and developed the digital internship." In calendar weeks 12 (22 to 26 March), 13 (29 March to 1 April) and 14 (6 to 9 April), we will be offering it to students in 8th grade and above who are in the process of career orientation.
The internship is one weeklong and runs from 8 am to 1 pm every day. Beforehand, the interns receive an electronic kit. "The kits are brought home to the participants by our trainees themselves," Marion Dittrich emphasises. After a short round of introductions, the trainees work in groups on some technical tasks to prepare for the building phase and present the results. "Then it's on to building, with support from us, of course." In between, former trainees or dual students present their technical professions at Phoenix Contact. Job application training and a digital plant tour round off the internship. "By carrying out the internship digitally, the students also learn how to use digital tools such as Microsoft Teams," adds Marion Dittrich.

Selection Criteria (why do you select it as a BP?)

- one goal is to get students interested in apprenticeships
- digital internship with a practical and hands-on component

Involved Institutions/ Interaction cooperation of relevant stakeholders

Phoenix Contact

11. YOULEARN: DIGITAL LEARNING PLATFORM @ DEUTSCHE TELEKOM

Country	Germany	Language/s	German
Title (EN)	youlearn: Digital Learning Platform @ Deutsche Telekom		
Type of BP	platform		
Format of BP	online		
Reference (URL)	https://www.acatech.de/allgemein/lebenslanges-lernen-in-unternehmen-acatech-stellt-good-practice-beispiele-vor/		

Summary:

With the expansion of digital formats, a completely new approach is being pursued called "you- learn". Behind this is a holistic concept in which employees themselves take greater responsibility for their own learning path. One of the core elements is therefore the so-called career coach. The Career Coach not only gives tips on successful learning in relation to the current job profile, but also directly offers alternative job profiles and makes training recommendations. The company-wide HR portal has been upgraded to a kind of information hub where all important areas converge.
At the centre of the developments, however, are learning platforms with a particularly high level of challenge, the "learning experience platforms". The offer is oriented towards the preferences and needs of the user and makes appropriate suggestions. It differs from classic seminar offers about as fundamentally as Netflix differs from the dry school television of days gone by. And it actually looks similar to the popular streaming providers. To this end, the company works with leading providers of so-called MOOCs (Massive Open Online Courses), the content comes from the world's best universities and online providers.
Digital conference via laptop
User-friendliness and low threshold offers are essential features of this new educational offer. Mobile access to the training courses is therefore expressly supported. Colleagues are encouraged to take advantage of the offers in between, just as it fits into their own daily routine. We are currently experimenting with completely new forms of incentivisation. In some national companies, experience is being gained with a digital training currency, the T-Coins. Employees can collect points for completed training courses, but also for courses given, which can be redeemed for product vouchers, for example.
Part of the new education system, but with a slightly different approach, is "social learning", which is becoming increasingly popular throughout the company. Here, employees learn from each other. The learning community "Learning from Experts (LEX)" has been growing rapidly for two years. In the company's internal social network, this group even has the most followers. More than a hundred online sessions, mostly between 30 and 60 minutes long, can be followed here month after month. They are offered by colleagues for colleagues - and are becoming increasingly popular.

Selection Criteria (why do you select it as a BP?)

- approach of learners as experts
- individual learning pathways for individual learning needs

Involved Institutions/ Interaction cooperation of relevant stakeholders

Deutsche Telekom

12. WBL GOES VIRTUAL: TEACHING GOES DIGITAL!

Country	Austria	Language/s	German
Title (EN)	WBL Goes Virtual: Teaching goes digital!		
Type of BP	EU Project		
Format of BP	Digital		
Reference (URL)	https://wifisteiermark.com/2021/11/30/wbl-goes-virtual-die-lehre-wird-digital/		

Summary:

Goal is not to have the EU project as BP; but the impact on the project on the education at the WIFI Steiermark. WIFI Steiermark is a leading WBL institution in Austria during Covid the digitized their learning processes.
Information on details is not available online. More research and personal information exchange is necessary to identify concrete BPs.

Selection Criteria (why do you select it as a BP?)
Large part of vocational education was digitized and some information was online.
Involved Institutions/ Interaction cooperation of relevant stakeholders
WIFI Steiermark

13. DIGITAL WBL AT THE BAHH

Country	Germany	Language/s	German
Title (EN)	Digital WBL at the BAHH		
Type of BP	Digital Dual Study Courses		
Format of BP	Online, hybrid		
Reference (URL)	https://www.ba-hamburg.de/		

Summary:

BAHH is a a vocational academy in Hamburg that offers dual study courses. The two dual study courses "Business Administration for SMEs" and "Management of Renewable Building Energy Technology" impart technical qualifications and business know-how for the business areas of the future. This was digitized during the pandemic and can serve as a BP example.

Selection Criteria (why do you select it as a BP?)
Large part of the education was digitized, with great success.
Involved Institutions/ Interaction cooperation of relevant stakeholders
BA Hamburg

14. VIRTUAL REALITY ICU UPSKILLING FOR HEALTH PROFESSIONALS

Country	Europe	Language/s	All 23 official EU languages
Title (EN)	Virtual Reality ICU Upskilling for Health Professionals		
Type of BP	Course		
Format of BP	Hybrid		
Reference (URL)	https://www.youtube.com/watch?v=WGDDegpT9no https://immersiumstudio.com/portfolio_page/rv-formacion-en-el-metaverso-para-profesionales-sanitarios-en-el-uso-de-las-ucis-europeas/		

Summary:

The goal of this experience is to increase the number of European Healthcare Professionals to be able to help inside ICUs in case of successive C19 waves. Providing them with a learning experience that increases their knowledge and confidence in ICU equipment and procedures when dealing with different real cases. It is a Virtual Reality (VR) learning experience based on the use of interactive 360 video. So everything the user sees are real places and real people.

The experience has three differentiated parts:

1) ICU virtual tour (to be familiar)
2) Severe covid patient master case
3) Non severe covid patient master case

When the user puts on the VR headset he/she plays either the role of a doctor or nurse who is integrated in a team of professionals providing medical care to two covid patients (donning and doffing). So you attend in first person to all the necessary procedures attending a covid patient inside an ICU. There are different decision points where the user needs to make a decision. Once each decision is made, the system provides feedback so the user is able to see its consequences.

The experience tracks the user activity in terms of right/wrong decisions and decision making time in order to provide insights on which topics generate greater doubts for them. So the European Society of Intensive Care Medicine could reorient their training towards those topics which generated more doubts in its professionals.

Selection Criteria (why do you select it as a BP?)

Because it has proven to be efficient and effective in upskilling more than 20.000 health professionals in covid times when Europe needed to reinforce its healthcare army.

This experience got the “Best Healthcare Experience” Auggie Award 2021. The Auggie awards are the oscars of the VR industry.

Involved Institutions/ Interaction cooperation of relevant stakeholders

Immersium Studio
European Society of Intensive Care Medicine
European Comission

15. IMPROVING SOFT SKILLS WITH INTERACTIVE VIRTUAL REALITY

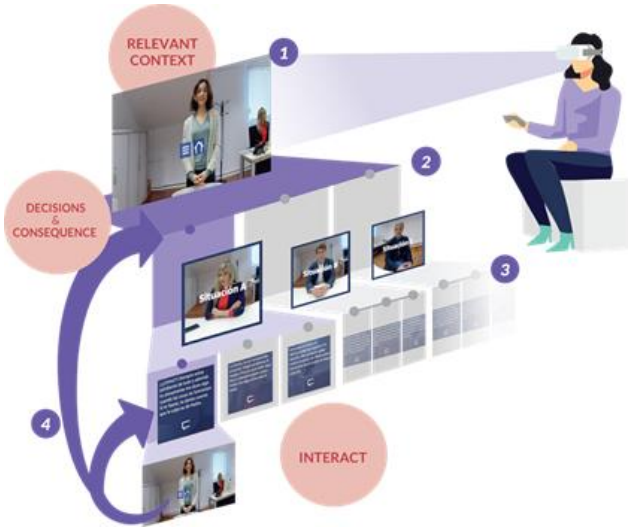
Country	Spain	Language/s	Spanish & English
Title (EN)	Improving soft skills with Interactive Virtual Reality		
Type of BP	Course		
Format of BP	Online		
Reference (URL)	https://www.youtube.com/watch?v=y_2Hlyo6CXI		

Summary:

Interactive 360 video learning experience to upskills communication and feedback in a cooperative environment.

When the user puts on the VR headset, he/she plays the role of an employee who has been called by his/her manager for a meeting. In that meeting the manager explains the user a problem and the user needs to make several decisions on how to communicate with the manager. Depending on the user choice, the manager reacts in consequence.

The user gets to communicate with three different communicative stereotypes: assertive, aggressive and passive. The figure of a presenter is used at the beginning of the experience to do the user onboarding. And the presenter appears also at the end of the experience to make the learning debriefing.



Selection Criteria (why do you select it as a BP?)

It is a tool that helps the user gets more confidence when dealing with this situation. Making mistakes in VR avoids mistakes in real life.

Involved Institutions/ Interaction cooperation of relevant stakeholders

Immersium Studio

16. TEACHERS' DIGITAL COMPETENCE FRAMEWORK

Country	Estonia	Language/s	EN
Title (EN)	TiteNHANCEle ENHANCE DIGITAL TEACHING PLATFORM		
Type of BP	Systemic best practice , promoted by the national Government		
Format of BP	Web site		
Reference (URL)	Title https://www.educationestonia.org/innovation/digital-c ht https://www.educationestonia.org/innovation/digital-competence/		

Summary:

The Estonian teachers' digital competence framework is adapted from DigCompEdu 2019 and has six dimensions:

1. professional development and engagement communication, co-operation, reflection and professional development using digital technologies

2. digital resources choosing, creating and sharing digital learning materials

3. teaching and learning managing and using digital technologies in teaching and learning

4. assessment using digital technologies to enhance learning

5. empowering learners using digital technologies to actively engage learners, to support differentiation, individualisation, and the development of learners' general competences/skills
6. facilitating learners' digital competence

The students' digital competence framework is adapted from DigComp 2.1 and it has five dimensions:

1. information and data literacy (e.g. articulating needs, judging the relevance of sources, organising digital data);
2. communication and collaboration;
3. digital content creation (e.g. creating, improving and editing, understanding copyright, giving understandable instructions to computer systems);
4. safety;
5. problem-solving.

Professional development programmes on digital competence for teachers
Some examples of professional development opportunities that support the development of teacher and student digital competence follow.
Digital Key
Digital Accelerator Since 2018, Estonian schools have received digital training, mentoring in the Digital Accelerator – a digital competence development programme in which the entire school teaching staff take part For the Digital Accelerator to be truly useful, the organisers have made it a rule that all teachers and the entire management, or at least 90% of the school team, participate in the programme.
The Digital Accelerator always starts by mapping the needs of the school. The situation of the school's digital infrastructure and digital security is analysed. The focus is on what kind of educational technology training this school team needs.
After that, teachers can study in either basic or tailor-made courses during a six-month programme. There is a separate training plan for the headmasters: digital change management at school. In the programme, school leaders can learn about the experience of others and create a school development project to support the digital competence of teachers and students in their schools.
Throughout the program, the school team is supported by an educational technologist. The experienced specialist helps find and introduce new technological opportunities in their teaching.

Digital ABC Short-term professional development sessions
Selection Criteria (why do you select it as a BP?)
Adaptation of DIGICOMP EDU and DIGICOMP for students The Digital Accelarator could be transferred and contextualised in our project
Involved Institutions/ Interaction cooperation of relevant stakeholders
European Training Foundation

17. ENHANCE DIGITAL TEACHING PLATFORM

Country	UK	Language/s	EN
Title (EN)	TiteNHANCEle ENHANCE DIGITAL TEACHING PLATFORM		
Type of BP	DIGITAL TEACHING PLATFORM		
Format of BP	online		
Reference (URL)	https://enhance.etfoundation.co.uk/		

Brief summary:

The Enhance Digital Teaching Platform is designed to help develop teaching and training practice using technology. The platform supports innovation in teaching and training to improve student outcomes and equip learners with the skills needed for the changing world of work, where technology use is becoming increasingly important.
Stage(s) of ICT adoption covered: All stages are included.
The Digital Teaching Professional Framework (DTPF) consists of seven competencies covering different teaching contexts and activities, which are mapped onto three stages/levels (Exploring, Adopting and Leading) of personal development
The three DTPF stages align with the four stages of ICT adoption. Stage 1 (Exploring) is similar to the 'emerging' stage of ICT adoption: practitioners assimilate new information and develop basic digital practices. Stage 2 (Adopting) overlaps with the 'applying' and 'infusing' stages: practitioners apply their digital practices and expand them further. Stage 3 (Leading) links to the 'transforming' stage: practitioners pass on their knowledge, critique existing practice and develop new practices. Earning Trends mapping study: Digital skills development in TVET teacher training 40 digital badges at each stage past Exploring requires not only participation in training but also application. To earn 2-star and 3-star badges, practitioners must submit reflections on the impacts of their practices on student learning, which are then peer-reviewed according to standards set by the ETF to contribute to further learning.

Selection Criteria (why do you select it as a BP?)

Enhance plattform can be freely accessed and used by anyone in the world with access to the internet but it does not cover work-based learning and practical skills training. Therefore it might be complementary to our project.
It is, in my opinion, intersting, the Digital Teaching professional framework (Digital Skills development in TVET teacher training, Unesco)

Involved Institutions/ Interaction cooperation of relevant stakeholders

50.000 users as of 30 September 2021

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DEAL WITH DIGITAL WBL

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