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DigiGo - Apprenticeships in the digital era

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Module 1 – Practical tools for the development of Digital Skills

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Introduction

Within the framework of the DIGIGO project, mentors and trainers of Vocational Education and Training both in learning centres and companies, will contribute to the development of digital skills of their apprentices. The teaching resources developed for this purpose are mainly based on the guidelines of the DigComp Edu and DigComp 2.2 frameworks (see bibliography and module 2 of the training kit for more details regarding the European digital frameworks).

This module aims to enable trainers and mentors to:

- Frame the pedagogical guidelines to be implemented in order to support the development of apprentices' digital skills
- Create their own activities for this purpose
- Build an approach to assess digital skills based particularly on tools identified and available online.

Learning outcomes

At the end of this module, mentors and trainers will be able to:

- Know the pedagogical guidelines to design practical activities for the development of digital skills
- Develop their own practical activities
- Know the 8 levels of digital competences established by the DigComp 2.2 framework
- Create and implement a process for assessing the skills of their learners

Unit 1: Why developing practical activities and tools to support the learning process? Principles of active pedagogy

To promote the development of digital skills and practices among apprentices, and more generally among vocational training learners, will focus on active learning based on the implementation of concrete activities rather than theoretical knowledge. For that purpose, it is highlighted the following:

- DIGIGO project supports the development of digital skills in the learner's professional environment. Therefore, the decoupling of theoretical knowledge from practical skills is not very relevant for this field of skills ;
- The profile of vocational training learners and their learning process, in which they have been more confronted with learning models based on the transmission of professional practice and are, therefore, more sensitive to this module of educational process.

1. Pedagogical methods and tools in apprenticeship

In the pedagogical literature there are plenty pedagogical methods constantly evolving to the point that pedagogical engineers are developing new pedagogical concepts based on new research.

Thus, it is underlined that there are many ways to approach the subject of the teaching method. There is no single and unanimous definition of teaching method. For Philippe Mérieu, French researcher and specialist in educational sciences, there are 3 definitions of a teaching method¹ :

- A pedagogical frame (or school) serving to promote certain educational purposes and suggesting a coherent set of practices;
- An activity whose purpose is to allow learners to develop certain abilities and thus enable learning;
- A pedagogical tool or instrument used to fulfil specific objectives.

In general, a teaching method is a mean used to develop learning and to fulfil a specific educational objective.

Finally, it should be noted that any teaching method is bound to evolve and must be the subject of permanent reflection after each training. Indeed, the trainer must ensure that his approach is adapted to his/her learners and that it aims to facilitate learning.

2. The active or experiential main pedagogical methods

To enhance learning effectiveness of digital skills in apprenticeship, active or experimental pedagogy is recommended in all areas. In particular, learning by doing processes support the ability to learn autonomously, solicit real engagement from the learner, promote deep and sustainable learning and increase the enjoyment of learning (Anderson et al. 2001).

¹ <https://www.meirieu.com/DICTIONNAIRE/methodepedagogique.htm>

These principles lead trainers and mentors to focus on developing curricula based on activities. The objective of the pedagogical activities is to allow the learner to test his/her understanding of the concepts stated, and to develop his/her digital practice.

THE ACTIVE OR DISCOVERY METHOD

Because it considerably modifies the roles of trainers and learners, the active method goes against the postulates of classical teaching methods. Thus, it considers that knowledge is built and not learned, and has action as its starting point. It is from the action that a learner will initiate a reflection on a given subject.

In addition, knowledge and skills can only be acquired in 3 cases:

- If the learner engages him/herself in this process. It's the notion of "intrinsic motivation for learning" which means that the learner is motivated because it gives him/her a direct satisfaction. In a professional learning context, this intrinsic motivation is motivated, for example, by the fact of gaining autonomy at one's workstation, of better integrating into the team, of gaining in responsibility;
- Whether the learner is involved in a collaborative or cooperative learning effort (in educational literature, different streams bring different definitions to these concepts);
- If the learner is engaged in an action-experience process and can thus test in real time what he undertakes and validate or invalidate his hypotheses himself, or by debating them with other learners.

During training using the active method several ways exist to enable the acquisition of knowledge, including case studies, simulations, role-playing or group projects. The trainer does not necessarily have all the knowledge and may even in some cases only be a guide or a mediator. Its interventions are therefore limited, and his/her role will be to create an educational scenario that leads the learner to acquire knowledge by making mistakes, and by trial and error. This method can promote collaborative work.

THE EXPERIMENTAL OR EXPERIENTIAL METHOD

This pedagogical method is based on the fact that a trainee can only acquire knowledge if he/she acts and accepts the risk of being wrong. It is therefore learning in real life conditions.

The trainer becomes a simple speaker and if he has the knowledge and know-how, he/she is no longer in a dominant position. The experiential or experimental method requires a preparation effort on the part of the trainer/mentor who must carry out the experiments or projects before they are carried out during the training. Most often, the training sessions are sequenced with increasing levels of difficulty.

Unit 2: Designing and implementing practical activities to support the development of digital skills

A pedagogical activity or learning activity aims to enable the learner to achieve a learning objective such as the development of a skill. The learning activity consists of one or more tasks to be accomplished, and can take various forms such as: laboratory, workshop, lecture, simulation, exercise, homework, experimentation, internship, among others.

In the context of the development of digital competences in learning, the learning activity aims to enable the learner to exercise and reinforce a given digital competence in a professional context in a company.

This chapter aims to enable mentors and trainers to develop their own pedagogical activities to support the process of developing digital competences of apprentices.

1. Design principles

A pedagogical activity or pedagogical support is an educational way used by a trainer/teacher to enable the acquisition of learning in a particular area of knowledge. An educational activity makes training more effective and promotes exchanges with and between learners. The educational activities must be adapted and chosen according to the educational project.

Design principles have different purposes, as following:

- To inform;
- To acquire skills;
- To transform representations.

Bearing that in mind, we introduce 8 basic pedagogical principles for the development of teaching activities and training content within the framework of an active pedagogical approach. These principles are developed in the framework developed by the OECD in the context of the CERI project "Encouraging and evaluating creativity and critical thinking" (2019). According to the methodology developed, an educational activity must meet the following criteria in order to achieve its learning objectives :

1. CREATING THE NEED/WANT TO LEARN IN STUDENTS
2. BE CHALLENGING
3. SUPPORT THE DEVELOPMENT OF CLEAR TECHNICAL KNOWLEDGE IN ONE OR MORE AREAS
4. INCLUDE THE PRODUCTION OF AN OUTPUT/RESULT BY THE LEARNER
5. INVITE LEARNERS TO PARTLY CO-DESIGN THE PRODUCTION/SOLUTION OR THE PROBLEM
6. ADDRESS PROBLEMS THAT CAN BE SEEN FROM DIFFERENT POINTS OF VIEW
7. LEAVE ROOM FOR THE UNEXPECTED
8. GIVE STUDENTS TIME AND SPACE TO REFLECT AND MAKE/ RECEIVE FEEDBACK

2. Technical support for the development of educational activity

A methodological framework for the formulation of activities is presented below to support the development of apprentices' digital skills in a vocational setting. The proposed model presentation template is a key-tool for trainers and mentors to complete and amend according to their needs. The aim is to formalise the production of an activity in order to :

- Facilitate its implementation and understanding;
- Consider its transmission or capitalisation;

The DIGIGO project also proposes a catalogue of potential activities that can be used by mentors as they are.

Title of the activity	Specify project or activity
Problem	The activity should be proposed in the form of a digital problem posed to the company/training organisation and to be solved by the apprentice. The problem should be posed in the form of a question to be solved or an outcome to be achieved - e.g., how can we organise an internal video conference?
Targeted DigComp 2.2 competence area	First identify the field of digital competence targeted, with reference to the 5 families of digital competences identified in the DigComp 2.2 reference framework and the competences identified under each family. Use the DigiComp 2.2 taxonomy of skills – for example: Problem solving / solving technical problem
Digital skills targeted	Specify the expected competence by expressing it in the form of an infinitive verb. For example, "To resolve technical problems with the most appropriate solution".
Description (step by step)	The description must: <ul style="list-style-type: none"> Specify all the main stages which allow the activity or project to be carried out, as well as the objectives and interest of each step Quote concrete examples that allow the trainer/mentor to carry out each step with the apprentice.
Location / conditions of implementation	Here you can specify whether the activity is carried out on the company's premises and, if so, in which room, at home, outside, etc.
Collective activity or individual	Individual, Group of 2 to 4, etc.
Material requirement(s)	List the material requested (consider that the material should be provided by the company/training center) If no material is required, specify it
Duration of the activity	Write the hours and minutes used for the activity (xx : 30 minutes, 1hour, 1hour per week all year round, 1hour per month for 4 weeks, etc.)
Skills assessment	Identify how the digital competence targeted by the activity is going to be assessed. For example, quality of the expected production, validation of the working method implemented by the apprentice, etc.
Additional resources	Possible link to website or other resources which can support the implementation of the activity by the apprentice
Observations	A conclusion to help the future user: If you have some feedback or specific observation after the implementation of the activity, you could develop it here in order to facilitate future implementations

3. Which activity for which skill and level?

The DigComp 2.2 framework provides 8 levels of practice associated with each identified skill. These levels range from 1 (basic) to 8 (independent expert). It is therefore a question of adapting the activities to the expected levels of the learner (and the skills of the trainer/mentor). The "Digital skill targeted" field should allow the formulation of the expected skill to be set according to the level targeted. In the

DigCom 2.2 framework, each level of competence is associated with a practical objective. You can use this as a frame for the formulation of the skill targeted by your activity.

According to the JRS (2017)², the main keywords that feature the proficiency levels are described below, being underlined that the 2.2. version follows the same frame:

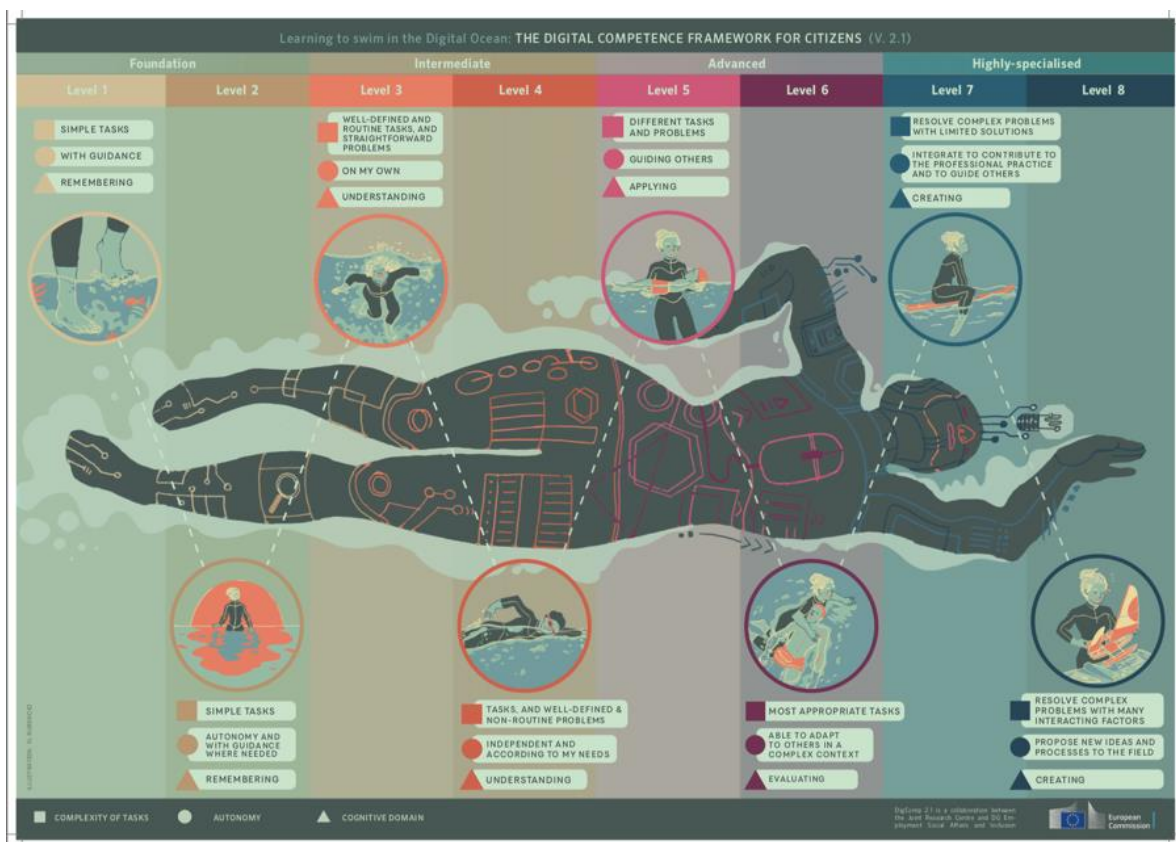
Levels in DigComp 1.0	Levels in DigComp 2.1	Complexity of tasks	Autonomy	Cognitive domain
Foundation	1	Simple tasks	With guidance	Remembering
	2	Simple tasks	Autonomy and with guidance where needed	Remembering
Intermediate	3	Well-defined and routine tasks, and straightforward problems	On my own	Understanding
	4	Tasks, and well-defined and non-routine problems	Independent and according to my needs	Understanding
Advanced	5	Different tasks and problems	Guiding others	Applying
	6	Most appropriate tasks	Able to adapt to others in a complex context	Evaluating
Highly specialised	7	Resolve complex problems with limited solutions	Integrate to contribute to the professional practice and to guide others	Creating
	8	Resolve complex problems with many interacting factors	Propose new ideas and processes to the field	Creating

[Source: JRS 2017: 13](#)

Unit 3: Designing and implementing tools for assessing digital skills

1. The DigComp assessment framework

The DigComp framework provides 8 levels of digital skills practice from Basic to Highly Specialized. The idea is to recall the degree of requirement associated with these 8 levels in order to design appropriate assessment tools.



Source: <https://oce.uqam.ca/wp-content/uploads/2019/03/Infographie-DigComp.png>

<https://oce.uqam.ca/digcomp-cadre-de-referance-europeen-competences-numeriques/>

The DigComp framework for citizens describes 5 skills and 8 levels of proficiency. Each skill area covers several sub-headings with examples given for each skill. Graphs and tables illustrate the skills required at each of the different levels. The DigComp framework offers tools to improve digital capabilities, self-assess, set learning goals, identify training opportunities and facilitate job search. The key knowledge, skills and attitudes necessary for digital competence are identified and the guidelines are applicable at all levels of education, including non-formal settings.

2. Tools for designing an evaluation process

This chapter will support trainers in designing their own frameworks for assessing the digital competences of their learners.

2.1. Diagnosis of digital skills

This chapter addresses the notion of diagnosis, which precedes the process of learning and assessment of skills. This phase should enable the learning device to be adapted, the understanding of the learners to be checked, prior knowledge to be adjusted and the notions of prerequisites and achievements to be reflected upon. This chapter is listing a series of practical tools that can be used to propose digital skills assessment activities: Wooclap, Padlet, Socrative, etc. The self-assessment process is also discussed.

- Padlet : <https://padlet.com/>

Padlet is an educational website or app that you can use to create interactive bulletin boards. It is available for Windows, MacOS, Linux and most operating systems. With Padlet, you will be able to design a virtual space where you can provide your students with learning materials and where they can upload their work. It is useful for creating activities for any level of language proficiency. This site is useful for improving written and oral pronunciation, production and reception.

Organize your virtual bulletin board as you wish, with multiple and creative messages. All learners with access will be able to view and add new posts whenever they want.

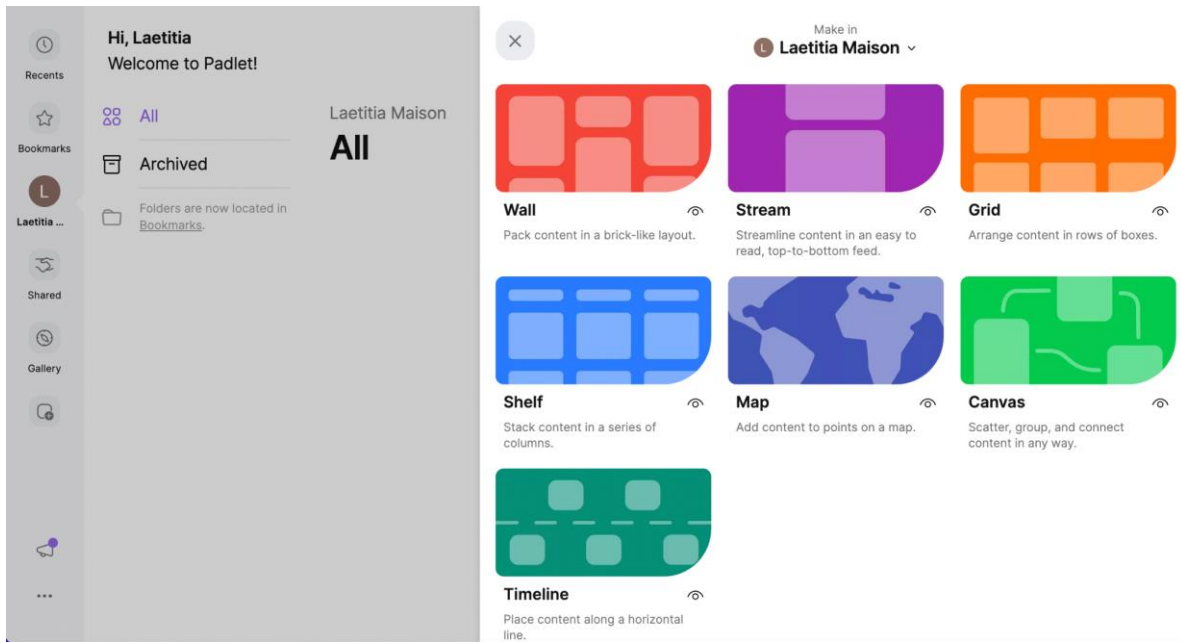
Padlet can be used by any teacher to provide students with a virtual space where they can share notes, comments, and ideas.

Thanks to this tool, it is possible to share with students contributions of different language proficiency levels, such as written documents, audio files, links to videos or online pages.

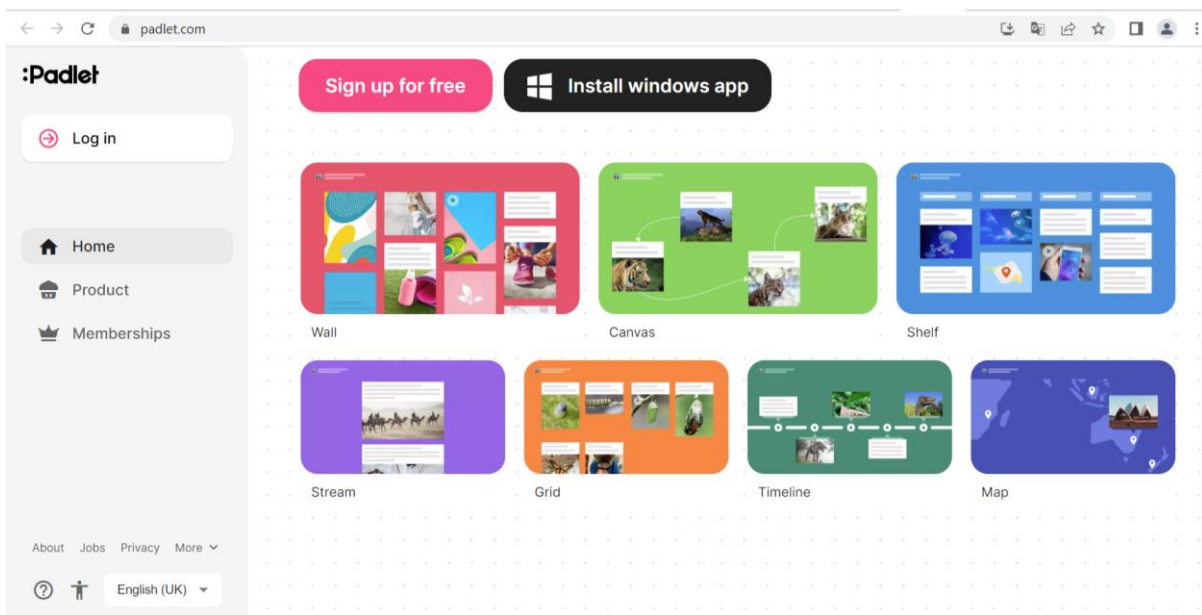
You can collect homework and student work in an easy-to-manage virtual space.

You can assign grades or responses to student work.

Foster interaction between learners, through feedback or collaborative projects.



Source: screenshot <https://padlet.com/dashboard>



Source: <https://padlet.com/>

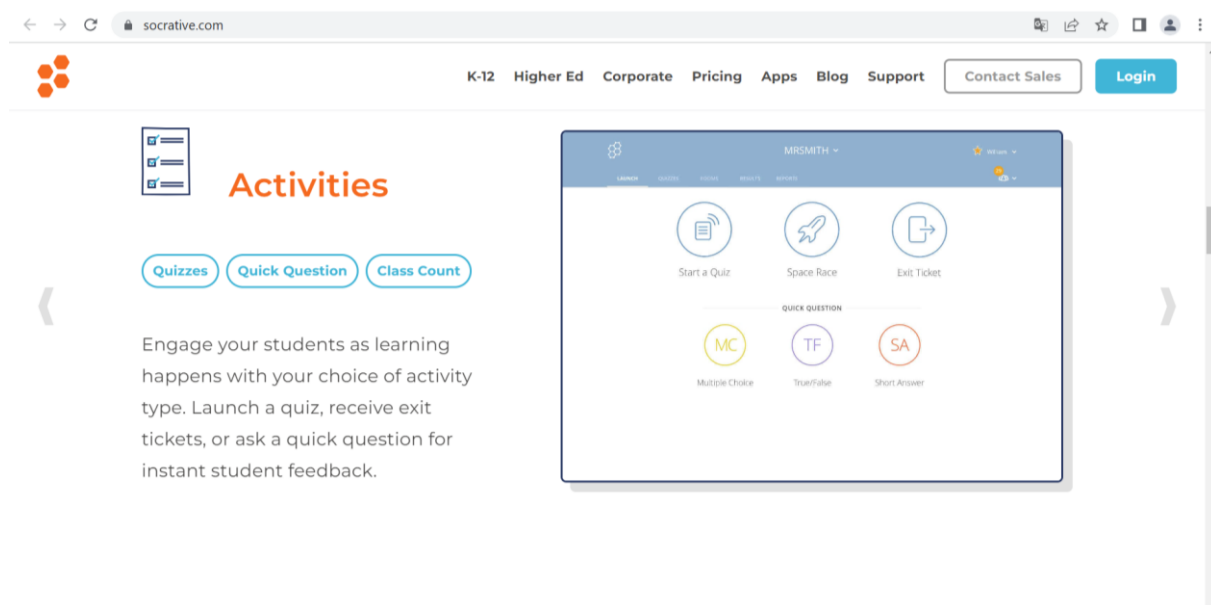
- Socrative : <https://www.socrative.com/>

Socrative is a digital, formative assessment tool that allows educators to create a series of online quizzes to check comprehension, start discussions in class, reflect on content, and much more. The teacher's page is simple to use, and the free options are useful and easy to implement. Although teachers create the quiz in advance, they can be used in real-time, so that educators can see, for example, if learners have understood the main point of a reading they have just done in a foreign language by having them answer a comprehension question or two and then displaying the whole group's answers as they come in (anonymously). This allows the instructor to assess the class, rather

than relying on extrovert learners who readily offer answers. It is easy for learners to use as well, as they only need a group join code to enter. Since the teacher creates the content, this is an appropriate tool for a range of levels (A1-C2).

Socrative is geared towards educators, and there is a free for public use version that has three types of quizzes (free versions allow for up to 50 learners per room with only one room functioning at a time). It does not require any special software to be installed. It is also quite simple for learners to use as they only need a simple join code to enter the quiz, and do not have to sign-up themselves.

Socrative is a web-based tool for iOS (Mac), Android, Chrome and Kindle and it works most optimally with the following browsers: Chrome, Safari, Firefox and Microsoft Edge (the last two versions of each).



Source: <https://www.socrative.com/>

2.2. Practical tools for the assessment of digital skills

2.2.1. Multiple choice questionnaires

What is a MCQ?

A Multiple Choice Questionnaire (MCQ) is a category of exercises, tests, in the form of a question / statement followed by several proposed answers, among which is (are) one or more answer(s) correct(s).

The MCQ makes it possible to measure the progress of learning and to evaluate it; can be used for a summative assessment (a mark) or for a formative assessment (check the acquisition of knowledge).

In the case of a formative assessment, feedback on the answers, correct or incorrect, is very important so that the students understand their results and their difficulties.

A MCQ is made to check the students' learning and not to "trap" them. It is therefore important to give them all the keys to succeed.

How to build a MCQ?

The questions

- Ask clear questions with enough elements so that the students can answer
- Do not mislead students through a poorly worded statement
- Promote simplicity: avoid negative expressions, be concise
- Present only one problem per statement
- Write the questions and suggested answers in such a way that the correct answers are not obvious: in some MCQs some of the suggested answers are so ridiculous that they are very easily eliminated.
- Question of form: distinguish the final question from the previous information so that the student identifies what he/she must answer (go to the line, leave a space, put the question in bold...)

The answers

- Do not group the answers, it is essential to provide solutions for each question posed independently of each other
- Propose credible decoys, rely on frequent mistakes of students feedback
- For erroneous answers, understanding the causes of the error makes it possible to explain where it comes from this error and above all how to achieve the right result and the right answer
- Indicating the correct answer is not enough, student must integrate why this answer is wrong and why he believed it to be correct
- For answers, give feedback. This reinforces the learning of the student

Source: <https://sup.univ-lorraine.fr/comment-rediger-un-qcm-pertinent/>

Design a MCQ applied to the assessment of digital skills according to the DigComp 2.2 level grid

Here is an example of the DigComp test.

The first question of the MCQ is the following:

- a) I rarely use digital communication channels
- b) I use basic digital communication channels, e.g., e-mail
- c) I combine different communication channels, e.g., e-mail and class blog or the department's website
- d) I systematically select, adjust and combine different digital solutions to communicate effectively
- e) I reflect on, discuss and proactively develop my communication strategies

As you can see, each answer is adapted to a level. The learners who rarely use digital communication channels are considered as beginners, while learners who discuss and proactively develop their communication strategies are considered as experts.

This type of question can be adapted to each area of DigComp Edu (cf. module 2).

2.2.2. Other assessment activities: supervised practical exercises, homework assignments, etc.

Supervised practical exercises

- Practical exercise 1 (in a remote/online scenario)

Make a visio (trainer and learner) with the learner explaining to the trainer how to use a digital software (ex: how to use padlet). The learner will have to share his/her screen during its explanations.

- Practical exercise 2

Make a group about 2 to 4 students. Open a debate, like for example “why digital skills matter?”. The assignment will be to use Padlet to share their ideas regarding the debate. To level up the exercise, you can require including at least an audio file and a link to a video which support their ideas and argumentations.



EXERCICE : you can use the activity description grid developed in Unit 2 - §2 to detail the activity set out below: Competency 5.2 - Problem solving - Identifying needs and technical responses - level 4

"The learner must prepare the purchase of equipment online for the company by comparing prices and selecting the best value for money from at least 3 sales platforms".

Please describe the educational process that will enable you to help your apprentice fulfill this mission.

Homework assignments

- Homework assignment 1

Ask the students to create a PowerPoint Presentation (PPT) which talks about their favourite digital tool (i.e.: canva, prezi, excel, etc.). The presentation can last from 10 to 15 minutes, and they will have to make the presentation in front of the class.

To level up the assignment, you can require including at least one picture free of rights (there are some websites such as Pexels that provide that), put their name as a footnote on all the slides, than export the PPT into pdf (they can use ILovePdf) and send it to the teacher by email.

- Homework assignment 2

Ask the students “In what year was xxxxx born?”. They will have to find the answer by making an online research and quote a reliable source.

- Homework assignment 3

Ask the students to create an account on Facebook. They will have to publish at least 3 pictures, choose a profile picture, make a post, and find each other students to put at least one comment on the profile of someone else, then share it on their one profile.

- Homework assignment 4

Create an Excel file with the full name of the students. Ask them to add a new sheet on the same document and put their name in alphabetic order.

2.3. Examples of platforms for the assessment of digital skills

This sub-section introduces open access assessment tools available at European level to assess your digital skills.

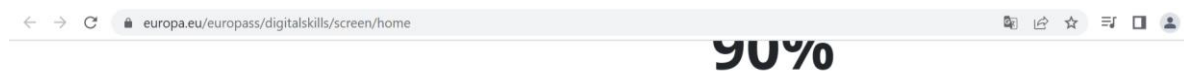
- <https://europa.eu/europass/digitalskills/screen/home>

The five competence areas will be tested in the following way:

After reading the others below, I returned to this one and have the same issues regarding using quotations without acknowledgement (kindly see image below “your” text – from <https://europa.eu/europass/digitalskills/screen/home>). See below comments/suggestions on that

Information and data literacy

You will be tested on the set of skills needed to search for, access and navigate between different types of digital content (files, websites, etc.). This also includes being able to compare different sources of information and understand which ones are reliable. The ability to store, manage, and organise folders and various types of files is part of this competence area as well.



Which competence areas will be tested?

Information and data literacy

You will be tested on the set of skills needed to search for, access and navigate between different types of digital content (files, websites, etc.). This also includes being able to compare different sources of information and understand which ones are reliable. The ability to store, manage, and organise folders and various types of files is part of this competence area as well.

Communication and collaboration

You will be tested on the set of skills needed to use digital technologies to interact, communicate and collaborate with other people. This also includes being able to participate in society through the use of public and private digital services. The ability to manage one’s identity and reputation on the web is part of this competence area as well.

Digital content creation

You will be tested on the set of skills needed to create and edit various types of digital content, including text and multimedia files. This includes skills necessary to improve and integrate different

kinds of information and content together. The abilities to understand how copyright and licences work and how to develop instructions for a computing system are part of this competence area as well.

Safety

You will be tested on the set of skills needed to protect devices, content, personal data and privacy, while understanding risks and threats of digital environments. This also includes skills necessary to protect physical and psychological health, and to be aware of digital technologies for social well-being and inclusion. The awareness of the environmental impact of using digital technologies is part of this competence area as well.

Problem solving

You will be tested on the set of skills to identify needs and technical problems, and to select appropriate technological responses to solve them. This also includes skills necessary to use digital tools to innovate processes and products. The abilities to understand which digital competences need to be improved and to keep up-to-date with the digital progress are part of this competence area as well.

- <https://www.digitalskillsaccelerator.eu/learning-portal/online-self-assessment-tool/>

DigComp identifies the key components of digital competence in **5 areas** which can be summarised as below:

1) Information and data literacy: To articulate information needs, to locate and retrieve digital data, information and content. To judge the relevance of the source and its content. To store, manage, and organise digital data, information and content.

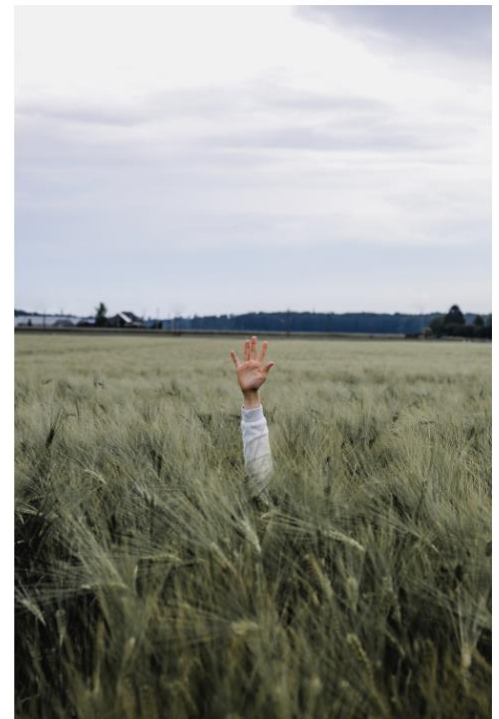
2) Communication and collaboration: To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services and participatory citizenship. To manage one's digital identity and reputation.

3) Digital content creation: To create and edit digital content To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licences are to be applied. To know how to give understandable instructions for a computer system.

4) Safety: To protect devices, content, personal data and privacy in digital environments. To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion. To be aware of the environmental impact of digital technologies and their use.

5) Problem solving: To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments. To use digital tools to innovate processes and products. To keep up-to-date with the digital evolution.

Source: <https://www.digitalskillsaccelerator.eu/>



- <https://mydigiskills.eu/>

MyDigiSkills helps you to better understand your level of digital skills based on knowledge, skills and attitude in each of the five areas of the European Digital Competence Framework for Citizens, known as DigComp.

- <https://pix.org/en-gb/the-tests/>

The Pix tests assess your digital skills in 5 competence areas and 16 competences of the European Digital Competence Framework DigComp.

It was suggested that we use the symbols for reading, tips and activities (see the symbols below)



Additional readings :

- [DigComp 2.2](#): the latest available version of the repository offers precise identification of the summary activities associated with each of the 8 associated digital skill levels, for each of the 21 skills. This sample can be used as a starting point for the design of activities to be implemented within the framework of your company/training center –
- The <http://digitalpedagogycookbook.eu/> project, co-financed by ERASMUS+, offers a number of teaching methods and support for teachers extending the DigComp Edu repository. The objective is to strengthen the digital skills of educators and give them tools to conduct their interventions by relying more on digital tools. Although not directly applied to the field of learning and vocational education, the project toolbox, valid in 5 languages, constitutes a complementary resource to the DIGIGO project.

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10. [Analyse one indicator and compare countries](#)
11. [DIGCOMP 2.2 THE DIGITAL COMPETENCE FRAMEWORK FOR CITIZENS](#)
12. [DigComp into Action: Get inspired, make it happen. A user guide to the European Digital Competence Framework](#)
13. [Developing digital competence for employability: Engaging and supporting stakeholders with the use of DigComp](#)
14. [Tip sheet – Design principles for creating engaging digital content](#) – Flinders University