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Training the Mentors Handbook

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Co-funded by the Erasmus+ Programme of the European Union

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Executive Summary:

The ACADIGIA Project is funded under the Erasmus+ programme and is specifically designed to accelerate digital readiness of Polytechnic higher education institutions towards the sustainable adoption of more online and blended approaches.

ACADIGIA was founded amidst the Covid19 crisis, aiming to deepen in the role of the 'New Academia' which is leaning toward digital approaches, and target the transformation of the institutional staff into mentors who will animate and support peer2peer assisted groups of practitioners that take the online end blended teaching to the next level.

The IO2 is aimed at developing training support for unleashing the digital transformation of learning in the Educational Institutions (Polytechnic HEIs).

For this, tailored training is unfolded in this deliverable, which aims to prepare well-rounded Mentors to lead this transformation by working with teams of educators in their institutions.

The main purpose of the methodologies and techniques incorporated is to arm the mentors with the needed Theoretical and Technical knowledge and competencies about Mentoring, Digital skills and tools.

The training program for Mentors is based on the DigCompEdu and foresees the validation and improvement of these competences among educators.

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PARTE A – Mentorship

PART A was created by INOVA+ and UPP, with contributions from the other ACADIGIA partners.

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1. Introduction

The meaning of mentoring

The concept of mentoring doesn't have a unique definition, many researchers define the concept in different ways. Some definitions as perceptions are listed below:

Mentoring is a formal or informal professional relationship between an experienced researcher and a less experienced researcher. It is dyadic relationship, i.e. a committed relationship between two persons, usually characterized by institutional proximity and direct contact (Sambunjak & Marusic, 2009).

"A deliberate pairing of a more skilled or experienced person with a lesser skilled or experienced one, with the agreed-upon goal of having the less experienced person grow and develop specific competencies" (Murray, 1991, p. xiv).

"The term 'mentor' describes a knowledgeable, experienced, and highly proficient teacher who works with and alongside a new teacher or less experienced colleague – quite closely at first but this gradually diminishes as the new teacher becomes more capable and confident. A mentor is not an instructor and the mentee is not a student; they are both colleagues" (Northern Territory Department of Education, 2017, p. 6).

"Mentoring is a process of using specially selected and trained individuals to provide guidance, pragmatic advice, and continuing support that will help the people in their learning and development process" (Chand, 2014, p. n.d.).

These definitions have some aspects in common that we highlight, that are important for a mentor to have in mind and are principles related to mentoring. Mentoring, in general, is[1]:

- Consistent: reliable contact between mentor and mentee.
- Reciprocal: The experienced and new teacher work together in an equal professional relationship where they are both teachers and learners.
- Dynamic: Mentoring influences/changes the context; and the context shapes the relationship. The relationship is organic. An understanding of mentoring is needed to underpin the approach but a formula does not work.
- Reflective: The mentor facilitates reflection on the part of the beginning teacher to support the development of the beginning teacher's professional identity as a teacher; the mentor professionally challenges the beginning teacher in developing their theory of teaching, and sense of teacher efficacy. In doing this the mentor continuously reflects on their own practice and self-image as a teacher.
- Based on Professional Support: While personal support is inherent in a mentoring relationship, the emphasis is on professional support, in this case supporting the growth of teaching expertise.
- Trustful: Mentoring requires a high degree of mutual trust between the mentor and the mentee.
- Communicative: Effective communication is the key to the mentoring programmes.
- Being available: Availability of the mentor involving predictability.
- Respectful: Mutual respect between each other is also required.

[1] (Chand, 2014; *Characteristics of Mentoring Relationships | Youth.Gov*, n.d.; State of Victoria & Department of Education and Early Childhood Development, 2010)

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Also, given the theme of the project and the possibility for mentors to guide virtually their mentees, it's important to describe what is e-mentoring: "E-mentoring is a means of providing a guided mentoring relationship using online software or email. It allows participants to communicate at their own convenience and beyond time zones since it eliminates the need for them to be in the same physical location" (Dikilitas et al., 2018, p. 114).

After comprehending the diverse range of perceptions of what mentoring is, it should be underlined what shouldn't be considered mentoring:

What mentoring is not[2] [3]:

- Cloning, or becoming a substitute parent, or acquiring a disciple, or an opportunity to prove how marvellous we are, or an opportunity to establish a power base.
- Giving advice - it's not the mentor's role to prescribe a path forward for the mentee. First, the mentor must recognize that the mentee's journey is their own, and what worked for the mentor may not apply in the case of the mentee. Second, if the mentor gives directive advice to the mentee, the mentee loses the opportunity to make their own decision and thus loses the opportunity to grow and develop.
- A therapy, an alternative to a counselling or confessional relationship - The goal of the relationship is not to rehash the mentee's childhood or other things that have happened in the past, but instead to focus on the future.
- About one person (the beginning teacher) becoming knowledgeable - it is about two people in a developmental relationship who are supporting mutual learning and growth.
- A job – it is a privilege and an opportunity.
- Coaching - while a coach might be paid directly for their work, a mentor participates for more altruistic reasons or for the benefits that the mentor receives from the relationship. Also, coaching tends to be more short-term and focused on a particular skills gap.

The role and profile of the Mentors

The Mentors are the ones that will lead the training in their institutions and be the "glue" of the teams. Through the sessions that will be implemented under the sequent IO3, it is expected that the mentors will support the educators´ teams to dive deep into the blended learning approaches and the effective use of existing open educational tools with pedagogical value. Also, with the mentors´ support, the educators will develop their ability to design new educational contracts with their students and shift to blended classes. Finally, a peer2peer support will be founded, and through personal "study case" projects continuous professional development will be implemented more autonomously as a group.

Regarding their profile, he/she must:

a. be motivated / willing to be a mentor;
b. be a user of digital tools in education, especially for blended learning;
c. have the time / availability to explore digital tools and mentor their colleagues;
d. have already a set of "soft skills" or personality traits that naturally make him/her the perfect candidate for the position (examples: positive humor, self-confident, flexible, calm, patient, active listener, communicative, resilient).

[2] (State of Victoria & Department of Education and Early Childhood Development, 2010)
[3] (Nabine, n.d.)

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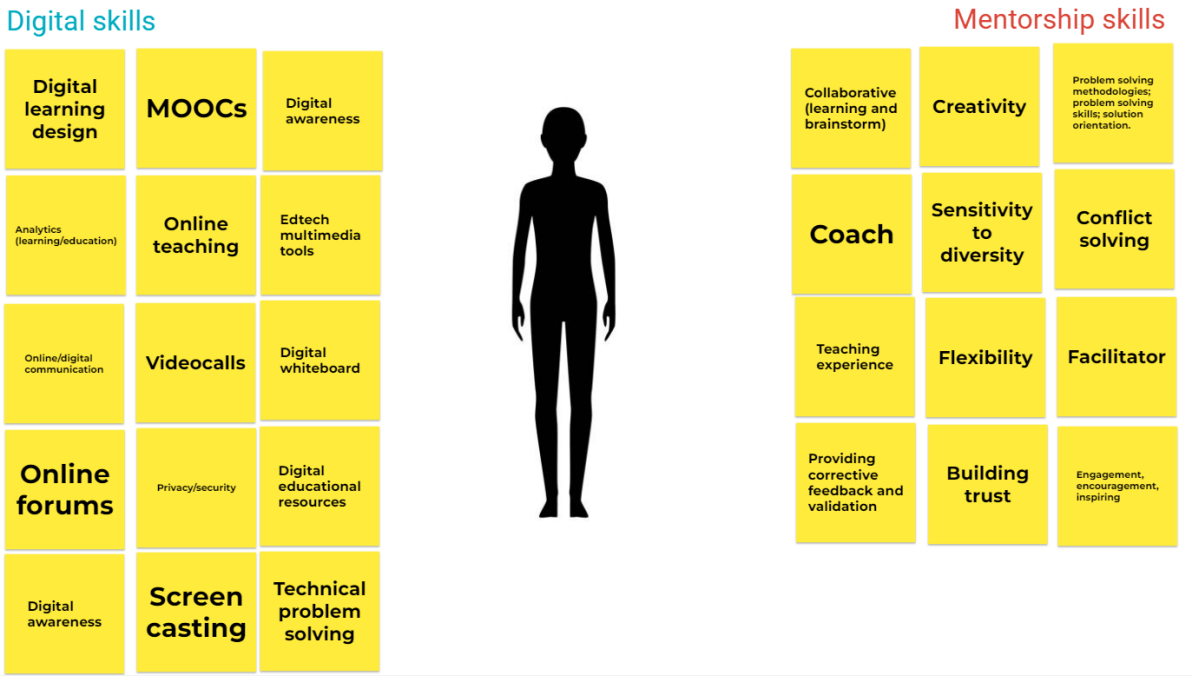

Figure 1: ACADIGIA Mentor Persona (contributions of all consortium partners on Jamboard)

The expected involvement of the mentors

Below is presented the future work of the Mentors with the teams. The content is divided in four activities, with different focus, and it's major objective is to empower the teams become autonomous in learning for digital tools and pedagogies. The mentors will be involved in the following activities of the ACADIGIA project:

- Establishing the teams;
- Carrying out the sessions;
- Developing demo lessons;
- Infiltrating the governance.

The ACADIGIA teams will be established in the Polytechnics Institutes partners with at least 4 educators each. Then, they will be part of an ignition event to start the work and during that, they will develop the Culture Manifestos of the team in each Polytechnic Institute. The dedicated mentors will be delivering the sessions to the ACADIGIA groups. The mentoring scheme will follow a format where every month will have a different focus and will be delivered in 2 sessions per month for 5 months, with an indicative structure as follows:

- Start at blending: #self evaluations #intro to frameworks;
- Tools specialization: #Digital literacy refresh #Tools cases;
- Group work scenarios: #Making examples of renewing the educational contract;
- Peer2peer development: #Peer presentations of tools use.

After this, demo blended lessons will be developed and implemented, with at least 2 examples of cases of blended teaching implemented in every institution.

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The final activity of the project focuses on the development of the ACCELERATION model of the ACADIGIA and a POLICY BRIEF.

The training of the mentors – goals and plan

The training of the Mentors is supposed to use the material of this guide and put things in practice during C1. The training activity, in line with this guide, **aims at building the capacity and nurturing Polytechnic HEIs staff into becoming fully capable Mentors that will be deployed to dynamically establish, follow and animate the support teams (the ACADIGIA groups) in their HEIs.**

This training methodology will merge theory with the realities of the Polytechnic environment and prepare the specialists not only in the theoretical foundations for online and blended education, but also in aspects as mentoring relationship process, collaborative partnerships, solution-oriented thinking and communication and interpersonal skills. It will focus also on the Educators pedagogic competences (DigCompEdu) on how to use and create Digital Resources, for Teaching and Learning, Assessment with a final focus on Empowering the Learners. Through mentorship we will encourage the integration of digital technologies, the innovation and expertise in digital education.

The short-term joint staff training event will take place in Porto, Portugal, at the premises of IPP, and its preparation will be led by INOVA+ with the strong support of UPT. For the delivery of the course, INOVA+, UPT and TCD will provide technical staff (2 from INOVA+ in presence, 1 From UPT in distance/online connection and 1 from TCD in distance/online connection).

The overall duration of this activity, including the preparation, implementation and closure is of 2 months (M12-M13) and the training event will consist of 5 days.

The course, will follow the structure of this guide and focus on the following topics (Digital / Mentoring):

PT time	**Day 1** 11 July	**Day 2** 12 July	**Day 3** 13 July	**Day 4** 14 July	**Day 5** 15 July
9h00-10h30	Presentations; Ice-break; Objectives and structure of the course	Open education resources, tools, practices	Stages of Mentoring Relationships	Bringing to life collaborative partnership / What is collaborative partnership and which are its benefits	Open discussion and brainstorming - What makes Mentoring Relationship Successful?
10h30-11h00	Coffee-break				
11h00-12h30	What is a mentoring relationship and types of mentorships?	Designing digitally enhanced learning and teaching	Active listening	Constructive feedback and validation	Discussions and Course evaluation
12h30-14h00	Lunch				
14h00-15h30	Integrating EU Digital Education Frameworks	Designing digitally enhanced evaluation and assessment	Building trust and empathy	What does 'solutions oriented' mean?	Next steps (IO3)

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15h30-16h00	Coffee-break				
16h00-17h00	Digital Learning Resources	Designing digitally enhanced evaluation and assessment	Flexibility and Conflict management	Practical Approach to Being Solution-Oriented	Next steps (IO3)

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A1: MENTORING RELATIONSHIP PROCESS

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A1: Mentoring relationship process

1. Mentoring relationship process: theory

1.1. Introduction

Mentoring is a new way of teaching digital content in university environments and is the cornerstone of the ACADIGIA project. Two main concepts stand out for their relevance in the field, leadership and the idea of reverse mentoring. Reverse mentoring, although it will be discussed in more depth below, is the opportunity to harness the technological skills of young people to train more experienced workers.

Mentoring is the process of using specially selected and trained individuals to provide guidance, pragmatic advice, and continuing support that will help the people in their learning and development process.

The purpose of mentoring is to tap into the existing knowledge, skills, and experience of senior or high performing employees and transfer these skills to newer or less experienced employees in order to advance their careers.

Teaching others is the best way to learn yourself. In the same way, mentors become more competent as leaders and communicators as they guide and help rising talent (Norris, 2020).

The outline of this chapter is as follows:

1. **Section 1.2** presents the idea of team development and the four phases identified by Tuckman for a successful mentoring process. Each of these stages is further elaborated in sub-sections.
2. **Section 1.3** discusses the concept of leadership linked to mentoring. It discusses both the concept in general and leadership at each of the stages identified in the previous section.
3. **Section 1.4** refers to the most widespread types of mentoring and focuses on those most applicable to this project: group mentoring and reverse mentoring. The major advantages of these two approaches are highlighted as well as the relevance of reverse mentoring as an innovative concept for technology education.
4. **Section 1.5** includes all references that are mentioned in the chapter, including those introduced with the expression "read (…) to find out more" and a variety of complementary resources to get in-depth on the topic. Some interesting books are presented here, as well as the documents used to illustrate the examples and some interesting resources that can be found online, including links.

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1.2. Team Development

In order to know the status of a team's developmental progression, in 1965 Bruce Tuckman identified four distinct stages through which all teams must pass in order to succeed. These stages are formation, storming, normalization and performance (Cosper, 2015).

A positive mentor-mentee relationship is established in the same way as any other human relationship. It requires both parties to have a genuine desire to understand the values and expectations of each other.

A mentoring relationship goes through four stages:

1. Forming
2. Storming
3. Norming
4. Performing

Each stage is equally important to make a relationship successful and should be treated with the same priority. While the time spent in each phase differs from relationship to relationship, the progression is uniform.

To learn more about the concept of mentoring and the stages described below, see Chao (2009), Eby (2008) and Martin, Reed, Collins, & Cortez (2002).

Figure 2: Four Stages of Team Development (Consulting, 2016)

1.2.1. 1st Stage of a Mentor-Mentee Relationship: Forming

The second stage is the business stage of a mentor-mentee relationship. It is the stage where a mentor helps the mentee set learning goals. They also agree on their initial expectations and define the strategy to achieve the target. Besides, they talk about when and how they will meet, what will be the frequency of their meeting and accountability.

In this stage, members begin to share their opinions more openly and may struggle to agree on the team's purpose, direction, and identity. Morale and productivity can be low during this stage, but issues are being identified and worked out. It's not the most fun stage, but it is important. The key is not to get stuck here.

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Although mentors and mentees work on setting goals and creating a work plan, the storming stage is not quite simple. It involves talking about soft issues in a relationship, establishing ground rules, confidentiality, boundaries, and shared responsibilities. These are the topics that are often left out of conversations because they are not very easy to talk about. Yet, these are critical topics that need to be discussed.

1.2.2. 2nd Stage of a Mentor-Mentee Relationship: Storming

The second stage is the business stage of a mentor-mentee relationship. It is the stage where a mentor helps the mentee set learning goals. They also agree on their initial expectations and define the strategy to achieve the target. Besides, they talk about when and how they will meet, what will be the frequency of their meeting and accountability.

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Although mentors and mentees work on setting goals and creating a work plan, the storming stage is not quite simple. It involves talking about soft issues in a relationship, establishing ground rules, confidentiality, boundaries, and shared responsibilities. These are the topics that are often left out of conversations because they are not very easy to talk about. Yet, these are critical topics that need to be discussed.

1.2.3. 3rd Stage of a Mentor-Mentee Relationship: Norming

Once the trust is built and the expectations are discussed, a mentoring relationship enters the third stage: norming. At this stage, the mentoring partners start working towards the goals that were set. This stage offers the greatest opportunity for learning and development.

During this stage, members begin to accept their roles on the team with their scaling up job scorecard, defences are lowered and relationships begin to deepen. Trust is being built and individuals will acknowledge their own weaknesses and ask for help. The team gains focus and begin to make progress, demonstrating alignment and acting as a real team for the first time.

The mentor's responsibilities at this stage are to help the mentee with various mentoring resources for their development. They share knowledge and experience through storytelling. They help mentees overcome challenges; and gradually a mentor becomes a guide, adviser, and friend to the mentee.

Another key responsibility of a mentor is to provide honest, candid, yet constructive feedback to the mentee. Because feedback is the most important part of a mentoring relationship. It allows mentors to acknowledge the mentee's strengths and help them identify their weaknesses, which is crucial for mentees' growth.

During this phase, both the partners monitor the learning process and progress to ensure the goals are being met.

1.2.4. 4th Stage of a Mentor-Mentee Relationship: Performing

At the fourth stage the team finally starts to thrive, in both results and in team spirit. Members are loyal and committed to the team's results. They are able to balance individual needs and team requirements, and disagreements and differing opinions quickly surface and are handled.

Productivity is high, deadlines are met and information flows easily so the goals are accomplished. Still, this stage is more than simply marking an end to the relationship. It is an opportunity for the mentoring pair to recognize and celebrate their success.

Both mentor and mentee benefit from closure. It is an opportunity to harvest the learning and apply it in real-life situations.

Any mentoring relationship moves through these four phases. Yet, there is no specific formula to create a successful relationship. It takes effort from both partners to make it work. And if at any stage, the relationship experiences hardship, communication is the main solution.

1.3. Leadership in mentoring

Leadership is the art of motivating a group of people to act toward achieving a common goal. Leadership captures the essentials of being able and prepared to inspire others. Effective leadership is based upon ideas that are effectively communicated to others in a way that engages them enough to act as the leader wants them to act.

A leader inspires others to act while simultaneously directing the way that they act. They must be personable enough for others to follow their guidance, and they must have the critical thinking skills to know the best way to use the resources at an organization's disposal.

While there are people who seem to be naturally endowed with more leadership abilities than others, anyone can learn to become a leader by improving particular skills. History is full of people who, while having no previous leadership experience, have stepped to the fore in crises and persuaded others to follow their suggested course of action. They possessed traits and qualities that helped them to step into roles of leadership (Ward, 2020).

Mentorship is the most effective way to build leadership skills. For anyone working within an organization with aspirations of becoming a leader, the path can seem frustrating at times. The skills acquired along the way don't always reflect the job they want to do. For many employees, training comes in the form of online courses and classroom-style learning with endless paperwork, tick boxes and reading. While this kind of training can teach someone how to do the basics to manage a team, or looking after systems, it does not teach somebody how to be a great leader. To learn more about the general concept of leadership, read MindTools (2020).

Mentoring, on the other hand, is effective at building leadership skills because the mentor is a role model and a teacher. Through active conversations, mentees uncover areas where they need to improve their leadership skills. With the help of their mentor, they can identify how to grow these skills and follow their footsteps.

Being a leader in an organization requires a mix of know-how, hard and soft skills, like emotional intelligence. While some of these skills take time and require on-the-job experience, others can be taught in leadership training programs. To find out more about studies on what makes great leaders tick and how to teach others those skills, please see Boston Consulting Group's Roselinde Torres (2021).

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It is considered vitally important that leaders in training acquire the following soft skills:

- **How to communicate effectively.** A LinkedIn Learning report (LinkedIn Learning, 2018) found that communication was one of the most important leadership skills for employees to learn. Seventy-four percent of talent developers thought it was a vital skill to learn. Mastering the art of communication means excelling at different ways of sharing a message with others, including presentations, phone calls, emails and one-on-one conversations. A leadership mentoring program presents an ideal space for employees to practice these skills.
- **How to hold others accountable.** While being responsible for individual performance is one aspect of accountability, it also means being accountable for the team. Leaders need to know how to encourage a team and motivate them towards success. Having a mentor allows mentees to gain more wisdom about problem-solving. It also helps them be accountable for their role in the mentorship.
- **How to grow your network.** Not everyone is a born networker. Some need more guidance than others, and a mentor can help in this respect. Mentors can open the door to other connections for mentees. Additionally, mentees gain confidence through mentorship as they see their own skills and abilities develop. This confidence can help them reach out to others and get to know people, expanding their network.
- **How to actively listen to others.** Hearing and understanding what others are saying is a crucial skill for leaders. Successful mentorships require good listening skills so that mentees can fully benefit from the experience and the advice offered.
- **How to strategically solve problems.** Finding workable solutions is a trait of an effective leader. Employees can learn how to find answers through the guidance, encouragement and advice of mentors.
- **How to guide others.** Good mentors have a lot of things to teach, but they can only impart their knowledge if they know how to guide others effectively. Mentorship is not so much about telling a mentee what actions to take, but rather guiding them on their journey to make the best possible choices.

The close relationship between mentoring and leadership is well known. That is why some leadership tips for each stage are included below (Cosper, 2015):

- **Leading while Forming:** During this stage, the team is very dependent on the leader. It's important that you take the lead in developing agendas, gathering information and solving problems. Try to involve as many members as you can in conversations and decisions but know that the ultimate responsibility lies with you.
- **Leading while Storming:** It's important to ask a lot of questions during this stage. Seek first to understand and encourage everyone on the team to take the same approach. Act as a sounding board and allow any hidden agendas to surface. Provide information and suggest alternative solutions to roadblocks. It's important to demonstrate the skills you want the team to develop. You are still responsible for the team's health and results.
- **Leading while Norming:** Finally, you are able to begin sharing responsibility with other team members. You are participating in the discussions instead of leading them all, and the team begins to solve problems jointly. It's important to step back a little during this stage and allow the team to succeed without you where possible. Your contribution becomes more focused on your specialized knowledge and expertise than your ability to hold the team together.
- **Leading while Performing:** Your role here is to act as the team's champion, securing resources and minimizing roadblocks in the organization. Your participation should be much more focused on how the team is tackling problems rather than solving the problems for them. You will still raise issues, ask questions, and challenge approaches, but more to validate the team's conclusion than to drive it. Leadership belongs to everyone on the team, and the team owns its results.

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Your role as a leader is different, but no less important through all four stages. The key is understanding where your team is and providing the right kind of leadership at each stage. If you feel your team is stuck, share this information with them and ask them to self-diagnose where they think they are and what they need to do to move on to the next stage. Understanding that each stage is normal and expected can relieve a lot of tension and free the team up to break through and move on.

1.4. Types of mentorship

Most people are familiar with the one-on-one mentoring approach and its benefits. A senior leader or expert takes a more junior employee under their wing and treats them as their protege. They share advice and guidance to help them with their career.

Figure 3: Types of mentorship (Carruthers, 2021)

However, this is not the only form of mentoring and in this case we will focus on two updated forms of mentoring that we believe are better suited to our approach:

- Group Mentorship
- Reverse Mentorship

1.4.1. Group Mentoring

Group mentoring is a flexible derivative of traditional mentoring, with added benefits. It can be defined as multiple mentees and one or more mentors working towards employee development together. These participants are also able to act as the mentee to a mentor, but a mentor to a different mentee simultaneously.

In traditional mentoring, the mentor and mentee are usually matched by similar background or career paths. In group mentoring, the mentee pool can be more diverse in terms of widespread backgrounds. They can also be exposed to several experienced, well-established members of their profession who can fulfil various mentor roles.

The primary use of these mentorships are short-term transitions when the required number of mentors is not available. Group mentoring can also be used when one mentor has critical knowledge that many individuals need, or during onboarding.

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Group mentoring is a process where peers and leaders are brought together to engage in discussion around common challenges, goals, and ideas. Their combined knowledge and different areas of expertise help each member solve problems and come up with new ideas. Instead of two heads being better than one, there are several (Together Platform, 2021).

That's the essence of group mentorship. But there are three ways to organize a group mentoring program:

- One mentor with multiple mentees: One mentor who is usually a senior employee or executive leads mentoring sessions with multiple mentees.
- Multiple mentors and mentees: Typically, larger groups of people to discuss goals for the organization or run ideas past executives.
- Peer mentoring: Different teams at similar seniority levels come together and help each other grow by coaching and mentoring one another.

Benefits of Group Mentoring

Like traditional mentoring relationships, group mentoring gives benefits to not only the organization, but the mentors and mentees as well. They both give participating mentees new skill sets and knowledge, but there are additional benefits specific to team mentoring (Insala, 2019).

Group mentoring brings together individuals that may or may not have connections and let them learn together. They will be able to support and help one another to become the best individual, fostering a sense of community on top of employee development. The true group situation provides an incredibly supportive environment in which to share knowledge and experience through mentoring.

Unlike the one-on-one mentoring relationship, group mentoring will involve a diverse group including experienced, well-established people as well as newcomers. Newcomers have the opportunity to gain access to a network that will offer support, important information, and contacts.

This group helps socialize newcomers to the corporate culture, on top of developing their skills and knowledge. This dynamic may be especially useful to mentoring for onboarding (Insala, 2021). During onboarding, you can form groups of new-hire mentees to learn the company culture from a single mentor. This will result in quicker time-to-productivity and a better overall employee experience.

1.4.2. Reverse Mentoring

Reverse mentoring is defined by more junior employees acting as a mentor to senior leaders or executives. For many organizations, reverse mentorship's purpose is to give leaders a fresh perspective on rising trends in areas of technology or the future of work (Together Platform, 2021).

Reverse mentoring is also a great way to increase the visibility of minority employees for future leadership opportunities, thus supporting diversity initiatives. In this way, each participant plays an active mentoring role. The less experienced will help build the skills of senior leaders in the organization. In turn, senior leaders gain fresh perspectives into the next generation of talent.

Reverse mentoring is a good approach to leadership development. In these scenarios, senior leaders need to listen to employees and understand their strengths and weaknesses. Doing this validates the

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young employee and creates a foundation of trust that is essential for successful mentoring. To learn more about the concept of reverse mentoring, see Jordan & Sorell (2019) and Wooll (2022).

Developing a reverse mentorship program within an organization offers a different avenue of learning and development for employees at any level. A reverse mentoring relationship provides benefits for all participants (Gordon, 2021), including:

- **Retention of younger workers, particularly Millennials.** Research by the Harvard Business Review found that reverse mentoring fulfils Millennials' desires for recognition in the workplace.
- **Expand digital skills competency among employees.** Younger workers have a lot to offer to senior leaders when it comes to understanding and integrating technology into workplaces. While many senior employees have had to learn social media, Millennials have a much more intuitive understanding of platforms and how to leverage them.
- **Leadership development.** Even if the goal of your reverse mentoring program is to have younger workers teach senior employees, learning will be a two-way street. Millennials can benefit by improving skills that will make them great future leaders, such as communication.
- **Improve diversity.** Learning to understand and respect differences is a key element to mentorships, including reverse mentoring. Patrice Gordon, an executive coach, did a TedTalk (Boston Consulting Group's Roselinde Torres, 2021) on reverse mentoring and how it's an effective way to champion employee diversity and inclusive leadership.

Some examples of reverse mentoring are listed below:
Caterpillar - The organization has had success with their mentoring programs and have added a reverse mentoring component in the form of ERGs. Vice President of Caterpillar's Large Power Systems Division, Tana Utley, said that Millennials see the work world differently than other generations, which is vital for senior leaders to understand.
PwC - With a focus on diversity and inclusivity, PwC has been creating reverse mentoring programs at its international locations. Participants have said it has positively impacted inclusivity, skills development, and a culture of learning within the company.

Heineken - Heineken has been running a reverse mentoring program through Together's platform since April 2021. The results have been amazing. When surveyed, 86% of mentees—who are senior leaders—wanted to connect with more junior employees to gain new skills and experiences from the next generation of talent. One participant shared that their meeting "was incredibly useful [for] learning about the processes at Heineken to progress through the business. We had a very open and honest conversation and I received a lot of direction and support on how to achieve my goals and ambitions within Heineken."

Mentoring Relationship process: exercises

Exercise 1: 'Introducing Each Other'

This is an exercise to get participants to know each other so that they find themselves in a friendly environment. Participants can do this activity either before the mentoring sessions, in their own time, or during the sessions.

Instructions

1. Pair up participants in twos.

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2. Give them a list of questions to ask each other. Some examples here.
3. Ask each pair to interview each other, either via email or in breakout rooms.
4. When all the participants convene together in the same virtual room, each participant will introduce the participant they interviewed.

Online tools you can use

- Breakout rooms
- Email
- Chats

Exercise 2: Get creative

Start a Google Doc (or similar) and get creative with your mentee using one of these writing scenarios (exercise 2.2.1. or 2.2.2).

A Big Decision

You make decisions every day that affect your life in different ways. Some decisions, such as which movie to watch or where to go on your morning jog, have a small impact, while others, such as which job offer to accept or whether to get married or not, have life-changing implications.

Look back on a past choice that falls into the life-changing category and use the experience as a reflective journal prompt.

1. Think of a specific time when you were at a crossroads and had a significant decision to make. Free-write one page in your personal journal, keeping these questions in mind:

   - When was this? How old were you?
   - What was the context in which you were making this decision? What other factors were important?
   - Why did the decision seem significant at the time? Do you still think it's important for the same reasons?

2. Consider the consequences of your past decision. Knowing what you know now, would you make the same choice? Free-write another page, using these questions as a starting point:

- How did this decision change your life for the better?
- How did it create challenges or heartache?
- Why would you stand by your decision, or why would you choose to go in a different direction?
- What do you think would have happened if you had taken another path? What consequences do you think would have resulted from that option?

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Sum up what this past experience taught you in a short paragraph. Have you used these lessons to make other big decisions? Did you create a "what not to do" script for yourself for future situations? Tell your personal journal all about it.

Exercise 3: Alphabet Story

Let's write a short story together. You must communicate through an online tool. The mentor will explain the rules to the mentee and guide him on the task.

A short story that is exactly 26 sentences long! Each sentence should begin with the next letter of the alphabet. You can begin with a name like "Bill"; an adverb (like "recently" or "often"); a conjunction (like "however" or "since"); an onomatopoeia (a sound word, like "clunk" or "bang") or a prepositional phrase (like "at her sister's house" or "during summer vacation").

You may choose any theme you would like, but your story must include:

- A setting (time and place)
- Characters
- Dialogue
- Conflict (this character wants "X", but ……. so……)
- A Beginning, Middle and End

Exercise 4: Role Playing

In this activity, participants will witness different leadership styles (examples here) and the impact on employees or mentees. During an online meeting, ask a few volunteers to role-play. One participant will play the role of an employee or mentee who made a mistake. For example, missed deadlines or lost clients. Two or three other teammates will assume the roles of different leadership styles and respond to the initial volunteer. After each leadership style has responded to the employee or mentee, allow time for the whole group to analyse which style was most effective. Team members can decide what an "ideal" leadership style should look like (using a digital whiteboard, for example).

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A2: COLLABORATIVE PARTNERSHIP

A2: Collaborative partnership

2. Collaborative partnership: theory

2.1. Introduction

Within the ACADIGIA project and the use of digital tools for teaching and learning, mentoring plays a fundamental role. In order to develop its function correctly, one of its fundamental aspects is to create collaborative partnerships between mentor(s) and mentee(s). The partnership established between mentor(s) and mentee(s) should always be based upon collaboration. This is the only possible way to create a lasting partnership based on confidence and mutual respect.

In this section, some of the basic concepts regarding this collaborative partnership will be presented, also mentioning some examples and some successful case studies in which this collaboration has been an important aspect.

The outline of this chapter is as follows:

- **Section 1.2** presents the idea behind the concept of a collaborative partnership between mentor and mentee. It also includes the definition of certain keywords in this field, including new concepts that are emerging as this idea is incorporated in different scenarios related to the world of education.
- **Section 1.3** includes the benefits for each of the profiles involved in this partnership. This collaboration is mutually satisfying and both mentors and mentees can learn from it.
- **Section 1.4** provides some useful information regarding how collaborative partnership can be adapted to today's virtual era. The same ideas of traditional collaboration are still valid, but new technologies and the possibility of online meetings, among other elements, present new possibilities that need to be explored.
- **Section 1.5** explains some case studies where such collaborative partnership between mentor and mentee has already been established. Only a few examples have been included that have been considered of interest because of their originality, but there are many published reports and articles on the subject. By exploring these case studies, it is possible to gain ideas on how to incorporate such a collaborative partnership idea in new contexts.
- **Section 1.6** includes all references that are mentioned in the chapter, including those introduced by with the expression "to find out more, read…" and a variety of complementary resources to get in-depth of the topic. Some interesting books are presented here, as well as the documents used to illustrate the examples and some interesting resources that can be found online, including links to Youtube or TedTalks videos.

2.2. The idea and some keywords behind the concept “collaborative partnerships between mentors and mentees”

The concept of **collaboration** is deeply rooted in learning and teamwork. When several people collaborate, they help each other and share their knowledge and experience in order to achieve a common goal. In this way, different people can collaborate with their knowledge and benefit from each other's skills, while all of them pursue the same goal.

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To find out more about collaboration, its different types and why the current time is a good time to collaborate, this TedTalk Why Collaborate? Why now? by Seth Starner is recommended as an additional resource.

When establishing a partnership between mentors and mentees, the concept of collaboration must be considered in the mentoring process. The different people involved in the mentoring process should collaborate with each other in order to improve and learn respectively from each other's strengths.

Collaborative Mentoring is a process and relationship between a number of experienced businessperson(s)/mentor(s) serving as trusted confidante(s) to business owner(s)/mentee(s) who come together over a specified period of time on a mutually defined purpose or mission through mentoring and a mentoring program (Digital Change Makers Erasmus Project, 2022).

In this collaborative mentoring, the aim is for each of the people involved to bring the best of themselves to others. In the case of more experienced people, one of their greatest strengths will be the knowledge they have acquired along the way, as well as lessons learned with their experience.

On the other hand, in the case of less experienced participants, their greatest strengths will be enthusiasm, agility and dynamism. Each participant will have their own interests, but a balance of reciprocal collaboration between all participants must be mutually agreed upon, in order to make their collaborative partnership last over time.

There are several keywords that make it easy to explain the idea behind collaborative mentoring. The following image shows all these keywords. At the top, the inputs of the mentoring process can be seen and, at the bottom, the outputs that are achieved, if the process is successfully developed over time.

Figure 4: Keywords for describing the inputs and outputs of a collaborative mentoring process (created by UPM partner).

In any mentoring process, **training** is fundamental. Mentors teach their mentees what they have learned from their experience and give them a series of tips. The mentee, on the other hand, can also contribute with their digital skills and their own vision based on their experience and training.

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Both mentors and mentees must be creative and willing to express their **ideas** with the rest of the participants. The basis of the whole process is a common goal or **target** shared by both mentors and mentees.

All the participants in the mentoring process should be open to dialogue and **exchange** knowledge, ideas and opinions. These exchanges should always be constructive and respectful. It should never be lost sight of the fact that, although there may be different visions, the common goal is shared. To find out more about the ideal soft skills to participate in these collaborative mentoring projects, please read Digital Change Makers Erasmus Project (2022).

All the concepts mentioned so far are inputs to the collaborative mentoring process. They are preconditions, necessary for the process to run smoothly. If this training, creativity and exchange of ideas are successfully directed towards the common goal, a series of outputs will be achieved that will allow all participants to grow and improve.

Firstly, a **partnership** is created between the different participants. Moreover, this partnership is based on **trust**, because each person has been able to expose and share with the others his or her ideas and opinions.

Normally, in the professional world, the fact of establishing a network of contacts with whom to collaborate is called 'networking'. In the mentoring framework, this term is being replaced by **'knot-working'.**

This term has been coined by Engeström, a teacher and researcher with a great experience in this field. The idea behind this concept is that, in the author's opinion, both the shape and form of future teams will be malleable, transient and self-governing (Engeström, 2008 , cit. Smith, 2010).

This idea is associated with dynamism, as knots can be created formally or informally and wherever they are needed. This invites us to think of a dynamic way of working in teams within different organisations. To find out more about 'knot-working' and all the theory that goes with it, the book "From Teams to Knots: Activity-Theoretical Studies of Collaboration and Learning at Work" by Yrjö Engeström is recommended.

The process of collaborative mentoring leads to a sense of **success**, as different views and opinions are balanced to achieve a common goal. In the same way, all participants are **motivated** to continue participating in this type of process or, depending on the case, to replicate it in a scaled-up way in their own teams and organisations. To find out more, this series of videos from the Mentor-Youtube Channel is highly recommended. They cover different topics included in the webinars on Collaborative Mentoring Webinar Series.

2.3. Collaborative partnerships between mentors and mentees: benefits for each of the profiles

Both mentors and mentees can take advantage of this collaborative partnerships. For sure, the general benefits of a mentoring process are also valid in this new approach. To find out more about the general mentoring benefits, read the reference of University of Southampton (2022).

By establishing collaborative partnerships between mentors and mentees, some of these benefits are reinforced. Although the specific benefits depend on the implementation scenario, the following image summarises some of the most outstanding ones.

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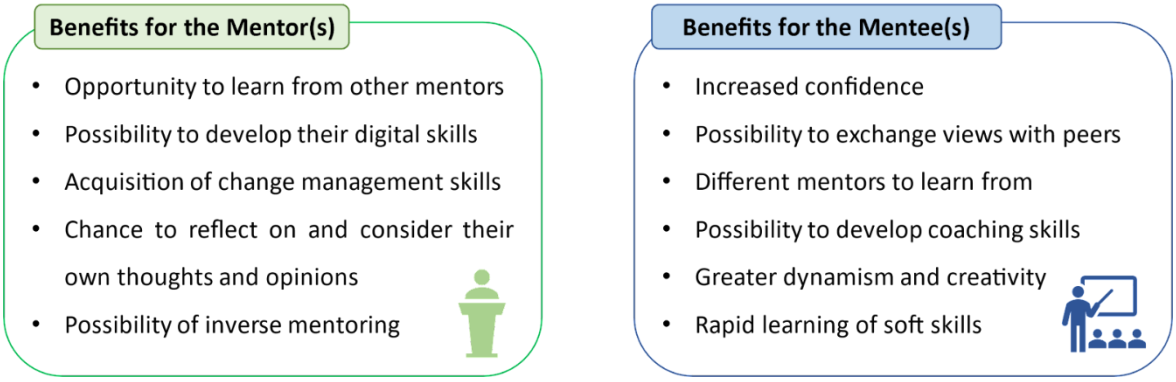

Figure 5: Benefits for mentors and mentees from collaborative partnerships (created by UPM partner)

In collaborative partnerships, mentoring is not limited to the mentor and the mentee. There are other people involved in the mentoring process.

This allows mentors to teach their mentees, but also to **learn from the advice and experience of other mentors.**

Similarly, partly due to the development of technology and the ease of younger professional profiles, who have no problem working with technology and working online, **mentors can develop some digital skills**, also learning from the creativity of their peers and mentees.

This new adaptation to digital media, together with the ability to learn from different ideas and the management of different opinions to achieve a common goal, helps them to **acquire or reinforce their change management skills**.

When explaining certain ideas to a group of mentees and participating in their discussion and exchange of opinions, **mentors themselves may rethink their views or certain lessons learned**.

The sum of all of the above means that mentors can also be mentored in some way by their mentees, which translates into **reverse mentoring**.

For mentees, the establishment of collaborative partnerships also brings several additional advantages.

Firstly, being able to defend their ideas and exchange views with mentors over a sustained period of time, helps them **gain confidence** in expressing their opinions.

Moreover, in case various mentees are working in the same group, **they have the possibility to exchange views with peers**, which also allows them to establish contact with other people with similar personal and professional characteristics.

The fact that they **can exchange views with different mentor profiles** also helps them to learn different lessons from different mentors' experiences.

By expressing their ideas and opinions to both mentors and peers, mentees can **develop coaching and leadership skills**.

The fact that all opinions are considered helps mentees to be **more creative and dynamic**, as the environment in which they work is more fluid. In general, this also allows them to **acquire a variety of soft skills much more quickly** than if they did not participate in the mentoring process.

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2.4. Bringing collaborative partnerships into the 21st century: virtual collaboration

The outbreak of the pandemic has abruptly changed the role played by technology. The implemented restrictions made it necessary to suspend activities that had traditionally been understood only as face-to-face and to adapt them to online contexts, either using digital platforms, webinars, video tutorials, etc.

However, it would be a mistake to think that ideas such as virtual collaboration or online mentoring have arisen because of the pandemic. These hybrid or fully online models had already been studied and successful cases of implementation analysed long before covid-19 brutally changed the lives of millions of people around the world.

As an example, to find out more, read Seabrooks & Kenney (2006) and Fong, Mansor, Zakaria, Sharif, & Nordin (2012) for some examples of the use of collaboration and virtual mentoring over the last fifteen years.

Depending on the situation and the activities to be undertaken, a decision should be made whether to choose online or face-to-face models (or even a combination of both).

According to different authors, a combination of both is probably the best option. To find out more about the advantages and disadvantages of organising conferences in the two different formats, read Moss, et al. (2021).

Including virtual collaboration in the establishment of collaborative partnerships can have several advantages for both mentors and mentees. In a schematic way, some of the most important advantages are highlighted in the following image:

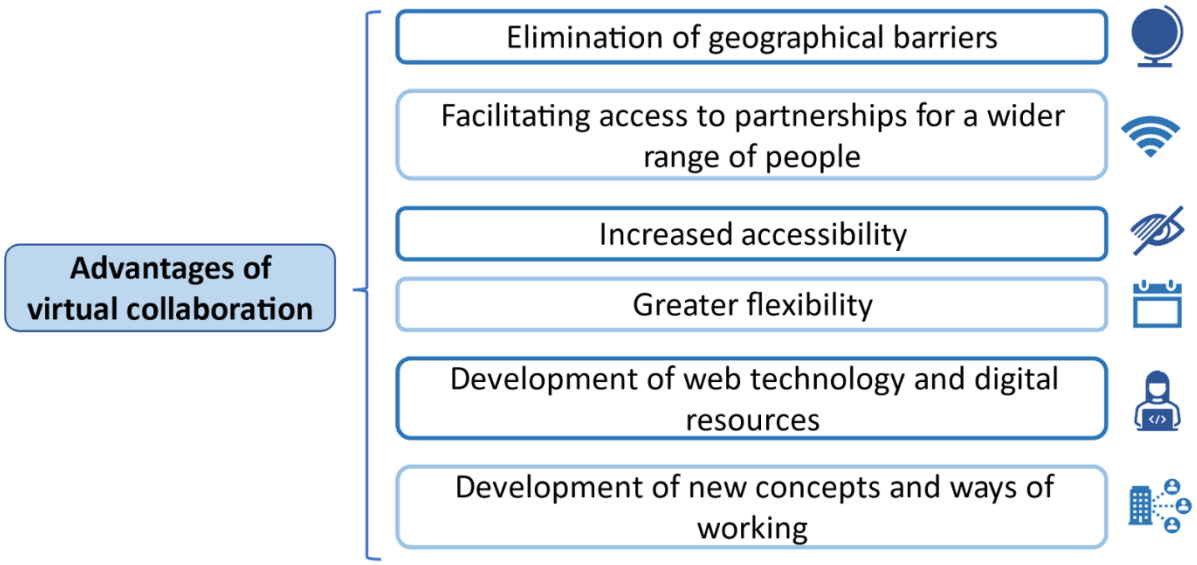

Figure 6: Advantages of virtual collaboration (created by UPM partner)

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The first advantage of virtual collaboration is that it connects people in different parts of the world. In other words, **it removes geographical barriers**.

The above factor, together with reducing the need to travel, allows **access to the partnership for others who would otherwise not be able to access it**. For example, mentors with a very busy schedule who cannot participate regularly, people living in remote areas, participants from different countries, etc.

Accessibility is another major advantage of virtual collaboration. Transcripts of events or subtitles of conferences can be produced. In the same way, there are different web or digital applications where accessibility is a maximum and can be easily included in the activities carried out.

Just as teleworking offers greater **flexibility** for workers who can work from home, remote collaboration has a similar advantage. Certain activities can be recorded so that they can be consulted by participants later, participants in mentoring activities can take part in these programmes from different locations, etc.

The global lockdown and restrictions imposed by the pandemic have led to a boom in new technologies, including collaborative working platforms, virtual meeting rooms and workplaces, webinars for training, etc. Presently is the time to take advantage of this boom in **digital tools and resources** and make the most of activities and events that can be easily organised online.

Due to the use of new technologies, different professionals have improved their digital skills, so that even if people are still doing the same job, they may have acquired new ways of doing it based on digital resources and tools.

Each of the participants in the collaborative partnership should integrate **these new concepts and ways of working** into the activities they do so that the whole group can learn and continue to improve.

2.5. Bringing collaboration into life: some successful case studies of collaborative partnerships

There are many examples where collaborative partnerships have been extended over time, far beyond the simple mentor-mentee or mentee-teacher relationship.

Three different examples have been selected to be presented in this chapter, all centred on the field of teaching and learning, but from different perspectives:

- In Reeve & Church (2013), there is a reference to a case study related to the School Library Media Preparation program developed by Longwood University. In this case, the aim is to train librarians. To achieve this goal, experienced librarians accompany their students in the first steps, training and teaching them all the necessary concepts. They also focus on teaching their students digital skills and integrating mentoring and collaborative activities between participants into the programme. The students are mostly adults and teachers who decide to become school librarians in order to increase their areas of expertise.

  The title of the article 'Collaboration till the end of time' sums up perfectly the success of this initiative. After a few completely successful editions, the former students are now experts in their different areas and, in some cases, their former teachers turn to them to solve their doubts. Many of these alumni coincide in different events and have managed to create a network in different parts of the country. It has evolved from a traditional case of learning to

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a successful collaboration, where the different participants continue to collaborate with each other.

- In Adejare Aderibigbe, Colucci-Gray, & Gray (2014), another case study that took place in Scotland is explained in detail. This paper presents the results of the analysis of a collaborative partnership between senior teachers and junior teachers. In contrast to the traditional approach, in which the more experienced teacher teaches the less experienced, the analysis of the data collected in the study shows that more experienced teachers can also learn from collaboration with less experienced ones.
  Furthermore, it was found that collaboration appears to change some of the norms of status and power. Therefore, mentoring is recommended in this type of apprenticeship and training, as both types of profiles learn from each other.
- A third case of successful collaborative partnership took place in Norway (Brynildsen & Haugsbakken, 2021). In this case, the application scenario was a secondary school. The two collaborating groups were Teaching Educators (TEs) and high-school teachers. TEs are experienced in professional digital competence (PDC) and information and communication technologies (ICT). To collaborate, they worked on the design of lessons using the collaborative digital platforms of the school (Microsoft Teams and OneNote).
  The approach of this study was based on the collaborative principle. The TEs were not external observers but collaborated with the teachers.
  Overall, the TEs were able to gain field experience, which will help them in their future research. On the other hand, the teachers gained new digital competencies and increased knowledge of certain pedagogical terms used by the TEs. Overall, they all learned in the process by collaborating and exchanging ideas, experiences and opinions with their peers.

Exercises/practical activities

Exercise 5: “Yes, and…”[4]

The principle of “Yes, and…” is the basis of all collaborative teamwork and group creativity. It is a fun exercise and allows team members to experience each other in a light, creative way. Players build a story one sentence at a time. Each sentence must begin with "Yes, and...". Each sentence must refer to one statement from the previous sentence. For example, if I say "Once upon a time there was a blue rhinoceros", then the next person might say "Yes, and the blue rhinoceros liked to drink tea (or wore reading glasses, or whatever)”. And the person after that could say something like "Yes, and that tea contained persimmons" and so on. Since you don't know what the person ahead of you will say, you can't plan. If someone forgets to start their sentence with "Yes, and..." then the group functions as a friendly human buzzer, saying "Buzzzz". The person then just tries again this time beginning his/her sentence with "Yes, and...". At any time, the participant has the choice to say “pass” if they get too stuck.

Because this is an exercise in accepting offers and building on them, these behaviours are to be avoided. It is best to alert the group to this No-Nos upfront:

[4] (Callen, n.d.)

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- Do not argue with what was just added to the story. Example: "Yes, and it wasn't really a blue rhinoceros, it was a greenfly". Arguers may say “Yes, and…” but they do not add, but instead block or deny the previous story addition. The group should be encouraged to Buzz an arguer to encourage them to try again with a true” Yes, and….” statement.
- Do not question what was just added to the story: "Yes, and what kind of blue rhinoceros was it?". Questioning in this game is to be avoided. The moderator should encourage people to say the first thing on their minds, the sillier the better.
- Do not hesitate. The moderator should encourage people not to hesitate by trying to find the perfect thing to say. Jump in by saying “Yes, and...” then repeat an element and let the first thing that comes to mind come out to add to the story.
- The moderator begins the story by saying "Once upon a time there was a (talking truck tire, or whatever)”. For best results, stay in the imaginary realm, not the business realm. The moderator can also assist by pointing at who is next and by encouraging people to speak up so others can hear. The moderator ends the story by saying "The End."

The steps:

1. Moderator organizes colleagues in groups of 5-15 people.
2. Moderator explains the rules.
3. Moderator begins the story with "Once upon a time there was a (something imaginary)."
4. Each participant contributes a "Yes, and...(something)" sentence to the story.
5. Keep going around until the story finds a natural end.
6. Moderator ends the story by saying "The End" and encouraging applause.
7. Moderator asks players what they noticed. What was hard? What was easy? What worked? What didn't?
8. Moderator draws learning conclusions and ties the game back to the workplace.

“Yes, and…” teaches a mindset that improves group creativity. Saying “yes” to the ideas of others, instead of “no”, and then building on those ideas, is more productive than brainstorming. The game forces you to stay present to the ideas of others and not think ahead or attempt to control things or appear smart. It teaches you that creativity can mean improving the ideas of others. And it dramatically demonstrates that group creativity can outperform individual creativity in terms of pushing the boundaries. The moderator can sum up by saying "I guarantee you that no one individual in this room could have come up with this story. “Yes, and…” is a great warm-up exercise for brainstorming or visioning meetings. It can also be used as a diagnostic tool to identify dominant types, rebels, show-offs, arguers, shy mousy non-contributors, etc.

Exercise 6: Collaborative drawing

Exercise 6.1.1. [5]

[5] (Stanchfield, 2021)

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- Materials: For in-person groups, large pieces of flip-chart or butcher paper, colourful, fat markers or crayons; for online learning, some online tools and online whiteboards (example: Jamboard, Aggie.io, Sketch Together) for each breakout group.
- Facilitation Suggestions:
    - Divide participants into small groups or breakout groups online.
    - Give each group a piece of flipchart paper and a selection of colourful fat markers. For online learning, a Jamboard or another whiteboard app page for each breakout group.
    - Ask them to reflect upon their day, class lesson, experience, or work together and create a pictorial or symbolic representation of their experience. This can be any kind of symbol, picture, or group of pictures that represents their time together. It is not meant to be an artistic masterpiece— it just should involve each group member's creative input in some way.
    - Give them 5 to 10 minutes, so they work quickly and collaboratively and don't get too caught up in or intimidated by artistic detail.
    - Invite each group to present their drawing to the larger group. This is where the laughter, celebration, and compelling metaphoric reflection dialogue come in.
    - Often, participants take away photos of their group drawings.

Exercise 6.1.2. [6]

Objective: This should illustrate how hard it is to give clear instructions as well as how hard it is to listen and can also show how things are easily misunderstood and misinterpreted. ´

Method:

• Divide participants into pairs.

• Give one member of the pair a picture which must not be shown to their partner. Examples of pictures here.

• The person with the picture must give instructions to their partner so that they can draw it, but must not say what it is, e.g., 'draw a circle, draw two more circles inside the circle about halfway up'. The person picture cannot watch the person draw it.

• Compare the drawing with the original.

• Hand out more pictures and ask participants to swap roles.

• The person with the picture can give instructions in a similar manner as in part 1 but this time the person drawing can ask yes/no questions and the person with the picture can watch as they draw. Half the group can begin by telling the person what the object is.

Round 1

• Why don't many of the pictures look like the original? (Interpretation: everyone has a different interpretation, directions were not clear, not able to give or get feedback).

• What were your frustrations as the source of the message (giving instructions), as the receiver of the message.

Round 2

[6] (Buren, 2016)

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• Did it help to be able to watch the person drawing?

• Did it help to be able to ask questions?

• Did it help to know what the object is …your clear goal? Relate this process back to communicating with your employees. Is your message always clear? Is there a channel to give and receive feedback? What noise is present that affects the message?

Collaborative partnership: References and resources

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A3: SOLUTION ORIENTED-THINKING

A.3. Solution Oriented Thinking

3. Theory: solution-oriented thinking

3.1. What does “Solution Oriented” mean?

In order to be a successful mentor, it is important to adopt a positive attitude towards possible challenges and difficulties that may be faced through the mentorship and during classes. In this sense, to prepare the mentors and explain the importance of applying specific attitudes and thinking, this chapter will focus to define and deeply explain the meaning and the importance of the “Solution Oriented Thinking” approach.

As the name mention, **Solution Oriented thinking approach** is based on the action of looking past any problem and trying to find possible efficient solutions that may prevent the problem to happen again in the future (Rovva, nd). To achieve that, the person must understand and define the obstacles that are in the way of the specific situation and solve them with practical solutions, by focusing on the problem from a different perspective and on the existing solutions and not on how hard or complex the problem is, which is the tendency of most people.

In fact, in effort to explain Solution Oriented Thinking, it is also crucial to clarify what **problem-oriented thinking** is. According to Mueller (2020), the problem oriented approach is when people “focus on the problem or the reason why a problem emerged (…)”. In general, people that are problem-oriented tend to be more negative, hopeless and have the tendency to give up easily on things (Nze, 2015). However, those characteristics are exactly the opposite from what it is expected from mentors and mentees, and that’s the reason why comprehending and adopting the Solution Oriented Thinking approach is so relevant.

Figure 7: Problem Oriented vs Solution Oriented (Nze, C. (2015). Problem vs. Solution-Oriented Thinking | LinkedIn. https://www.linkedin.com/pulse/problem-vs-solution-oriented-thinking-chidinma-ogbuaku/)

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With the definition of both perspectives, it is possible to comprehend that, in terms of leadership, the Solution-Oriented approach helps to keep people more motivated, goal-oriented and positive, while, with the problem-oriented approach, people tend to look backwards and get easily frustrated (Rovva, nd).

Following this perspective, Marek et al., (1994) explains that the "solution focused supervision" centers, above all, in the strengths and resources and not on the deficits and problems of the circumstances (de Shazer, 1984, 1985, 1988, 1991; Wetchler, 1990, cit. Marek et al., 1994). In light of that, this definition "include the belief that individuals have the resources and strengths to create solutions (…)"(Juhnke, 1996; Marek et al., 1994 cit. Golding, 2020, p. 48). Which means that, most people have the skills to find solutions and face the problem with a positive posture, instead of fearing the situation and/or giving up for thinking that there's no solution for the existing problem. Indeed, that is what mentors should do in their daily lives, nevertheless, they should also incentive their students and mentees to do the same, by giving them complex exercises and activities that need to be presented with creative and innovative solutions.

It is important to highlight that the Solution Oriented Thinking can and should be used during classes and mentorships, but also during difficult situation in people's lives, as a way to instigate them to act more positive, focus on how to lead with challenges, not to overthink and become anxious about the problem itself. As matter of fact, Mueller (2020) mentions that if we think about the two methods mentioned, "the majority of our decisions and our attitudes towards tasks, problems and upcoming situations will either be problem or solution oriented." (Mueller, 2020). In other words, most of the times we adopt, consciously or not, one of the two approaches, but the goal with this chapter is to ensure that the mentor, the mentees and/or students will adopt and face situations using, from now on, Solution Oriented Thinking.

3.2. Characteristics of Solutions-Oriented Leaders

In general, people lead with problems and challenges in different ways, according with their personal experiences and their mindsets. When it comes to leaders, there's a high expectation about how they will lead and face specific situation in their professional lives, particularly from people who admire them or work directly with them. Considering that, the purpose of this chapter is to list and define important characteristics that can help to build a successful Solution-Oriented Leader.

The first step to become Solution-Oriented is focusing on your mind. According to Nze (2015), "The mind is a powerful tool. When its full capacity is engaged, creative and innovative solutions can solve even the toughest problems. Sometimes, just changing the way you think about a situation is all the change you really need". Which means that the initial phase is based on understanding the power of your mind and the impact of your thoughts in the way you will lead with any situation that occurs.

Following this perspective, Nze (2015) also mentions five main traits of solution-oriented thinkers: Positivity, Feeling Hopeful, Take responsibility, See problems as challenges that can be overcome and willing to hold on until a problem is solved. Based on this list, the next paragraphs will deeply describe what means each characteristic and why they are so relevant for Solution-Oriented Leaders.

In first Place, Nze (2015) mentions the relevance of **being positive** in your actions and thoughts but being optimistic is not always a first natural behaviour for people. Truth being said, people tend to be more negative and, normally, they end up focusing on aspects of life that they don't like, leaning

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to complain to other people about it, until that affects their mood and the people around them (Howatt, 2018). On the opposite side, a positive person tend to find joy in simple things, by trying not to focus so much on aspects and situations of life that they can't control, centring their attention only in what they actually can control (Howatt, 2018).

Furthermore, Howat in the article "Why it is positive to be a positive person" (2018), mentions that "positive people can inspire and influence others to reframe and to think about things differently. They can be infectious in a good way". In this perspective, it becomes understandable why is so important to be positive in order to be a Solution-Oriented Leader, because a leader/mentor has an important role in their mentee's lives, and his/her attitudes will not only influence others but will inspire their actions and the way they will face situations.

Similarly, Nze (2015) also refers the importance of **being hopeful**, which can be considered a complement to the positivity behaviour mentioned before, since a positive leader understands that life is far from perfect and that "there are ups and downs, but to enjoy the ups it's important to be aware of and acknowledge them. The general attitude of positive folks is that there's more good than bad in life, and you doesn't need to be perfect to enjoy it " (Howatt, 2018).

Another important trait is **taking responsibility**, an aspect that should be part of any leader and must be fostered among its students and mentees. For instance, planning steps to achieve goals or solve a problem help people to feel more empowered and ready to overcome any issue. In this sense, the leader or anyone that intends to be Solution-Oriented must make their own decisions and plan act towards its purposes, and, ultimately, take responsibility from what comes next (Ross, 2017), never expecting anyone else to do it.

Additionally, it is expected that a Leader must assume responsibility for its actions and decisions, even when they are not correct. Leading people is also about making mistakes and growing throughout rights and wrongs, showing that a leader is not perfect and don't need to be.

The last two main traits referred by Nze (2015) are complementary**: See problems as challenges that can be overcome and willing to hold on until a problem is solved.** In that matter, Ross (2017) advices people to avoid "(…) perceiving the problem to solution process like a cliff face to climb, steps make the problem seem much more resolvable". That is, the way that the problem is perceived affects the way that people will lead with them.

Accordingly, leaders must face problems as situations that need to be solved and elaborate solutions that will minimize the possibility of the same problems to happen again in the future. And this behaviour must also be implemented with their mentees and/or during a lesson. Finally, the focus on the solution need patience and dedication from people involved, and comprehension that giving up is not a plausible option.

To finalize, according to Traver (2019), there are three primary ways that solution-oriented people can act and add value to others:

1) Solution-oriented people always find a way;

2) Solution-oriented people use critical thinking;

3) Solution-oriented people answer the "why" question.

It is possible to conclude that there's no list of rules or a defined right way on how to be a Solution-Oriented leader, but there are a few thoughts, postures and perspectives that can be adopted that may help in the process. Also, it is important to underline that these actions should be present in classes and mentorships, where the students/mentees feel safe and motivated to be positive, have

hope on the planification of existing solutions, take responsibility of their actions and see any problems as challenges that can be overcome with effort and patience.

3.3. Practical Approach to being Solution-Oriented

Previously we have clarified what is Solution-Oriented thinking, its relevance and important characteristics behind any successful Solution-Oriented Leaders. Next, we will focus on practical approaches that mentors need to take in consideration to become Solution-Oriented. It should be underlined that this is focused not only for mentor or leaders, but also for students, mentees and people interested in general.

It should be mentioned that there are many different perspectives on how to apply Solution-Oriented Thinking in practical terms, many specialists list different ways of doing it, but in general the ideas and the practices are very similar and complementary. In this sense, one of the perspectives that will be presented is based on the book "Solutions Oriented Leader" (2019), written by Dr Rick Goodman, who is a Team Building expert, author and entrepreneur on Leadership, Engagement and Business Growth. The author defined 5 main strategies to become solution-oriented:

5 main strategies to become solution-oriented (Dr. Rick Goodman)	
1) You look at a problem and see the possible outcomes—the possible *future*	Goodman highlights that it is extremely important to separate your emotions from the problem. "Don't dwell in the past; start building the future " (Goodman, 2019). Similarly, Jawardena (2022) also underlines that it is very important to identify key inputs to the problem and then, look forward to incorporate the outputs in a rational way. In addition, she also mentions that this should be instilled into the team or class you are part of.
2) You think systematically and strategically.	Dr. Goodman (2019) says that if " You're at Point A. You need to get to Point B. A solutions-oriented mind immediately starts thinking about methods to close the gap and make that change". In addition to this aspect, Jawardena (2022) mentions that strategic thinking is about ideas and the systematic review is directly related to the implementation itself.
3) You have little time for excuses	This step is related to the "take responsibility" practice, mentioned on the previous subchapter, because focuses on the importance of people taking responsibilities for their actions and not blaming others for existing problems (Jayawardena, 2022). In this matter, Dr Goodman (2019) says that "the solutions-oriented leader doesn't care about whose fault it is so much as what can be done to make things right".
4) You resist problem-oriented questions	When people face a difficulty or are trying to solve a problem, in personal, professional, or educative matters, there is a tendency to make distractive and unnecessary questions. For instance, questioning

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	"why" the situation happened, etc. To reverse that, Goodman (2019) highlights: "The solutions-oriented leader fights these questions, though—because often, they just waste time. Focus less on why and more on what do we do now?"
5) You take a collaborative approach	It is safe to say that collaborative work, brainstorm, and dialogue with other people is efficient to find good solutions for any problem. Based on that, Dr. Goodman (2019) says that "the best way to do that [find a way forward] is to pull the whole team together into brainstorming and collaboration".

Similarly, Amy Q. (2020) also stablishes a few actions that are part of the Solution-Oriented initiatives and practices that are useful for leaders, mentees and students and that should be applied in their daily lives or in classrooms:

How to apply Solution-Oriented Problem Solving? (Amy Q.)	
1) Embrace Problems as opportunities	As mentioned on the first subchapter, one of the most important aspects related to Solution-Oriented approach is seeing the problem from other perspective, in order to find a good solution. In fact, it will be easier if the mentor and mentees observe the problem as an opportunity rather than a something dramatic. Based on that, Amy Q. (2020) mentions that "This is something all great leaders in every industry have; the drive to find a solution."
2) Separate emotions and Admit the Existence of A Problem	On the previous board it was mentioned about the relevance of separating emotions from the problems. However, Amy Q. highlights the value of creating a safe space for people to admit that there's a problem, or a challenge that needs to be faced. Usually, this kind of environments are created throughout transparency and honesty, two important aspects related to Solution-Oriented Approach (Q., 2020).

Besides the practices mentioned above, there also another important aspect that is extremely important to the practical Solution-Oriented approach, which is the **ability of thinking critically**. When a mentor or a mentee adopt a critical posture, he/she can evaluate, analyze and decide in a fast and clear manner, which is excellent for achieving solutions for different problems (Traver, 2019). Also, people with critical perspectives tend to deep analyze the situations and can easily help to identify the source of the problem, which is important for the elaboration of a useful response.

In a general perspective, the aspects, strategies, and traits mentioned during this chapter are based on specialists' perspective on what are the necessary practices and mindset for the adoption of the Solution-Oriented approach. Most of the steps mentioned demand a strong mindset towards finding, no matter what, solutions for any situation, and declining the possibility of giving up by facing a hard or complex challenge. However, the indications are not mandatory or strict for the

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success of the process, but they may help anyone interested in becoming more positive, determined and solution-oriented instead of problem-oriented.

Examples/suggestions/tips

1)

Problem: I don't have enough budget for this event.

Solution-Oriented thinking: How can I find ways to make an event that fits my budget?

2)

Problem: We don't have enough room for the number of students that want to participate in this workshop. We have to limit the entrance.

Solution: How can we guarantee that everyone interested can participate?

3)

Problem: Why that only happens to me?

Solution: What can I learn from this situation?

4)

Problem: My students are failing in my class, they need to study more.

Solution: What can I do to help to raise their grades?

Exercises/practical activities

Case Studies:

•**MIRO** https://miro.com/pt/index/

•**Strategyzer** https://www.strategyzer.com/

•Other case studies and success stories by companies or schools.

Exercise 7: Kanban Framework

Kanban Framework	
Duration	30 minutes (after that, periodically, depending on deadlines established).
Objectives	Organize Team tasks in production or development of products/services. Every team member gets an overview of their tasks, responsibilities for a project or class.

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Guidance for the implementation	
Materials required	Kanban Template
Methodology to implement and develop	1. Start by defining the tasks to be done in a specific project/class. Every member can participate, either by brainstorming together what the tasks should be or individually adding them to the board. 2. Assign a deadline to each task and a responsible person. 3. Assign a team member to be in charge of keeping everything on track, and to lead the task completion. 4. Review the board at every deadline.
Evaluation/ Feedback	Feedback according to the information. Metrics for Task completion, Respect Deadlines.

Kanban Framework Example, Credits: MIRO https://miro.com

Exercise 8: SMART Goals

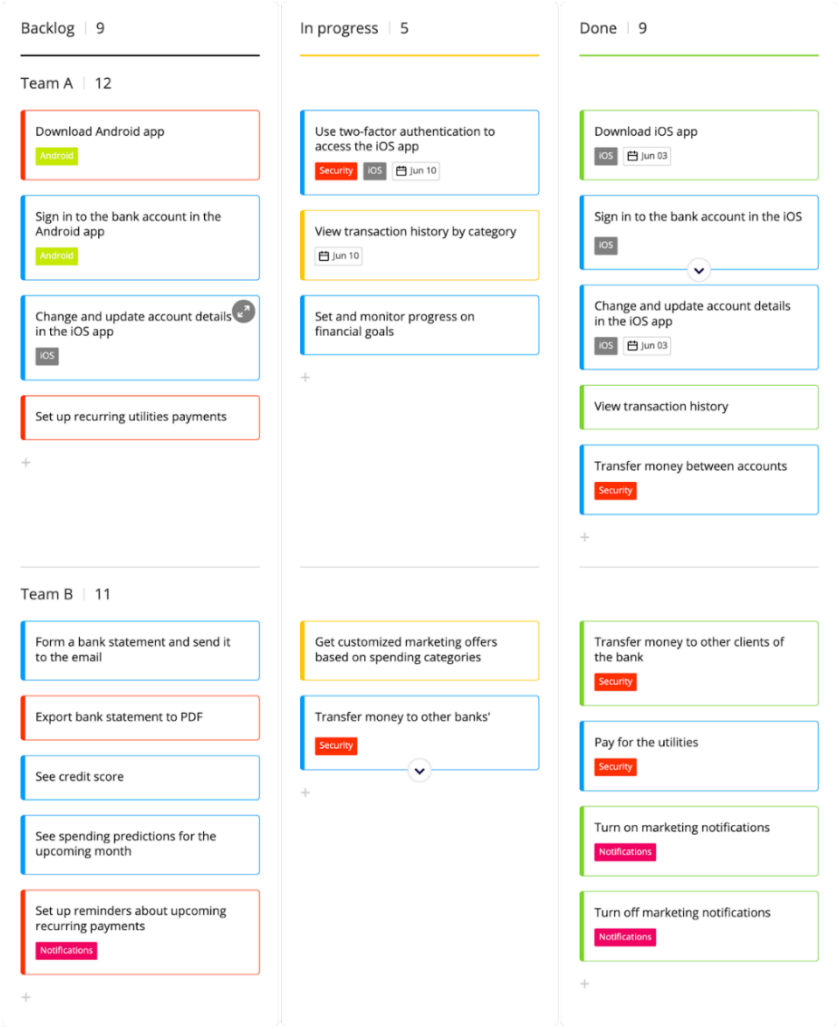

Figure 8: Figure 8: SMART Goals Example, Credits: Positive Psychology

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SMART Goals	
Duration	30 minutes (after that, periodically, depending on deadlines established).
Objectives	Organize Team tasks in production or development of products/services. Every team member gets an overview of their tasks, responsibilities for a project or class.
Guidance for the implementation	
Materials required	SMART Goals Template
Methodology to implement and develop	**1. Firstly, start out by defining answers to the questions below, as per indicated in the template in annex:** **S** = **M** = **A** = **R** = **T** = Specific Measurable Attainable/ or Agreed Upon Realistic Timely - allowing enough time for achievement **S** - This part of your goal will answer the "What, Why, and How?" of the goal. Ensure goal is an approach vs an avoidance. **M** - Short term goal set to know when the goal has been attained. **A** - Ensure that the goal is hopeful and attainable. **R** - Ensure that the goal is within reach given current skills, resources, and time. **T** - Ensure enough time to achieve the goal. Set smaller goals within the larger goal. + Accountability - How will you be held accountable for this goal? **2. Secondly, answer the questions below as part of a second stage of defining what you are doing, and what can you improve to meet your defined goals:** • What is my first step I'm willing to take toward my goal? • What am I willing to notice about what is going well? Where will I keep track of what I'm noticing? • What experiments am I willing to try? • Who will be my accountabilibuddy? (someone else in the team assigned to

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Evaluation/ Feedback	Feedback according to the information. Metrics for Task completion, Respect Deadlines.

Exercise 9: Mind-Mapping

Mind-Mapping	
Duration	45 minutes.
Objectives	Organize visually Team or Individual concepts, ideas or methods. Every team member gets an overview of their ideas, concepts for a project or class.
Guidance for the implementation	
Materials required	Canvas / Paper Different Coloured Pens Stickers or other office 2D supplies.
Methodology to implement and develop	Mind-Mapping can be a solo, or a team exercise. It is best used, when trying to map out an initial concept or idea for a project, or simply to display visually your ideas. **1. Firstly, start out by defining a main question or topic (in the centre), from which the ramifications of the mind-map can flow.** **2. Secondly, add each "branch" a new topic, with sub-topics if needed, and assign a specific colour and shape to it.** • Different colours can be used. • Different line thickness to indicate hierarchy. • Different visuals, like images, photographs, collages can be added. **3. Brainstorming together as a team is encouraged, as well as building on top of each other's ideas.**
Evaluation/ Feedback	Team Feedback according to the information.

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Exercise 10: Point A to Point B Game

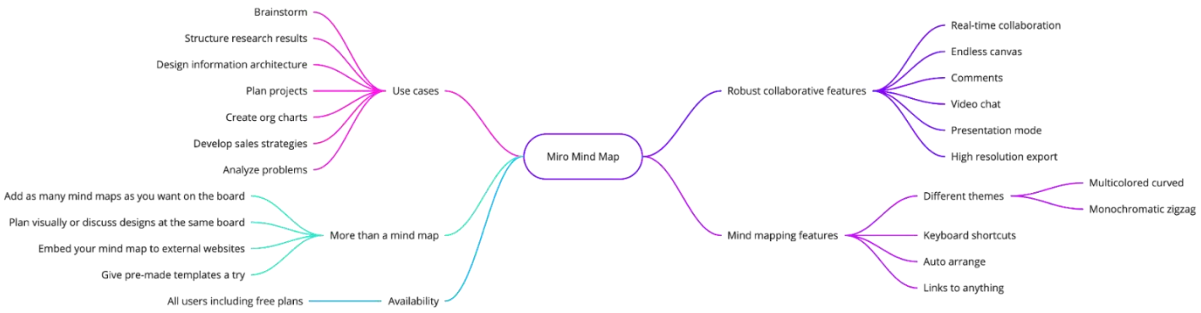

Figure 9: Mind-Map Template Example, Credits: MIRO https://miro.com

Point A to Point B Game	
Duration	15 minutes.
Objectives	Build skills of rapid thinking and creativity. Instant problem solving skills.
Guidance for the implementation	
Materials required	Canvas / Paper Different Coloured Pens Stickers or other office 2D/3D supplies. Artefacts.
Methodology to implement and develop	The game is as follows: **1. Take 5 minutes to brainstorm with the team or colleagues, an object or being, that needs to be moved from point A to point B. After choosing the object or being, define where exactly is point A and point B.** It can be a school, a home, a specific urban or nature place. Different variations of this exercise can be invented and adapted to specific classes or audiences. **2. Each participant or pair of participants has 5 minutes to come up with as many ideas as possible in order to move said object/being, from point A to point B. You can sketch, roleplay, or even do quick 3D maquettes if you have the time. The goal is to come up with as many ideas as possible, even if they are a bit crazy and intangible.** **3. At the end, everyone presents their ideas for discussion in 5 minutes.** This is a very fast game, and easy to do and prepare. It encourages people to think outside the box and don't worry too much about the feasibility and technical aspects of their ideas, but rather, prime for creativity and quantity of ideas. This activity is best used as an ice-breaker activity, or an initial stage project game.
Evaluation/	Team Feedback on the ideas presented, and critical analysis.

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Feedback	

Solution oriented thinking: References and Resources:

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Resources

https://www.linkedin.com/pulse/problem-vs-solution-oriented-thinking-chidinma-ogbuaku/

https://blog.trello.com/characteristics-of-solution-oriented-leaders

https://www.rovva.com/en-gb/blog/efficiency/what-does-it-mean-to-be-a-solutions-oriented

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https://medium.com/outsidethebox/what-it-means-to-be-solution-oriented-c7bf38ba98ab

https://explainagile.com/blog/how-to-apply-solution-oriented-problem-solving/

A.4. Communication and interpersonal skills

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A4: COMMUNICATION AND INTERPERSONAL SKILLS

4. Communication and interpersonal skills

4.1. Active listening

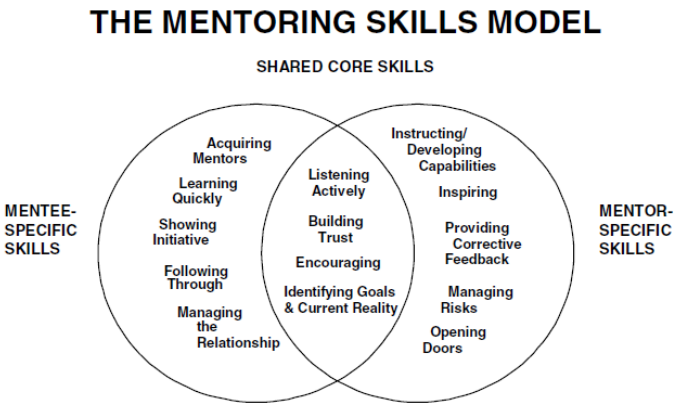

Figure 10: The mentoring Skills model (Phillips-Jones, L. (2003). Skills for successful mentoring: Competencies of outstanding mentors and mentees).

Communication is a key factor for any relationship established between people, including mentors and mentees. What should be considered is that communication is much more than speaking and listening. According to Nordquist (2020), the definition of communication falls under the "exchange of information (a message) between two or more people. For communication to succeed, both parties must be able to exchange information and understand each other. If the flow of information is blocked for some reason or the parties cannot make themselves understood, then communication fails".

Considering that, this chapter will focus on one of the most basic and important mentoring skills (Phillips-Jones, 2003, p. 2) and communication practices, that is "Active Listening". In this stage, the concept of Active Listening will be deeply explained, and some important practices, tips and behaviours will be presented, in order to ensure that mentors improve their communication skills, specially while communicating with mentees and students.

Communicating and hearing what someone has to say may seem like a simple task. However, actively listening to a person demands more attention and engagement from the listener, especially because the human tendency is to hear another person's thoughts and to apply the topic of conversion on their own lives and, then, reply with the goal of sharing their personal perspective (Linde, sem data). Based on that tendency, the author Phillips-Jones (2003), mentions the significance of resisting that impulse on turning the conversation about you and avoid trying always to find solutions to the problems presented.

It is crucial to comprehend that the basic aspect of Active Listening is to really pay attention to what is being said by the other person (mentee and/or student), with the aim to deeply understand the person's perspective, instead of reflecting your ideas and opinion on it.

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Following the same point of view, Cuncic (2022) adds that Active listening is "the process of listening attentively while someone else speaks, paraphrasing and reflecting back what is said, and withholding judgment and advice"(2022). As a result, by adopting an active listening approach you will make the person feel heard and important, no matter the environment (Cuncic, 2022), and demonstrate that their concerns were heard and understood, making them feel accepted (Phillips-Jones, 2003, p. 2).

Different specialists and researchers have mentioned a set of actions that may help people to practice the Active Listening approach, and those actions can and should be applied during mentorships and even during classes. Accordingly, the list below is based on the some of the tips that Linde (nd) defined that can be helpful for people who are in a mentoring position to connect with their mentees:

- "Focus on what your mentees is saying". Linde (nd), mentions the importance of not focusing on what to say next, but paying full attention to what the person is expressing, because the rest will happen naturally, including your words.
- "Avoid being judgmental". Linde (nd) highlights that the mentor doesn't have to, and probably won't always agree with what the mentee is saying, and that is normal. Sometimes you don't have to advise them, just need to listen their point of view.
- "Work hard to build trust". In this aspect, Linde focuses on the importance of the built of trust between mentors and mentees, to ensure that they can rely on each other, knowing that what they say won't be shared or exposed.
- Look at your mentee when he/she is speaking. In this case, even if the mentee does not look at you, it is important to always try to stablish eye contact with him/her

In parallel, Cuncic (2022) refers that, in order to be an Active Listener, the person needs to:

- "Be Patient". Cuncic (2022) focuses on the relevance of not interrupting the other person while they are talking. Furthermore, the author also affirms that in active listening, the aim must be to understand what is being said and not on to give the best answer possible.
- "Reflect on what you hear. Paraphrase what the person has said, rather than offering unsolicited advice or opinions"(Cuncic, 2022). In other words, what the author is implying is that you should summarize out loud what you've heard, as a way to reflect what the person have stated, in order to confirm and validate what you understood and what they expressed.

In addition to what was mentioned, Philips-Jones (2003), listed some characteristics that may determine if you are a good listener or not, based on that, we highlight two main aspects. First, the importance of using suitable nonverbal communication, that goes beyond keeping eye contact, including also nodding, leaning toward them, and smiling when appropriate. Secondly, the author also highlights that the listener must demonstrate interest in what the person have said previously, (For instance "By the way, how did the meeting with your manager go?" (Phillips-Jones, 2003, p. 2)).

In general, active listening is considered, by the specialists, a basic skill for any mentor. Nevertheless, not everyone understands the concept and knows how to do it properly and/or how to avoid natural impulses of reflecting their own experiences and perspectives on what the other person says, which is exactly what this approach tends to avoid. In this sense, active listening is basically focusing 100% on what your mentee is saying, without thinking on what to say next, or how to react, and always providing answers that makes the person feel heard and validated. There are few actions, mentioned in this chapter, that may support you to actively listen to your mentee, like looking into their eyes, be patient, don't judge and make them trust you, etc.,

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4.2. Building trust and empathy

Becoming a mentor is an important task, that directly affects the life of the mentors and the mentees, and that is the reason why is so important to provide a few tools and tips that may support building a strong and trustable relationship between mentors and mentees. In point of fact, “the more that your mentors and mentees trust you, the more committed they’ll be to your partnerships with them, and the more effective you’ll be” (Phillips-Jones, 2003, p. 3). With this being said, the main goal of this chapter is to provide important information that will help you to build a trustful and empathic relationship with your mentee. In general, people take different times to build trust in relationships, and sometimes, with colleagues and mentors can be hard, due to how distant they may feel from the mentor. In order to facilitate that process among people and to make anyone more trustable, Phillips-Jones (2003) says that it is very important to put in practice the following actions:

1) Respect the boundaries stablished by the mentees;
2) Admit and take responsibility for your mistakes;
3) Keep confidences with some information shared from your mentors and mentees;
4) Respect the promises you make to them;
5) Tactfully share with them when you don’t agree or feel uncomfortable with something. “Particularly with cross-difference (e.g., gender, culture, style, age) mentoring, trust building is crucial and has to be developed over time.”(Phillips-Jones, 2003, p. 3).

Another important aspect that shouldn’t be forgotten is to demonstrate empathy towards your mentee. According with the Cambridge Dictionary, empathy means “the ability to share someone else's feelings or experiences by imagining what it would be like to be in that person's situation” (Nd). In other words, it is trying to walk in someone shoes, understanding their point of view and how they are felling, and that is considered, by Ariel Ervin (2020) a central component on effective mentoring relationships.

In the same perspective, Bohart et al., defends that “empathy expressed by mentors seemed to similarly illuminate and elevate youths’ own strengths (…). Further, mentors’ ability to take the youth’s perspective and be responsive to their interests and needs may demonstrate to youth that their interests and preferences are important and deserving of respect.” (Bohart et al., cit. Ervin, 2020). Although this is focused on young people, these rules can be applied for any mentor and mentees, no matter the age, because everyone have the need to feel understood and validated, particularly by their mentor.

Another aspect that should be considered and that Holyoak (2022) calls attention for is the fact that “everyone is facing new and unique situations”, and that’s something we should consider every time we communicate with someone, acknowledging that we don’t know exactly what the other person is going through and it is important to always practice empathy and respect them, no matter what.

In short, trust and empathy should always be prioritized between mentors and mentees, no matter if the mentee is someone from the same age, younger or older, doesn’t matter if it is a colleague of work or a student. Establishing a relationship based on trust and empathy may be a long and hard path but it is worth it, to ensure a health environment and a good communication during the mentorship. As mentioned, to become trustable it is important to respect the limits of the mentee, to share your ideas in a tactful way and to keep confidence towards any shared information, etc. Additionally, to have empathy towards your mentee and comprehending their struggles and difficulties is another step to a successful mentorship.

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4.3. Constructive feedback and validation

An important aspect of communication is providing and receiving feedback from the mentor and/or the mentee. Nevertheless, that is not an easy task, because most people don't know how to do it properly or, even, how to receive and lead with constructive feedbacks. In this sense, this chapter aims at explaining the importance of a constructive feedback provided by the mentor, the importance of also asking for assessment and how this should be presented to the mentee, ensuring that they feel validated and respected.

According to J. Fiske (1990 cit. Baltov et al., 2020, p. 37) "feedback is the transmission of a recipients response to the sender of that information, allowing them to adapt to the needs and responses of the interlocutor". In practical terms, the concept of feedback means sharing information regarding the effort or work done by someone in a specific matter, it can be a positive or corrective, but it should always be **constructive**, which means, that it must be for the development and growth of the mentee and not to make him/her feel apprehensive or unmotivated, and that's why mentors need to know how to do it properly.

It should be highlighted that, providing, and receiving feedback is excellent to improve in important areas, sometimes is the only way to figure it out and/or express if something is being done correctly or not. Considering that, B. Townsend Hall (2007) mentions that it is extremely important to get proper feedback, "because merely transmitting information is the wrong position for communication – communication is a two-way process" (Hall, 2007 cit. Baltov et al., 2020, p. 37). Following this perspective, Phillips-Jones (2003) mentions that "effective mentors and mentees are constantly fine-tuning this self-knowledge, incorporating new feedback and observations on a regular basis" (Phillips-Jones, 2003, p. 4).

Concerning the responsibility of giving feedback to a mentee, Dumitrascu (2021) presents three factors that must be considered in order to provide an effective feedback:

1) "Give feedback immediately and regularly": Dumitrascu (2021) explains that if providing and receiving feedback becomes a routine, this practice may lead to a supportive, communicative and cooperative environment for the ones involved.
2) "Use a friendly, trustworthy tone": Dumitrascu (2021) highlights that the receiver of the feedback, will only feel supported if they know that the assessment is well-intentioned, and that is why it is so important to use a friendly and kind tone, instead of making an angry or patronizing comment.
3) "Use feedback to meet goals": Dumitrascu (2021) affirms that through feedback people can easily understand the existing expectations towards them and how to accomplish them correctly.

Furthermore, Dumitrascu (2021) also presents two types of feedback:

a) Positive Feedback:

It is necessary to point out the importance of mentees reinforcing positive/good work done by the mentor and/or the mentee. Positive and constant feedback helps the person to keep focused and motivated on their tasks (Phillips-Jones, 2003). Additionally, positive feedback may foster or maintain positive behavior (Dumitrascu, 2021).

b) Corrective Feedback

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Positive and honest feedback is very important but sometimes it may be necessary to give corrective feedback to your mentee, especially if they've done something less desirable. When that happens, the mentor must be direct and let him/her know what they've done wrong. Nevertheless, the mentor can't just inform the less desirable aspects, him/her must indicate the possible solutions and best way to act in the respective situations in the future (Phillips-Jones, 2003).

In this matter, Phillips-Jones (2003), mentions the possibility of the mentor discussing with the mentee "if and how they'd like to receive this feedback. People are more willing to hear corrective feedback if they've given permission and know in advance it's coming" (Phillips-Jones, 2003, p. 5). In this perspective, Phillips-Jones (2003) call attention for a few actions that should be put in practice while giving corrective feedback:

• Choose to use positive, non-derogatory, words and a specific tone of voice if something unsatisfactory happened;

• The corrective feedback should be given in private;

• Give feedback as soon as the situation occurred;

• Give specific feedback, instead of a vague one;

Offer useful solutions and suggestions for their improvement, offering support when the situation happens again in the future. It is also relevant to underline that presenting corrective feedback is harder than providing a positive one. Based on that, Dumitrascu (2021) highlights that sometimes the person who is receiving the feedback may take the comments in the wrong way and due to that, mentors need to be careful on how to mention the constructive critics. Based on that, "some types of responses are always inappropriate, such as belittling the recipient, becoming abusive, or commenting on irrelevancies. Instead of giving feedback, you're stirring up trouble" (Dumitrascu, 2021).

If you feel like you have hard time to provide honest corrective feedback, you can use the Sandwich Feedback Technique:

Figure 11: Sandwich Feedback Technique (Belludi, N. (2008). How to Give A Compliment Sandwich Feedback. Right Attitudes. (https://www.RightAttitudes.com/2008/02/20/sandwich-feedback-)

The Sandwich feedback is a very popular technique, based on three-steps procedures. This approach consists in providing, first, a praise, then a corrective feedback, and to finalize add another praise (Belludi, 2008). This is useful to make this process easier for the mentor but also for the mentee,

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by creating a conversation where both aspects, positive and negative, will be pointed out, leading to the mentee to understand where he/she is going well but also where he/she needs to improve.

In a general perspective, it is possible to visualize that feedback is a key aspect of communication between any mentor with its mentee or student. However, it not an easy process, full of communication and techniques that needs to assure that the mentees always feel validated and respected, receiving positive or corrective feedback, without forgetting that in both cases, the feedback must be always constructive. Accordingly, providing, receiving, and asking for feedback should be implemented as a routine during the mentorship stage, in order to ensure a safe and growing environment for everyone involved.

4.4. Conflict management and Flexibility

Diving into the deeps of communication abilities between mentors and mentees, leads to the inevitable topic about conflicts and flexibility. These topics are part of the complex side of communication and interpersonal skills, where mentors and mentees need to know how to face and solve specific conflicts that may happen in a flexible and respectful way, and the purpose of this chapter is to guarantee that, as a mentor, you will know how to react when a conflictful moment happens, or even, how to avoid it.

Hudson on his study about "Conflicts and conflict resolution strategies in mentor-mentee relationships" (2014), highlights that conflicts between mentors and mentee can be considered "a major obstacle to the formation of productive mentoring relationship"(Hudson, 2014, p. 5), and that is why is so important to talk about this aspect and to present possible skills to manage conflicts with wisdom. Also, the author underlines the fact that sometimes conflicts between mentors and mentees happens due to misperceptions of each other's characteristics, developing negative emotions and feelings between them.

Considering the negative impact of unsolved conflicts, a few researchers have provided some tips that may be useful for mentors to lead with conflictful circumstances. For instance, Caroll, on her article about "How to Address Conflicts or Concerns in a Mentor-Mentee Relationship"(2013) presented a few options, and, similarly, Feldman and Kahn in the article "Making the most of conflicting advice from mentors" (2020), did the same. Based on their perspective, it will be highlighted the most interesting practices for mentors:

- **Conflicts should be solved face-to-face** between the persons involved. "This allows both people to address the issue in "real time" and increases the chances that it can be resolved at a faster pace. Written communication all too often can be misinterpreted and lead to further escalation of the issue" (Caroll, 2013). If you are mentoring at distance and is not possible to meet face-to-face you should organise an online meeting to discuss some ideas and clear misunderstood with your mentee.
- If the discussion is not going to be solved easily, **you can invite someone from outside the situation to mediate the conversation**. "Sometimes having a third party hear both sides of the story can help in making headway with the issue" (Caroll, 2013).
- People have the tendency to avoid conflicts, however, this kind of circumstances may be a good opportunity to grow and learn something. In light of that, Caroll (2013), advice that, **after the situation is solved, both mentors and mentees, should look back and analyse the issue in order to search for the existing lessons behind it.**
- It is important to recognize that your mentee will look for other opinions and ideas that may be different from yours. In this sense, Feldman et al., suggested that, as a mentor you can

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"**communicate** that you are glad they are seeking multiple viewpoints. Be clear that you are open to hearing about and discussing other mentors' ideas. And be willing to shift your own perspective based on what you learn about others' guidance" (Feldman & Kahn, 2020).

- **A two-way debate it is expected and appreciated**, and that's an idea that the mentor should make it clear to the mentee since the beginning of the mentorship. The mentee needs to comprehend that their relationship will "stay strong regardless of the decision they make. Show them that you support their efforts to make a decision for themselves" (Feldman & Kahn, 2020).

As previously stated, conflict is an inevitable event that can happen between the mentor and the mentee, and it is the responsibility of the mentor to ensure that the conflict will be used as a lesson and will make their relationship grow in a good way. But this can only happen if the mentor is flexible, reasonable, patient, and respectful with the other part.

If and/or when a conflict happens, it is important to put in practice everything that you've learned in this chapter, from active listening to empathy and trust, because a conflict may be a hard obstacle to overcome if both parts don't know how to solve the situation. Knowing how to manage a conflict can make life more pleasant not only during mentorship but with any relationship stablished in your life.

Exercises/practical activities

Exercise 11: Icebreaker – visit card

Icebreaker – visit card	
Duration	30 minutes (5+10+10+5)
Objectives	The main objective of this dynamic is the self and hetero knowledge of the participants. At the same time, it is intended to create a positive and informal atmosphere among the participants, as well as a greater awareness of active listening skills.
Guidance for the implementation	
Materials required	Visit card template Pen or pencil Enough space for conversation in pairs
Methodology to implement and develop	The trainer presents the theoretical rationale of the dynamics, briefly explaining what the activity consists of, not revealing all the information and objectives of the activity. The trainer introduces the activity saying that it is an activity with the objective of increasing knowledge among the trainees. There are essentially 4 steps in this dynamic: **1 - Presentation of the activity by the trainer and completion of the business card by the trainee:**

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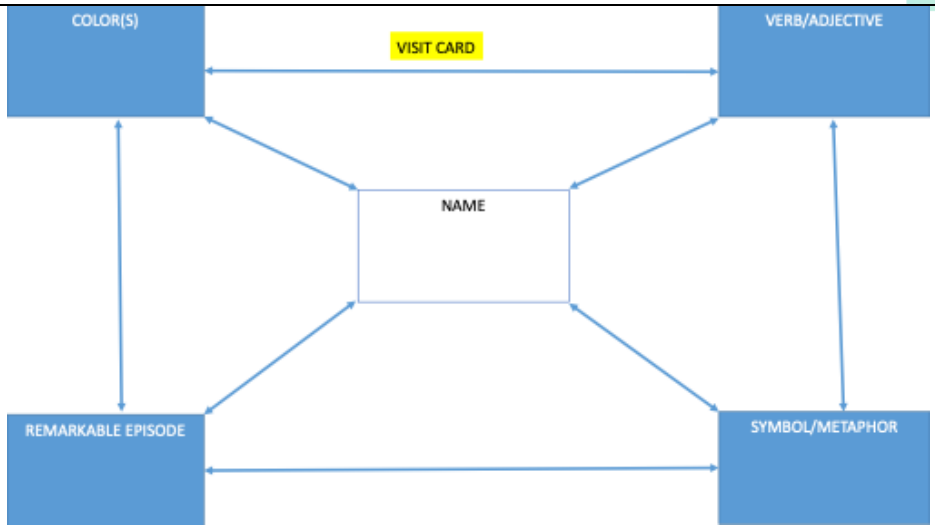

a) In the center of the business card they must write the name by which they would like to be called in this training
b) In the upper left corner they must write a name of a color or colors
c) In the upper right corner, write the name of an adjective/verb that is related to you
d) In the lower left corner you should write/remember a remarkable and significant episode in your life (that can be shared)
e) In the lower right corner you should think of a symbol/metaphor that can represent you (people who know you well would know that this metaphor/symbol is in fact associated with you)

2 - Presentation of the business card to the designated pair
The trainer creates pairs of trainees (it is important that the pairs do not know each other) and gives them 6 minutes to introduce each other, based on the business card. They must do this task in a place that is spacious enough so that others cannot hear the conversation. When the presentation is over, they should fold the paper into four parts and put it in their pocket.

3 - The presentation to the large group of the designated colleague
After everyone is finished, we gather everyone back together in a large group and ask each member to introduce their partner (no one can see the "business card" again or ask questions to their partner). Each one is given 30'' for this task

4 - Individual and large group reflection
The trainer points out important aspects of the dynamics that involve the need for active listening, personal filters, memory, the questions to be asked, the thoughts, behaviors and emotions involved.
What do we now know about ourselves?
What do we know about each other?
What is my communication style?
What areas should I invest in?
What hasn't been said but what I've read about the other?
...

Evaluation/ Feedback	Feedback and feedforward in general.

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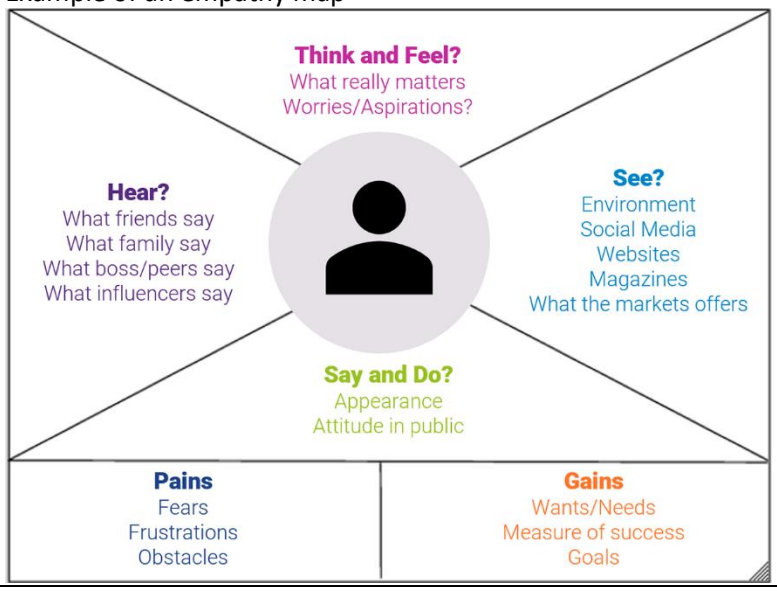
Exercise 12: Building trust and empathy

Empathy map	
Duration	30 minutes
Objectives	Create a shared understanding of someone needs Aid in decision making Develop empathy
Guidance for the implementation	
Materials required	Example of an empathy map 
Methodology to implement and develop	Define scope and goals for the activity. Gather materials. Your purpose should dictate the medium you use to create an empathy map. Individually generate sticky notes for each quadrant. Converge to cluster and synthesize. Polish and plan.
Evaluation/ Feedback	Feedback according to the information defined in each component.

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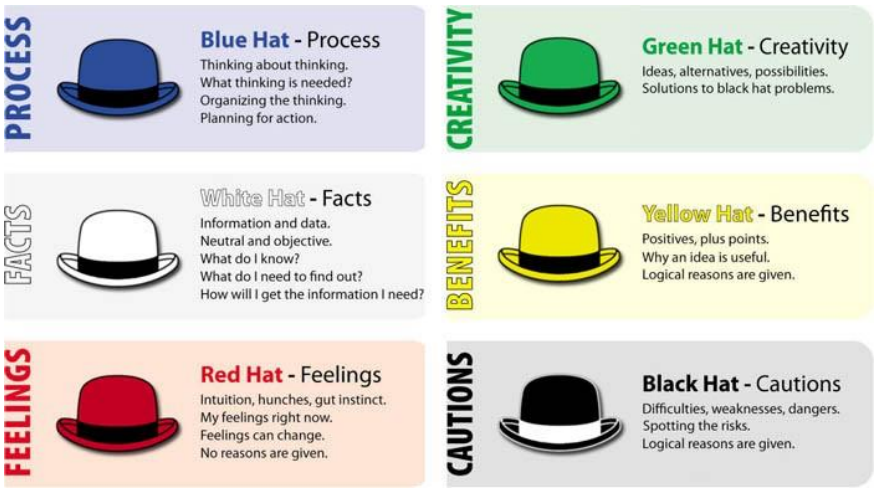
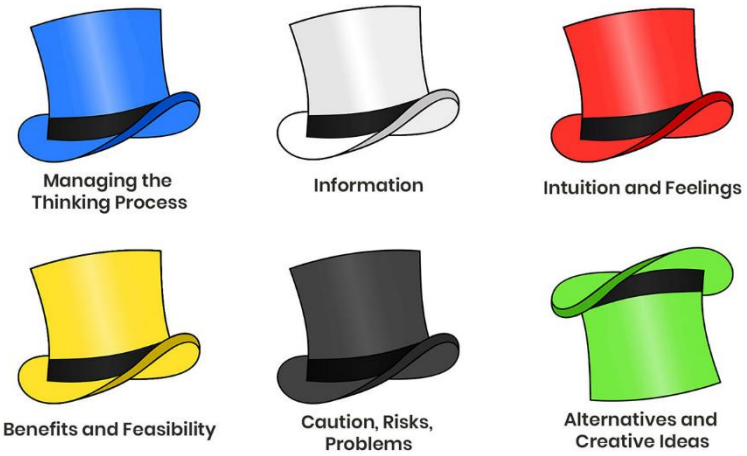
Exercise 13: constructive feedback and validation

Six Thinking hats	
Duration	60 minutes
Objectives	Promote the communication of different problems and ideas develop feedback ability
Guidance for the implementation	
Materials required	Image of 6 hats of different colours (white, red, green, yellow, blue, purple)  For the exercise the hats should be physically or should be printed to create different experiences. The following image can be used: 
Methodology to implement and develop	The problem is divided into its different aspects (hats). At each moment, the mentor "puts on" the hat chosen by the facilitator and directs his thinking according to the point of view determined by the colour of the hat. Blue: When you are in blue hat mode, you focus on controlling your thinking and managing the decision-making process. You have an agenda, ask for summaries, and reach conclusions.

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	Green: The green hat represents creative thinking. When you are "wearing" this hat, you explore a range of ideas and possible ways forward. Red: This hat represents feelings and instincts. When you are engaged in this type of thinking, you can express your feelings without having to justify them logically. Yellow: With yellow hat thinking, you look at issues in the most positive light possible. You accentuate the benefits and the added value that could come from your ideas Black: This hat is about being cautious and assessing risks. You employ critical judgment and explain exactly why you have concerns. White: The white hat represents information gathering. Think about the knowledge and insights that you have collected already – but also the information you are missing, and where you can go to get it.
Evaluation/ Feedback	Feedback and feedforward in general.

Exercise 15: Reflected best-self feedback

Reflected best-self feedback	
Duration	60 minutes
Objectives	Promote feedback Identify and understand your unique strengths and talents
Guidance for the implementation	
Materials required	Case description
Methodology to implement and develop	1. Ask 10 persons in your relationships (e.g. colleagues, supervisors, friends, family members) to identify their strengths and describe specific examples and situations in which these strengths were revealed. The request can be made by e-mail. 2.Analyse the data, trying to find the main sources described by the interlocutors. Create a table with three columns. In the first column put the strength identified, in the second insert examples of these strengths, and in the third write your interpretation of the accounts. 3.Compose your self-portrait. Complete sentences such as "when I am at my best, I am able to...", "whenever I use my strengths properly, I am able to...", "I get excellent results from my team when...", "using my greatest strengths as a leader, I am able to...". 4.Redefine your goals and working strategies in the light of the strengths identified. Reflect on the ways in which you can change the way you do your job. Think about the ways in which you can redesign your role in the organisation. Think about how you can foster enthusiasm in your team and those around you. Use your strengths to develop yourself and to improve your life and the lives of others!
Evaluation/ Feedback	Feedback according the information.

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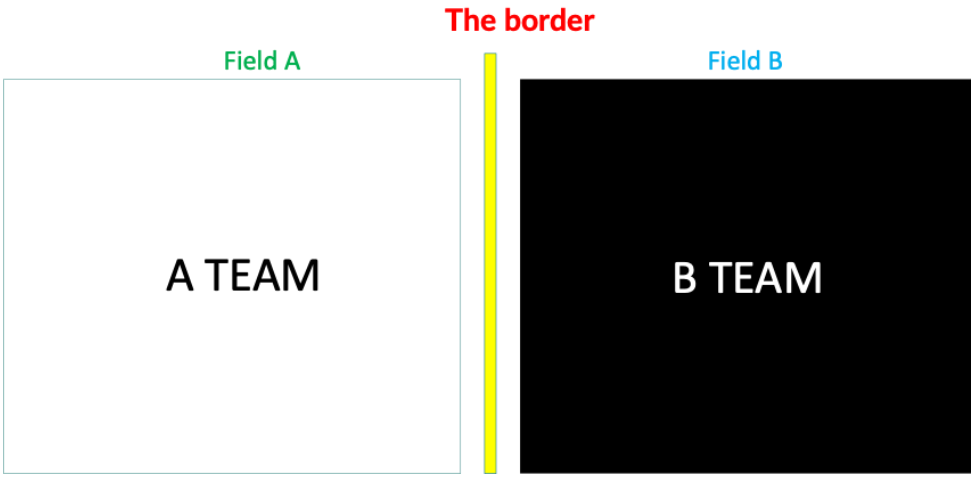
Exercise 16: Border exercise

Border exercise	
Duration	30 minutes
Objectives	- Train conflict management and negotiation skills - Identify and analyze a problem - Develop exploratory and assertive communication attitude
Guidance for the implementation	
Materials required	• 2 teams • 2 fields • 1 border
Methodology to implement and develop	 1 – Create 2 teams, and explain that the team A is in the field A and the team B in the field B (3’) 2 – Team A stays in the room and team B is taken out of the room, being told that they will win this challenge if they can convince the other team to change from field A to field B. Team B is given 3 minutes to think of strategies to win. While team B thinks about its strategy, the trainer returns to the room and gives team A the objective "Convince team B to move to field A". Give also 3 minutes for team A to plan their strategy. (3’) 3 – Each team need to prepare the strategy (in diferentes spaces) PLAN (6’) 4 – The teams are in position in each field and have do put the strategy in action (first A team and after B team) OPEN (6’) 5 – The teams can ask Questions and Bargain TRADE (3’) 6 – The teams need to have a solution AGREE (3’) 7 – The teams need to Act after the decision CLOSE (1’) 8 – AFTER ACTION REVIEW/REFLEXION (5´)
Evaluation/ Feedback	Win-Win, Win – Lose or Lose – Lose attitude? Trust? Aggressivity? Assertiveness? Is the solution incompatible? Cooperation or competitiveness?

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Exercise 17: Conflict management

Main responsability	
Duration	30 minutes
Objectives	Develop negotiation skills Promote problem analysis from different perspectives Differentiate conflicts and its origins
Guidance for the implementation	
Materials required	Case study
Methodology to implement and develop	Case description: Isabel started working 3 months ago in an event management and organisation company. She is married and has a son aged about 1 year. At night she is quite tired, because during the day she works with her utmost commitment and dedication, as she really wants to grab this opportunity. After all, this is her first job after maternity. When she applied, it was explained to her that she would not need to work on weekends, which clearly influenced her decision to choose this job offer over another. For the last month or so, your superior has asked you to go to work in the morning on most Saturdays, but you only get this request on Fridays, even in the late afternoon. She is paid overtime, but Isabel is not satisfied because this request has always been made at short notice, repeatedly, and is not in accordance with the working conditions initially defined. Managing the family dynamic has not been easy and has even generated some conflicts with her husband. The facilitator should make some questions to analyse the case such as: a) Type(s) of conflict(s) experienced by Isabel; b) Background of the conflict(s); c) Define different strategies and styles of conflict management, identifying their consequences.

Exercise 18: The old woman and the back young man

The old woman and the back young man	
Duration	40 minutes
Objectives	- Know your personal filters, lack of perception and attributional cause - Think critically about the causes of the existing conflicts - Practice assertiveness skills
Guidance for the implementation	
Materials required	• Slides • Projector • Blank sheets

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Methodology to implement and develop	1 – Put the slide 1 **The old lady and the young black man** **An old lady is in a self-service.** **She approaches the counter and orders a plate of soup.** **She pays for what she ordered and takes her tray to a table.** **Then sits down.** **She realizes that she did not buy bread.** **She gets up and comes back to the counter, buys bread, pays for it and returns to the table.** **Then sees, with surprise, that a black man is serenely eating the soup.** ? **What would you do if you were the lady?** 2 – Give 1' for each participant write a reaction if in the old lady role (as individual and to not share in this moment) 3 – Put in small groups 4/5 participants sharing the responses and analyse them (6') 4 – In Big group the spokesperson shares the synthesis of the debate (3') **The old lady and the young black man (...)** **The old lady said to herself, "I won't let myself be robbed."** **She then decides to sit in front of the young man, part the bread into pieces, put them into the plate and start eating quickly. They eat from the plate, alternately, until they are over. Then the man gets up and comes back, shortly after, with an abundant plate of spaghetti and... two forks... They both eat the same plate of spaghetti, each in turn. When they are done, the man gets up and, after wishing the lady a good day, begins to walk to the exit door. The astonished Lady stares at the young man on his way out.** ? What would you do if you were the young man? 5 - Put the slide 2 (1') 6 – Give 1 minute for each participant write a reaction if in the young black man role (as individual and to not share in this moment) 7 – Put in small groups 4/5 participants sharing the responses and analyse them (6') 8 – In Big group the spokesperson shares the synthesis of the debate (3') **The old lady and the young black man (...)** **When the old woman gets up to shout "Thief", she realizes that two tables in front was a tray with a plate of cold soup.** **And in front of the table a chair with her suitcase.** **She had made a mistake at the table when she came back from buying the bread.** **AFTER ACTION REVIEW** 9 – Put the slide 3 (1')

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	10 – In Big group all participants have a reflexion (14') 11 – The facilitator have a final conclusion about the causes of the conflict and give some strategies to coping (5')
Evaluation/ Feedback	Feedback according to the information.

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PART B – Digital Readines

PART B was created by Diana Andone and the Team from UPT, with contributions from the other ACADIGIA partners.

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B1: INTEGRATING EU DIGITL EDUCATON FRAMEWORKS

1. Digital education actions

1.1. Integrating EU Digital Education Frameworks

Today, it is necessary to implement changes in the ways and methods of teaching and learning, not only in the school education system, but at all levels of education. Digital technologies can enrich the learning experience, bring new and innovative teaching and learning opportunities, improve the quality of the educational process and better achieve learning outcomes. Teachers are facing great challenges, they are expected to be competent in using new technologies, able to apply them and introduce new teaching methods. Although many teachers have been using digital technologies to some extent before the pandemic, the education model was dominantly classroom teaching. During the pandemic teachers have moved to online teaching and learning overnight. Without time to prepare classes for an online environment, teachers defaulted to transferring their classroom teaching to online (emergency remote teaching). Teachers have, during this time, gained significant experience in the use of digital technologies but still they are insecure in their use. They lack a structure, an open course or education program that will give them the knowledge and tools but mainly the practices and support to become aware which digital competencies they have and which they lack.

In the wake of Covid-19 global pandemic, emergency remote teaching had become the new reality for school education around the world.

1.2 The EU Digital Education Action Plan

The EU Digital Education Action Plan has been initiated by the European Commission Directorate-General for Education, Youth, Sport and Culture (EAC), starting with 2018 nd refined in 2018.

Information from https://education.ec.europa.eu/focus-topics/digital-education/action-plan

Context

The current EU framework for digital education was set in 2018 through the Digital Education Action Plan 2018-2020. The Action Plan presents a coherent narrative on the role of education and training in the digital age and takes an action-oriented approach. The Political Guidelines of the European Commission's President set the priority of getting Europe up to speed on digital skills for both young people and adults by updating the Digital Education Action Plan. Through COVID-19, EU and the world have experienced an unprecedented challenge to their education and training systems, which led to a sudden and large-scale switch to digital education modes including online learning and teaching. However, most educators, learners and parents were not necessarily prepared to harness online learning nor able to deal with its limitations. Moreover, in some cases, the resources and infrastructure were simply not available. As a result, too many students were excluded. The Next Generation Communication of the Commission announced the adoption of the Digital Education Action Plan for Q3 2020 in the context of the recovery plan.

There are at least three issues to be tackled:

1. Digital capacity: There is a need to overcome technology differences (infrastructure including laptops, tablets and access to broadband) and develop new organisational capabilities in education that support hybrid modes of learning and teaching (online + offline). Equity needs to be the driving force, with a view to increase access and reduce inequality while addressing divides driven by gender, socio-economic and urban/rural contexts.
2. Digital competences for the 21st century: There is a need to provide support to educators and learners to enhance digital education practices. Teachers in particular need stronger support in mixing effectively online and offline learning depending on the learners' needs. There is also a need to develop a solid understanding of the digital world to be able to critically approach information and navigate an algorithm-driven web. Digital technologies can be better used for lifelong learning while innovation and practice are a core part of transforming the learning process.
3. Digital ecosystem of education content, tools and platforms: Technology and competences alone are not sufficient for quality and inclusive education if the process itself does not change. Digital learning cannot take place by simply replicating what happens in the classroom or lecture. A trusted digital ecosystem that draws on both public and private resources require quality content, user-friendly tools and secure platforms. It must include social aspects and maintain privacy and ethics. In supporting this evolving ecosystem, we need continuous research on the role of data, cognitive development and emerging technologies in digital learning.

The Action Plan included a limited set of impactful actions addressing the need to strengthen:

1. Digital capacities for resilient education and training systems

   Support could be offered to address access to technologies and infrastructure where needed. Specific support could possibly include digital capacity development of education and training institutions through cooperation, professional development, best practice exchange and organisational capabilities for developing new modes of digital education.

2. Digital literacy and competences for the 21st century

   Measures could focus on support to the development of digital competences of educators and learners, including through a better understanding of the role of computing education. Digital skills training should include promoting the application of ethical standards in the use of data and artificial intelligence in education, supporting gender equality and facing disinformation and fake news

3. A trusted digital ecosystem of education content and tools

   Actions could support innovative applications and address the need to increase the use of digital learning, including through supporting a trusted ecosystem of quality content, user-friendly and secure tools that help avoid confusion and maintain privacy and ethics. User-driven innovation, stakeholder engagement and strategic foresight should be integral part of the continuous innovation in education through digital means.

Digital education can be an important lever for the EU internationally through sharing of principles, tools, and content. With its focus on people, in particular teachers and learners, the EU should lead by example with digital education that is rooted firmly on its values while embracing the opportunities of the digital age.

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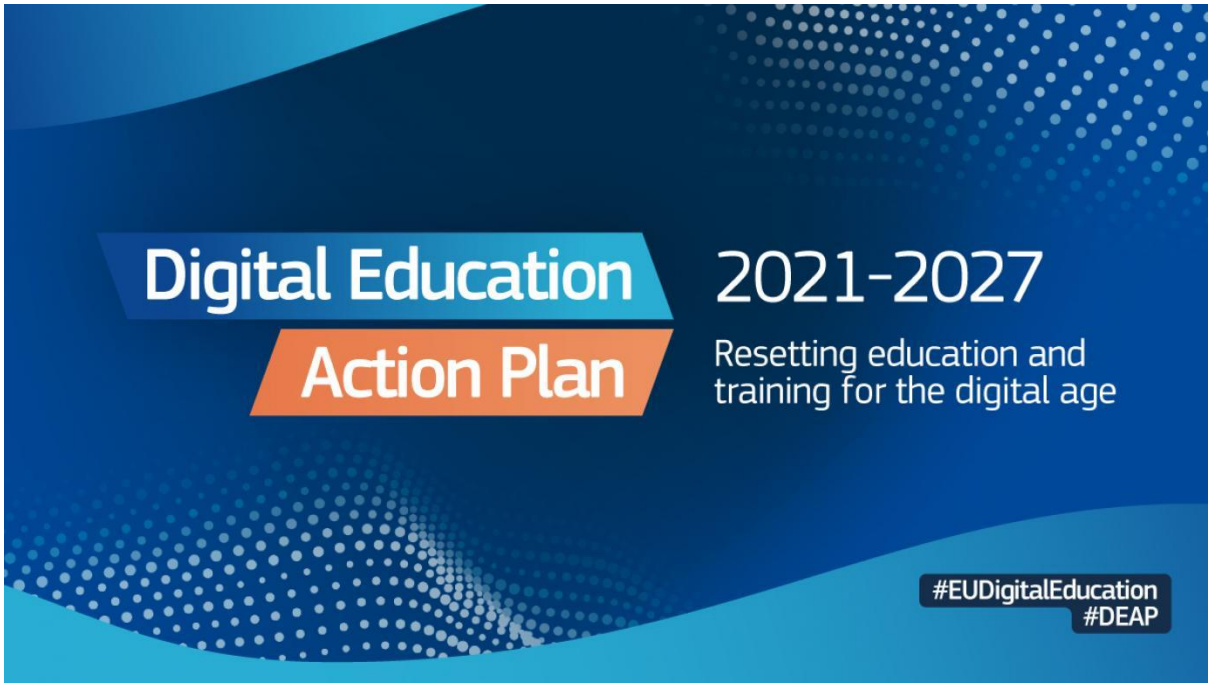
The Action Plan Update built on this knowledge, including, but not limited to:

- Public Consultation
- Targeted stakeholder consultations with education stakeholders, Member States, and the ET2020 Working Group
- Eurydice report on Digital Education at School in Europe (2019)
- 2018 International Computer and Information Literacy Study (2019)
- Commission 2nd Survey of Schools: ICT in Education (2019).
- OECD TALIS 2018 Results (2019)
- Commission Report on PISA 2018 and the EU (2019)
- Joint Research Center Report on the impact of AI on Learning, Teaching and Education (2018).
- Joint Research Center Report on Makerspaces for Education and Training (2018)
- Joint Research Center Report on Emerging technologies in support of educators

PPMI, Prospective report on the Future of Assessment in Primary and Secondary Education (forthcoming)



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Priority Area	Objectives
Fostering the development a high performing digital education ecosystem	○ Boosting peer learning and policy cooperation ○ Investing in infrastructure and connectivity ○ Fostering digital capacity building ○ Supporting high-quality and inclusive digital content, platforms and tools
Enhancing digital skills and competences for the digital transformation	○ Fostering the development of basic digital competence ○ Promoting digital literacy for informed choices as citizens ○ Boosting the development of advanced digital skills

Priority 1: Developing a high performing digital education ecosystem.

1. Strategic Dialogue with Member States on enabling factors in digital education.
2. Proposal for Council Recommendation on blended learning high quality and inclusive primary and secondary education
3. Better connectivity in schools under the Connecting Europe Facility. Encourage Member States to make the most of EU support with regard to internet access, purchase of digital equipment and e-learning applications and platforms for schools, including through the national Recovery and Resilience Plans.
4. European Digital Content Framework and possible European Exchange Platform.
5. Digital transformation plans in education and training supported through Erasmus+ cooperation projects. Digital pedagogy and expertise in the use of digital tools for teachers, through Erasmus+ Teacher Academies and the launch an online self-assessment tool for teachers, SELFIE for Teachers.
6. Ethical guidelines on artificial intelligence and data usage in teaching and learning.

Priority 2: Enhancing digital skills and competences for the digital transformation.

1. Common guidelines for teachers and educational staff to foster digital literacy and tackle disinformation through education and training.
2. Updated European Digital Competence Framework to include AI and data-related skills and support the development of AI learning resources for education and training.
3. European Digital Skills Certificate.
4. Supported cross-national collection of data on student digital skills and a EU target for student digital competence.
5. Scaled up Digital Opportunity Traineeships.
6. Better provision of digital skills in education and training, including computer education;
7. Encouraged women's participation in STEM in cooperation with the European Institute of Innovation and Technology and support for the EU STEM Coalition to develop new higher education curricula for engineering and information and communications technology based on the STEAM approach.

1.4. ETF Digital Education Framework

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The ETF Digital Education Reform Framework – this information is provided from the ETF Digital Education Reform Framework, developed within the Creating New Learning (https://openspace.etf.europa.eu/pages/creating-new-learning-cnl) initiative, aims to support policy makers, in ETF Partner Countries and beyond, to design, implement and monitor effective and equitable digital education policies that are tailored to the dynamics and characteristics of contemporary digital ecosystems.

The framework details and connects the WHAT of digital education policies, meaning the possible focus areas of such initiatives, and the HOW of digital education, through some critical factors that need to be considered within sustainable and human-centric digital education initiatives.

The central part of the framework is about the "What" of digital education and aims at presenting the different possible policy areas with examples of real-life initiatives, so that policy-makers can learn from the experiences of other countries. Also, for each area, the main common challenges and the mostly used policy support tools are included. The framework identifies nine areas that can be at the focus of specific digital education policies:

Digital infrastructure

Digital competences of educators

Digital capacity of schools

Digital pedagogies and curriculum

Digital education resources

Digital learning environments

Digital assessment

Digital competences of learners

Digital credentials

1.5. EUA Digital Strategy and transformation

EUA Strategy and organisational culture Report, by: Diana Andone, Mark Brown & Helene Peterbauer, 2022 https://eua.eu/resources/publications/1010:strategy-and-organisational-culture-group-report.html

This report outlines the conclusions of the Learning & Teaching Thematic Peer Group "Strategy and organisational culture", which explored the role of strategy and organisational culture in promoting digitally enhanced learning and teaching (DELT).

The report explains why organisational culture is crucial to successfully implementing educational innovation and identifies various components that need to be included in an institutional strategy. It also suggests selected actions that institutions need to explore as they look to harness the transformative potential of DELT over the short, medium and long term. The group was organised in the context of the "Supporting European universities in their strategic approaches to digital learning" (DIGI-HE) project and EUA's Learning & Teaching activities.

The structure of a DELT vision

Three key domains emerged during the group's discussions:

- Vision, Leadership and Governance
- People, Community and Stakeholders
- Tools, Spaces and Resources

The group also identified “Transformation”, “Collaboration” and “Change” as the three key integrating themes that need to be woven throughout the development of an effective DELT policy and strategy (**Erro! A origem da referência não foi encontrada.**).

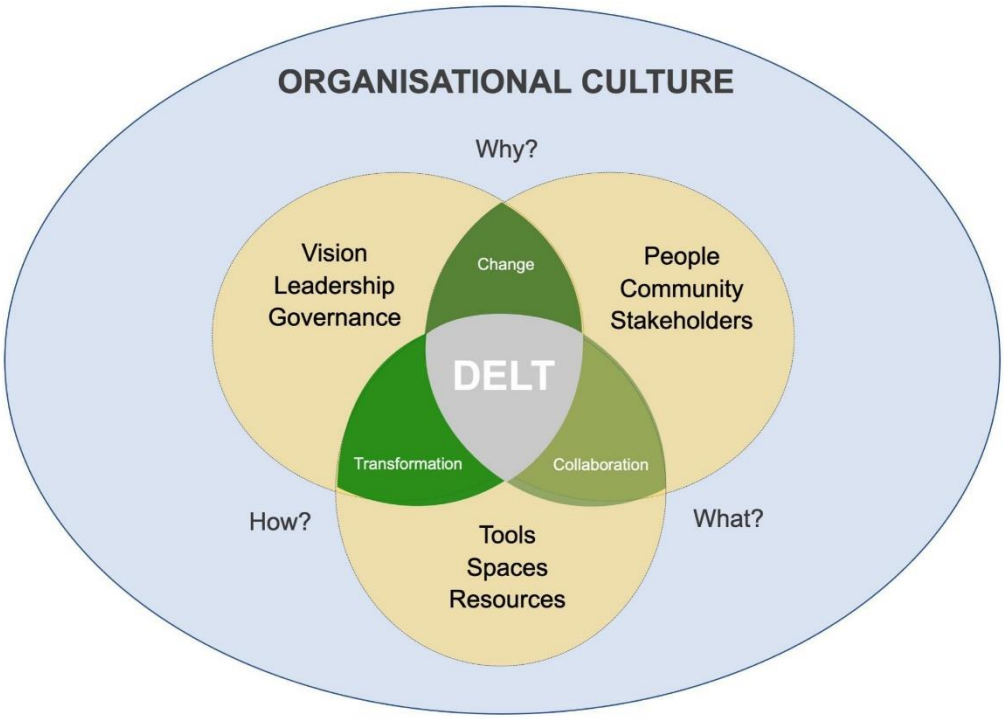

Figure 12: Structure of a DELT vision

Integrating themes

While remaining respectful of contextual differences, the group identified three themes that are important to the development of an effective DELT strategy:

Fostering digital transformation

Digital transformation can take many different forms (digitisation, digitalisation, digital ecosystem) and implies a commitment to institutional change. There can be big transformations that fundamentally challenge traditional practices or small incremental transformations that collectively influence the teaching and learning experience. The potential of small transformations to lead to bigger transformations should not be underestimated. As institutions differ from one another, the type of digital transformation and the time it takes to implement them will depend on the conditions and characteristics of each context.

Understanding that collaboration is crucial

To develop and empower a comprehensive institutional strategy at a cross-institutional level, an ethos of collaboration and partnership needs to drive institutional change. Students, educators and the wider stakeholder community must be involved in this process to develop a shared perspective and ambition. Such collaboration helps to better understand to what extent new innovative approaches through DELT are realistic, share good practices, and identify what support and resources may be

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required for teaching staff and students. Collaboration is also important to build shared ownership of the priorities and key performance indicators for monitoring progress and recalibrating the strategy.

Recognising that change does not follow a straight line

Change is a process. It rarely follows a straight line and represents a constantly evolving and transformative condition. This means that periodic readjustment of the institutional strategy for DELT will be necessary due to changing internal and external conditions. An important aspect of change is that the institution needs to cultivate growth mindsets and create an organisational culture where new innovations and transformations can thrive. Such a culture requires leaders and ambassadors for change who can energise others and help drive continuous improvement. On the other hand, change is not benign, and building resilience in the face of uncertainty also requires listening to your critics. As well as identifying and celebrating what worked, institutions and their leaders have to be critical and honest about what did not work. The group proposes that institutions establish a quality assurance framework with defined guidelines or standards as well as maintaining an outward focus so they can benchmark their goals and outcomes for DELT with other leading and like-minded institutions.

Given the importance of local context, three examples of specific actions – one under each domain – that partner institutions plan to implement are listed below. The actions outlined in Table 1 illustrate the need to develop solutions that adequately meet local challenges and opportunities.

Table 1. Actions undertaken by partner institutions

Domain	Challenge	Action
Vision, leadership and governance	• Establishing the current state of practice, how to develop the right type of strategy and rethink teaching approaches for best practices • Promoting leadership, quality assurance and self-assessment • Defying delivery modes and exploring partnerships • Ensuring quality and revising the quality assurance framework to support new models	**Re-envisioning the future of examinations** Written exams were previously held in rented rooms at other higher education institutions. As a result of the pandemic, there are now many fundamental questions about what requirements are attached to an exam and what the students' performance actually consists of. As a result of this cultural change, new concepts are now being experimented with. This means that institutionalised structures are also concerned with why traditions endure and how other forms of learning and assessment can be made possible.

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		FernUniversität in Hagen, Germany
People, community and stakeholders	• Promoting a mindset shift amongst teachers and administrators and transforming assessment practices • Developing support for teacher and students • Increasing continuous professional development • Promoting shared ownership of developments towards digital transformation • Developing a community of practice, growth mindsets and shared ownership • Increasing flexibility and more authentic and relevant assessment models • Supporting students and mapping the study lifecycle	**Developing a community of practice for heads of studies** Unit heads are key constituents, as they represent the central connection between the institution, educators and students. They can help realise institutional ambition by orchestrating the educational environment. A new internal training program for unit heads is underway with the main goal to develop a community of practice. The topics covered during these sessions will be discussed in a participative mode. This action aims to develop academic leadership within the organisation and connect the rectorate to the educational realities of learning and teaching.

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		HES-SO University of Applied Sciences and Arts Western Switzerland
Tools, spaces and resources	• Upgrading digital infrastructure • Integrating digital infrastructure in the wider DELT ecology • More fully harnessing the pedagogical affordances of digital video • Ensuring a more sustainable platform for the recording and delivery of digital video • Future proofing digital infrastructure for further growth	**Finding a replacement platform for Unicam** The Covid-19 crisis has seen a significant increase in the use of recorded videos for learning and teaching. An internally developed video platform known as Unicam built in conjunction with an external company has been part of the central digital architecture since 2019. However, the platform that integrates with YouTube is no longer able to support the rapid growth in demand with on average around 20 new videos uploaded per day. A decision has been made to identify the future requirements and based on this analysis to follow a formal tender process to find a suitable replacement platform.

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		Dublin City University, Ireland

The final observation from group members is a reminder that the digital education ecosystem consists of a diverse range of macro, meso and micro-layers. Impactful DELT strategies need to extend to each of these layers.

1.6 Digital competences frameworks

1.6.1. Developing digital literacies by JISC

Digital literacy looks beyond functional IT skills to describe a richer set of digital behaviours, practices, and identities. What it means to be digitally literate changes over time and across contexts, so digital literacies are essentially a set of academic and professional situated practices supported by diverse and changing technologies. This definition quoted above can be used as a starting point to explore what key digital literacies are in a particular context (e.g., university, college, service, department, subject area or professional environment).

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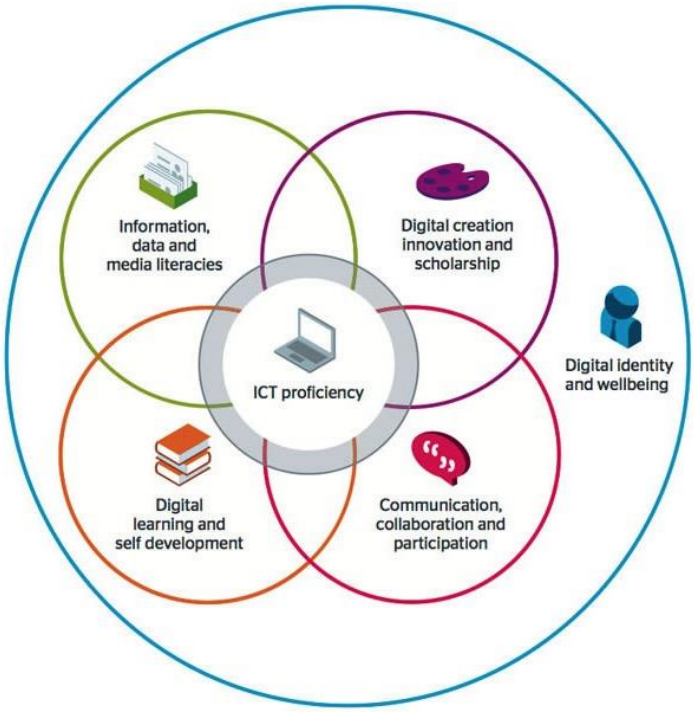

Figure 13: The aspects of ICT proficiency

Digital literacies encompass a range of other capabilities represented here in a seven elements model: Seven element of digital literacies CC Jisc

https://www.jisc.ac.uk/guides/developing-digital-literacies

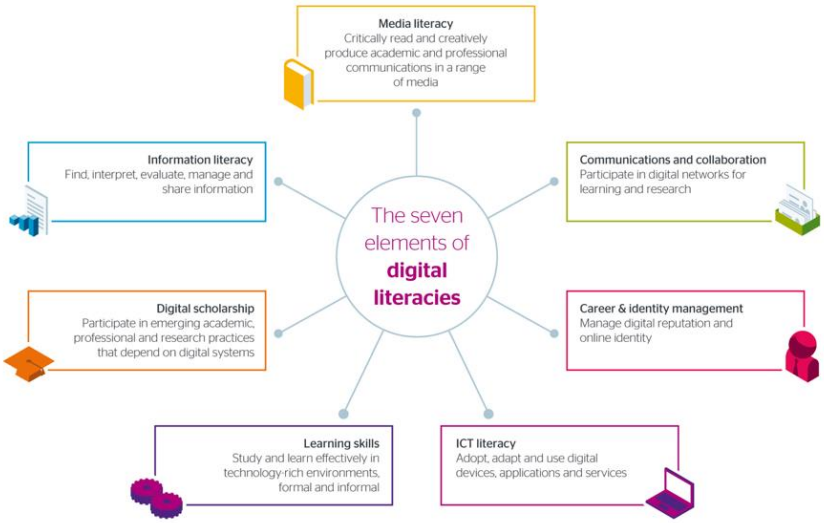

Figure 14. The seven elements of digital literacy

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1.6.1. Digital IQ – DQ

(This information is sourced from the DQ Institute https://www.dqinstitute.org/)

DQ (Digital Intelligence) sets a Global Standard on Digital Literacy, Digital Skills, and Digital Readiness (IEEE 3527.1™ Standard).

Beyond IQ and EQ, DQ (Digital Intelligence) represents critical skills needed to thrive in the digital age.

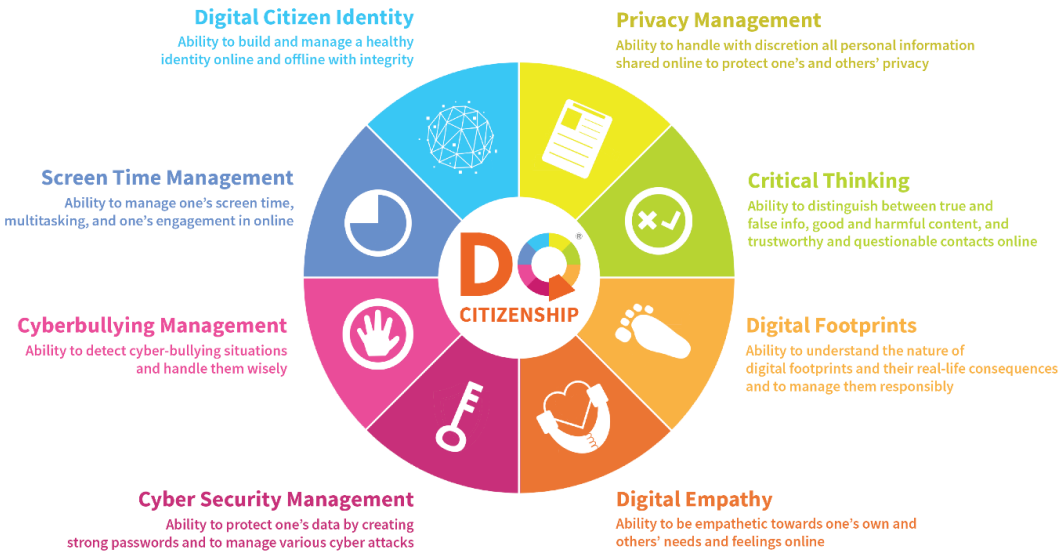

Figure 15. Elements of Digital Intelligence

DQ is defined as "a comprehensive set of technical, cognitive, meta-cognitive, and socio-emotional competencies that are grounded in universal moral values and that enable individuals to face the challenges and harness the opportunities of digital life."

Its framework aggregated across more than 25 prior leading frameworks about digital literacy and skills. It lays out a common language, structure, and taxonomy around digital literacy, skills, and readiness that can be benchmarked, referenced, and adopted across nations and sectors worldwide. The DQ Framework was internationally acclaimed and endorsed by the Coalition for Digital Intelligence (CDI), formed in 2018 by the OECD, IEEE SA, and DQ Institute in association with the World Economic Forum, with the commitment to promote digital literacy and digital skills around the world.

DQ comprises 24 digital competencies. It focuses on 8 critical areas of digital life– identity, use, safety, security, emotional intelligence, literacy, communication, and rights. These 8 areas can each be developed at three levels: citizenship, creativity, and competitiveness.

Citizenship focuses on basic levels of skills needed to use technologies in responsible, safe, and ethical ways.

Creativity allows problem-solving through the creation of new knowledge, technologies, and content.

Competitiveness focuses on innovations to change communities and the economy for broad benefit.

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Figure 16. DQ Framework

1.7. Future Skills

(Ehlers, Ulf. -D., Kellermann, Sarah A. (2019): Future Skills - The Future of Learning and Higher education. Results of the International Future Skills Delphi Survey. Karlsruhe)

The Future Skills Report presents information and data that were compiled and/ or collected through a research team from Baden-Wurttemberg Cooperative State University in Karlsruhe, Germany.

More information on the projects here:

www.next-education.org – Information on the research group and related projects
www.nextskills.org – Information about the Future Skills Project

The term “future skills” is defined as the ‘ability to act successful on a complex problem in a future unknown context of action’. It refers to an individuals’ disposition to act in a self-organized way, visible to the outside as performance. The first Future Skill dimension is the subjective dimension of futures skills profiles. The second Future Skill Dimension is relating to an individual’s ability to act self-organized in relation to an object (object dimension), a task or a certain subject matter related issue. The third Future Skill Dimension is relating to an individual’s ability to act self-organized in relation to its social environment (social dimension), the society and organizational environment.

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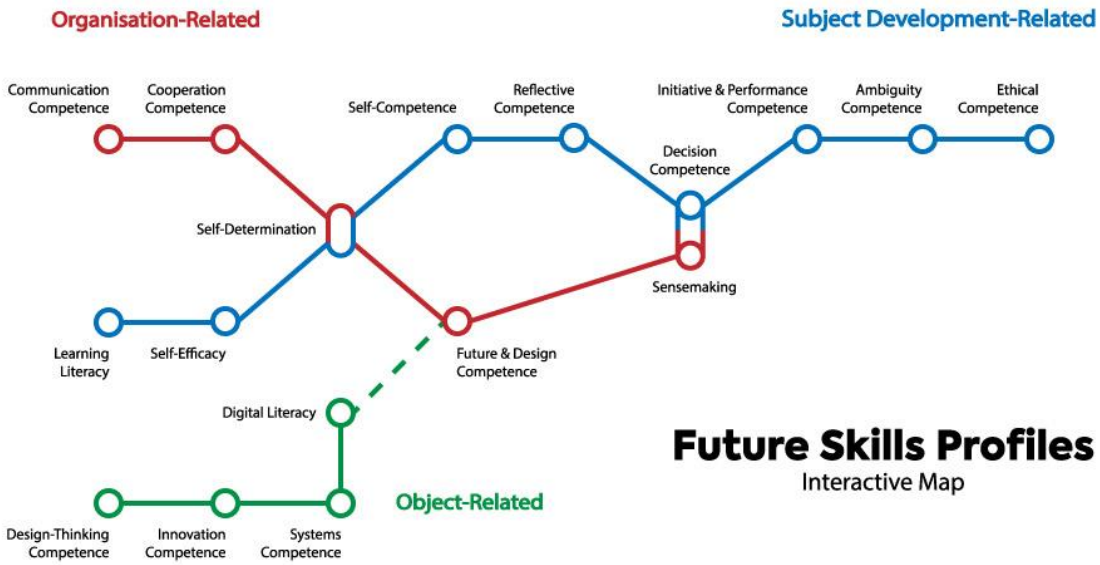

Figure 17. Map of the Future Skills profiles

Future Skill Profiles

Autonomy: capacity to make an informed, uncoerced decision and act accordingly

Agility: ability to orient oneself in fast changing contexts, constantly changing objects

Sense making: ability to identify with and make sense of given organizational rules and values for one's own life and work

Self-initiative: individual ability to take an active and self-starting approach to work goals and tasks

Creativity: to be able to deal with task in a new, unforeseen way

Tolerance for ambiguity: ability to deal with uncertainty and in different roles

Future mindset: ability to productively develop an organizations' context, continuously learn and develop one's skills and to be open for new and unknown challenges within a given organizational context

Self-management: ability to lead and regulate oneself to decide in a self-responsible way

Cooperation skills: ability to cooperate in teams and have social and intercultural skills

Need/ motivation for achievement: individual's desire for significant accomplishment, mastering of skills, control, or high standards

Digital literacy: ability to utilize digital technology in a creative way for learning, working, collaboration

Communication competence: ability to actively create dialogue, achieve consensus and criticize

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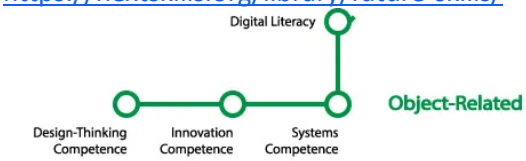
Personal agility: positive attitude, resilience and openness to changes, being comfortable in ambiguous and changing situations

Ability to reflect: ability to critically analyze made experiences and learn for future contexts

Autonomous competence: continuously learning, methods, evaluate own progress, ability to learn motivated

Self-efficacy: one's own conviction to be able to act successfully on a given task

https://nextskills.org/library/future-skills/



Future Skills Profiles
Interactive Map

Digital literacy

Definition: Digital literacy is the ability and disposition to use digital media, to develop them in a productive and creative way, the capacity to critically reflect on its usage and the impact media have on society and work, both for private and professional contexts, as well as the understanding of the potentials and limits of digital media and their effects. (mean value: 4.5 of 5, standard deviation: 0.80)

Reference Competences: media literacy, information literacy

1.8. The DigComp 2.1: The Digital Competence Framework for Citizens. DigComp 2.2

Initiated in July 2019 and revised in December 2021 the DigComp Framework consists of a set of guidelines, a set of key skills and also a set of indications on identifying and using them.

https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use

Definition of Digital Competence

In DigComp, digital competence involves the "confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It is defined as a combination of knowledge, skills and attitudes." (Council Recommendation on Key Competences for Life- long Learning, 2018). https://op.europa.eu/en/publication-detail/-/publication/297a33c8-a1f3-11e9-9d01-01aa75ed71a1/language-en

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The Digital Competence Framework: 5 areas

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Figure 18. The 5 areas of the Digital Competence Framework

The DigComp Conceptual Reference Model that includes competences:

Information (1.1 Browsing, searching and filtering information, 1.2 Evaluating Information, 1.3 Storing and retrieving information)

Communication (2.1 Interacting through technologies, 2.2 Sharing information and content, 2.3 Engaging in online citizenship, 2.4 Collaborating through digital channels, 2.5 Netiquette, 2.6 Managing digital identity)

Content creation (3.1 Developing content, 3.2 Integrating and re-elaborating, 3.3 Copyright and Licences, 3.4 Programming)

Safety (4.1 Protecting devices, 4.2 Protecting personal data, 4.3 Protecting health, 4.4 Protecting the environment)

Problem solving (5.1 Solving technical problems, 5.2 Identifying needs and technological responses, 5.3 Innovating and creatively using technology, 5.4 Identifying digital competence gaps).

There are 21 competences that are pertinent to these areas, their titles and descriptors are outlined in Dimension 2. Taken together, **Dimensions 1 and 2 form** the conceptual reference model. Additional Dimensions outline Proficiency levels (**Dimension 3),** Examples of knowledge, skills and attitudes (**Dimension 4**) and Use cases (**Dimension 5**). The latest publication, DigComp 2.2, presents the consolidated framework.

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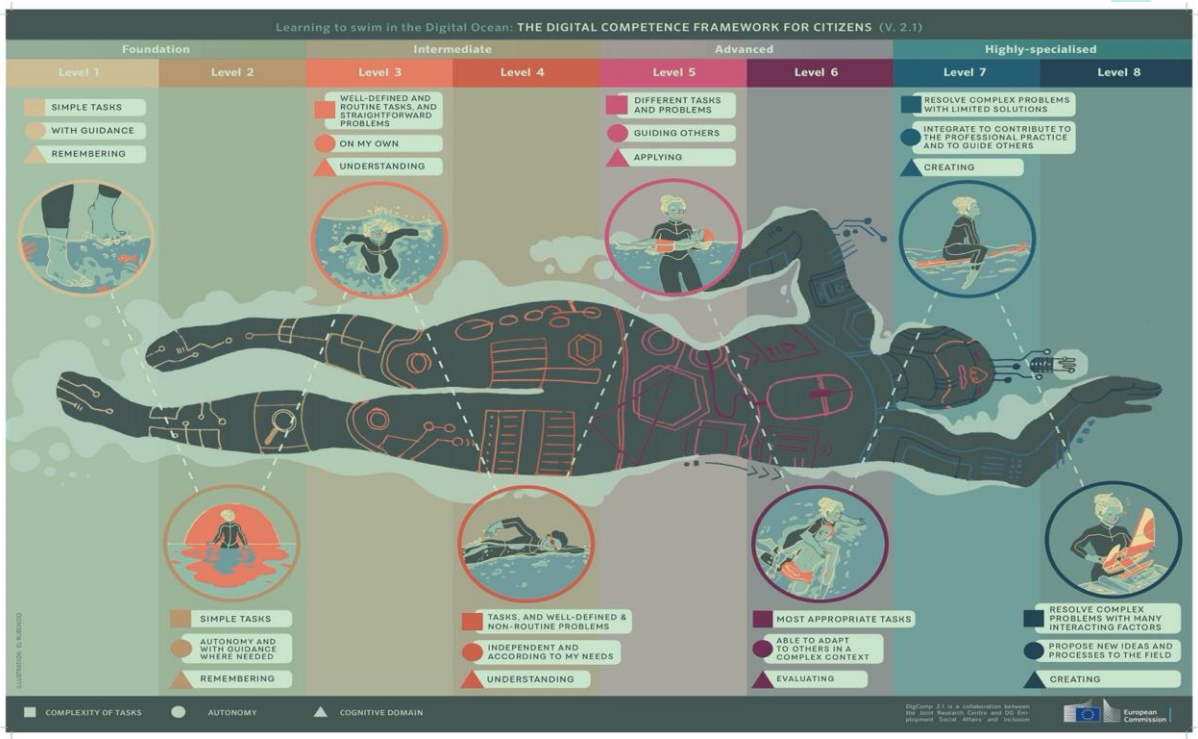

Figure 19. Learning to swim in the Digital Ocean: The Digital Competence Framework for Citizens

The Digital Competence Framework for Citizens (DigComp)

Information and data literacy	1.1. Browsing, searching and filtering data, information and digital content 1.2. Evaluating data, information and digital content 1.3. Managing data, information and digital content
Communication and collaboration	2.1. Interacting through digital technologies 2.2. Sharing information and content through digital technologies 2.3. Engaging in citizenship through digital technologies 2.4. Collaborating through digital technologies 2.5. Netiquette 2.6. Managing digital identity
Digital content creation	3.1. Developing digital content 3.2. Integrating and re-elaborating digital content 3.3. Copyright and licences 3.4. Programming
Safety	4.1. Protecting devices 4.2. Protecting personal data and privacy 4.3. Protecting health and well-being 4.4. Protecting the environment
Problem solving	5.1. Solving technical problems 5.2. Identifying needs and technological responses 5.3. Creatively using digital technologies 5.4. Identifying digital competence gaps

https://ec.europa.eu/jrc/en/digcomp

Figure 20. The 21 competences of DigComp

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Main display of the framework

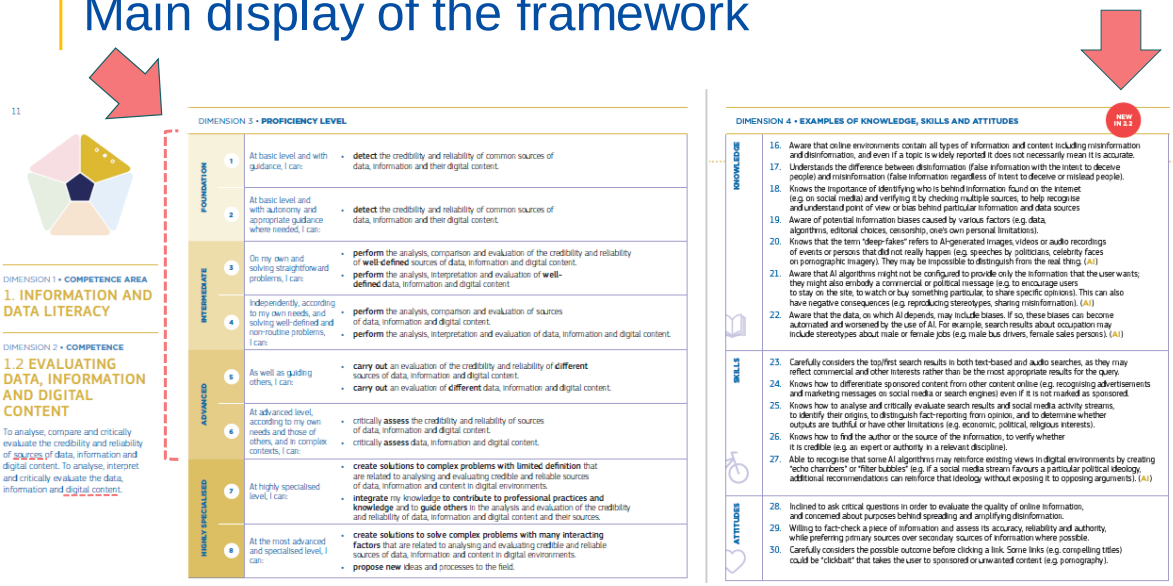

Figure 21. Changes in DigComp2.2 (1)

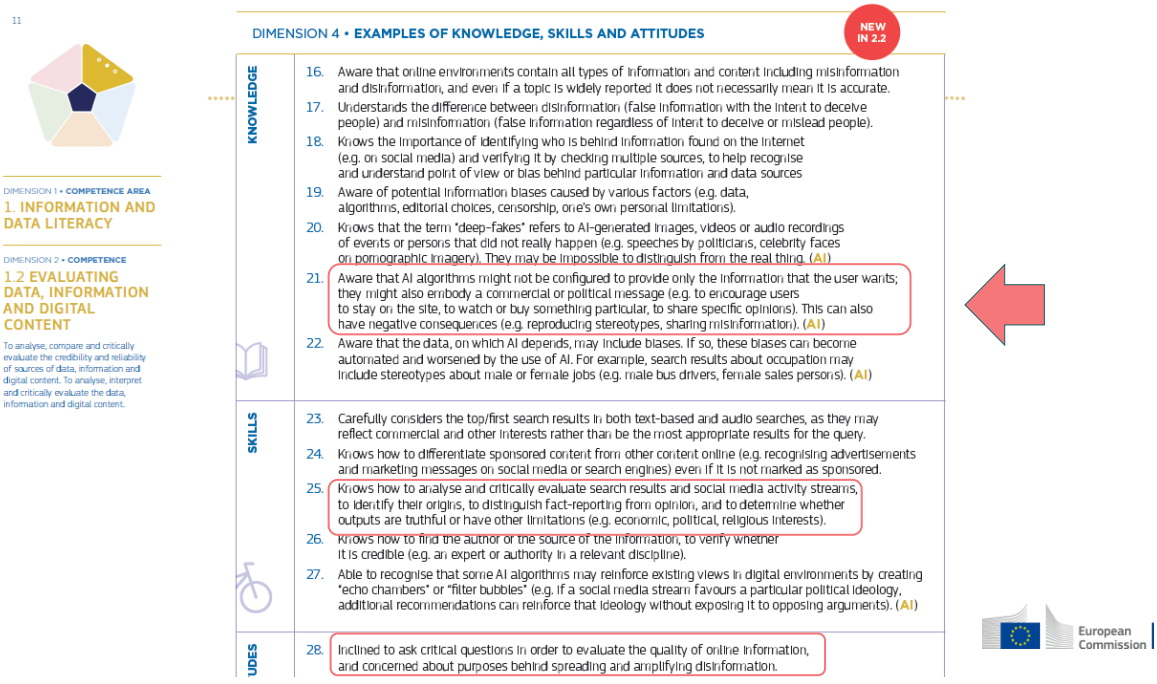

Figure 22. Changes in DigComp2.2 (2)

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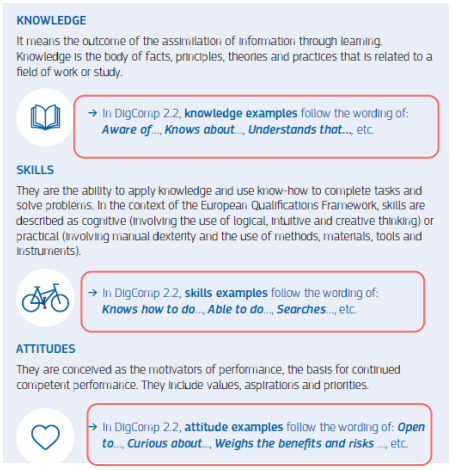
What examples are and what they are not?



- Useful curriculum planning, updating and developing DigComp training syllabus or course content

- **Do not** represent an exhaustive list of what the competence itself entails!
- **Are not** on proficiency levels although some more complex than others

Figure 23. Changes in DigComp2.2 (3)

The key themes of DigComp 2.2 update:

- New copyright/IP pertinent to citizens
- Fact-checking online content and its sources
- Citizens interacting with AI systems, data literacy
- Green and sustainability aspects of interacting with digital technologies
- Focus on well-being and safety
- Remote work/hybrid work context (RW)
- Digital accessibility (DA)

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Figure 24. Changes in DigComp2.2 (4)

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The DigComp 2.2 update:

- 10-15 examples *per* competence to illustrate timely contemporary themes
- More than 250 new examples of ***knowledge, skills and attitudes*** to help education and training providers update their DigComp curriculum and course material to face today's challenges

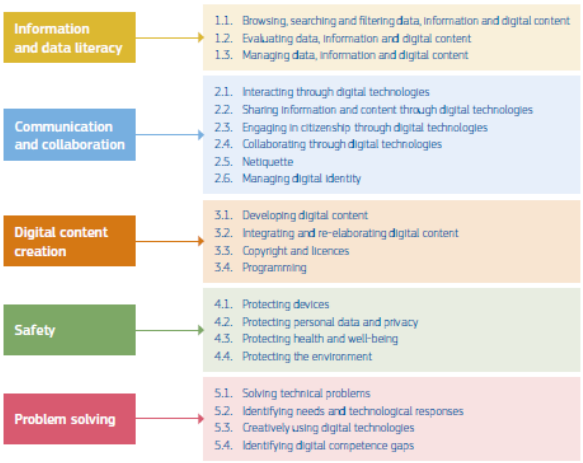

Figure 25. Changes in DigComp2.2 (5)

Key competences are *interlinked!*

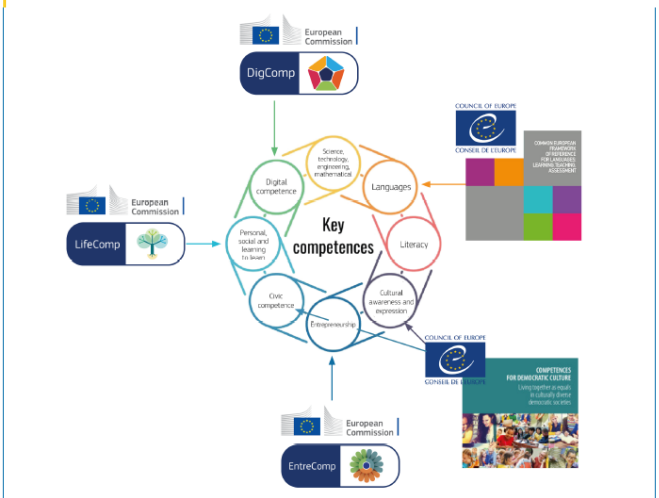

FIG.5 Both the European Commission and the Council of Europe have created reference frameworks to support the conceptualisation of the Key competences and their key terminology.

EntreComp

The development of the entrepreneurial capacity of European citizens is one of the eight Key Competences for Lifelong learning. Entrepreneurial value creation and entrepreneurial learning can take place in any sphere of life; turning ideas into shared value is equally relevant to progressing one's career, supporting one's local sports team or establishing a new social enterprise. The report entitled **EntreComp: The Entrepreneurship Competence Framework** describes entrepreneurship as a lifelong competence and identifies what are the elements that make someone entrepreneurial.

REPORT (2016): data.europa.eu/doi/10.2791/593884

NOTE: The Dimension 4 examples that focus on the interconnection between DigComp and EntreComp include the following: 237, 239, 242, 243, 244.

Figure 26. Key competences in DigComp and related frameworks

Important readings

- 2022: DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes
- 2017: DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use
- 2016: DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: the Conceptual Reference Model
- 2013: DigComp: A Framework for Developing and Understanding Digital Competence in Europe

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- 2012: Report on Online consultation Experts' views digital competence
- 2012: Digital Competence in Practice: An Analysis of Frameworks

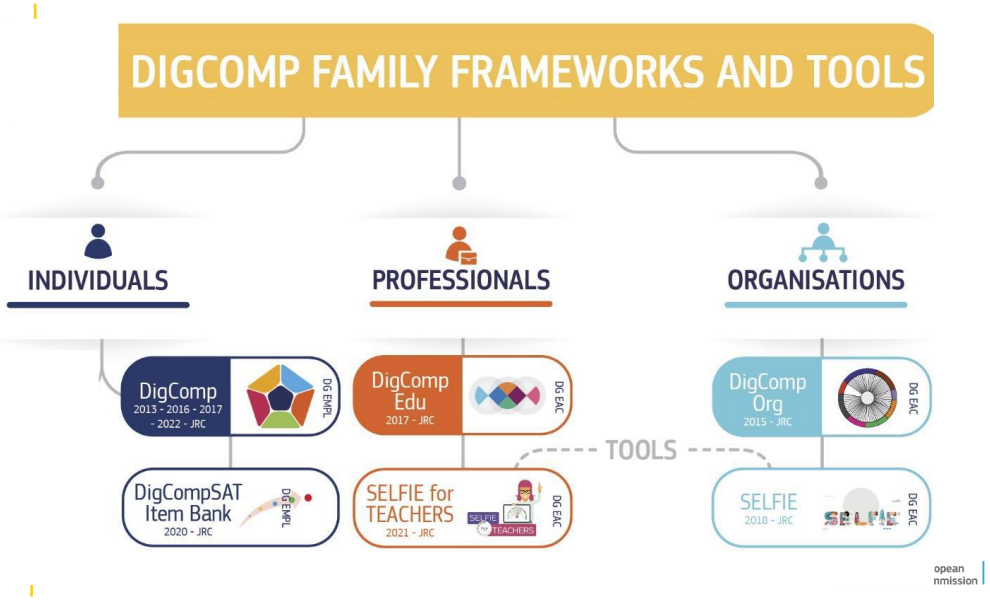

Figure 27. DigCom family of frameworks

Integration of Digital Competences in **Europass CV:**

https://europass.cedefop.europa.eu/editors/en/cv/compose

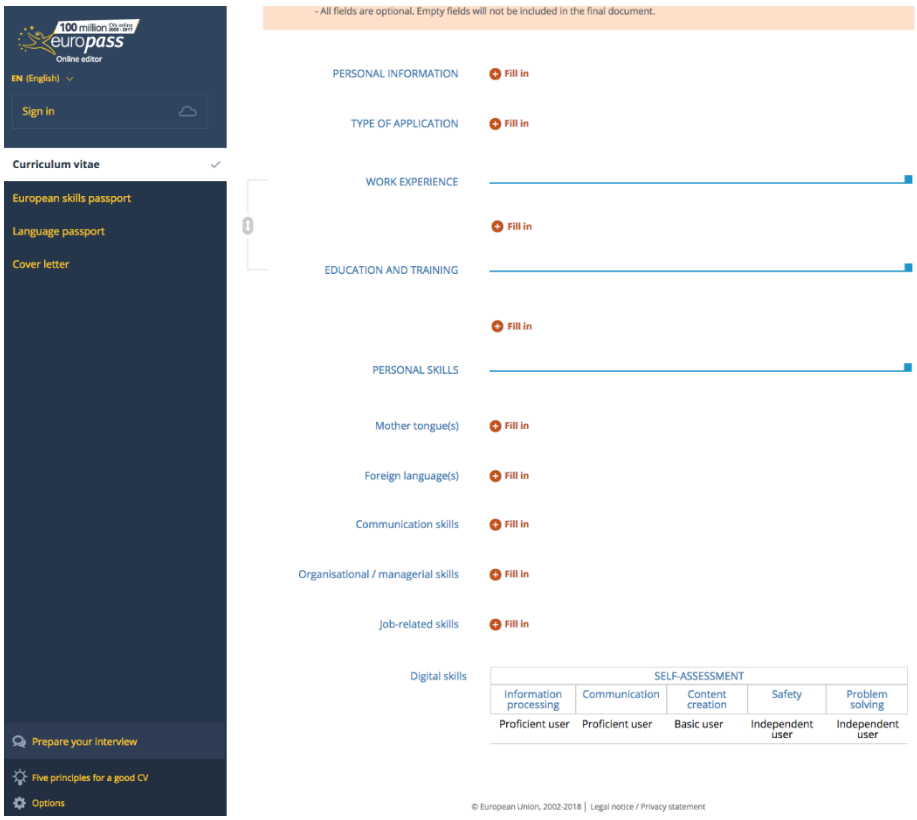

Figure 28. Example of integrating Digital competences in Europass CV

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There are several tools, developed in EU to indicate your Digital competence level.

A good example is the Digital Competence survey: https://digital-competence.eu/survey/

The Digital Competence Wheel is developed by Center for Digital Dannelse, which has been specializing in digital formation and digital competences for more than 10 years.

The Wheel's purpose is to provide an overview of digital competences and offer concrete tools to how these competences can be elevated and improved.

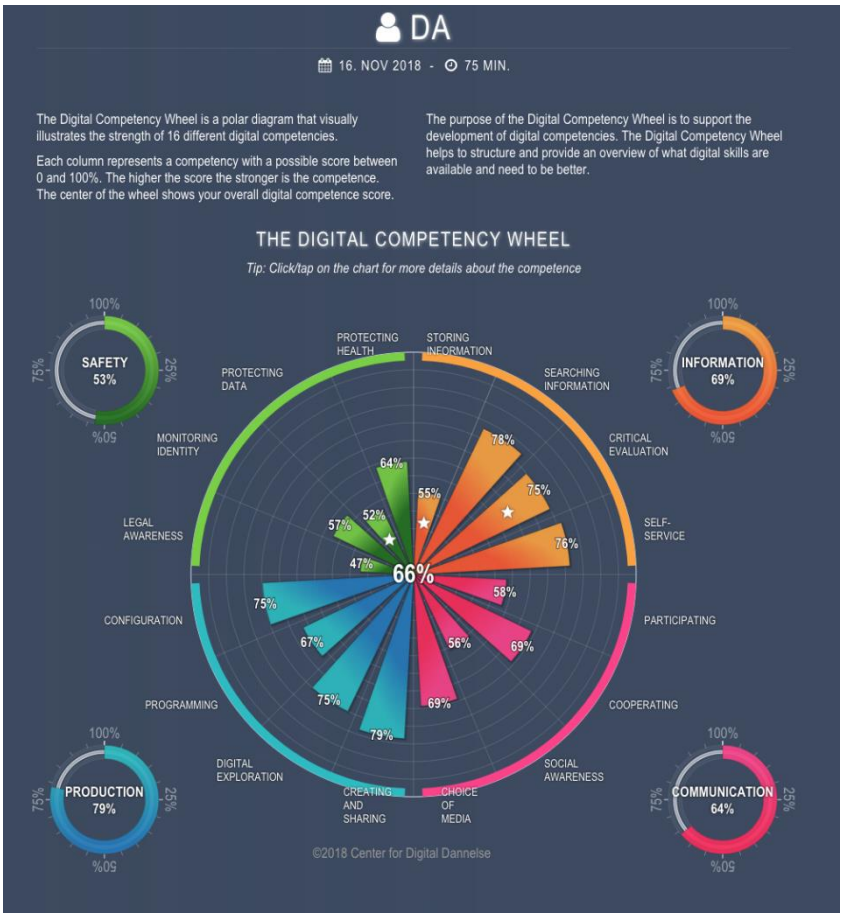

Figure 29. The Digital Competence Wheel

1.9. Digital Competence Framework for Educators (DigCompEdu)

(Information and manual download from https://joint-research-centre.ec.europa.eu/digcompedu_en)

DigCompEdu is a scientifically sound framework describing what it means for educators to be digitally competent. It provides a general reference frame to support the development of educator-specific digital competences in Europe. DigCompEdu is directed towards educators at all levels of education, from early childhood to higher and adult education, including general and vocational education and training, special needs education, and non-formal learning contexts.

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DigCompEdu details 22 competences organised in six Areas. The focus is not on technical skills. Rather, the framework aims to detail how digital technologies can be used to enhance and innovate education and training.

The DigCompEdu study builds on previous work carried out to define citizens' Digital Competence in general, and Digitally Competent Education Oragnisations (DigCompOrg). It contributes to the Commission's recently endorsed Skills Agenda for Europe and to the Europe 2020 flagship initiative Agenda for New Skills for New Jobs.

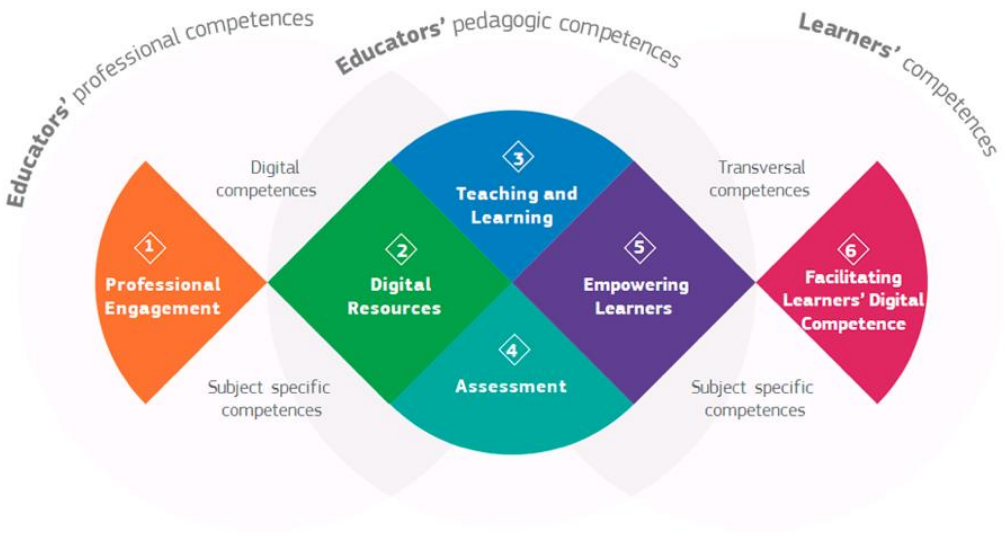

Figure 30. DigCompEdu - part 1

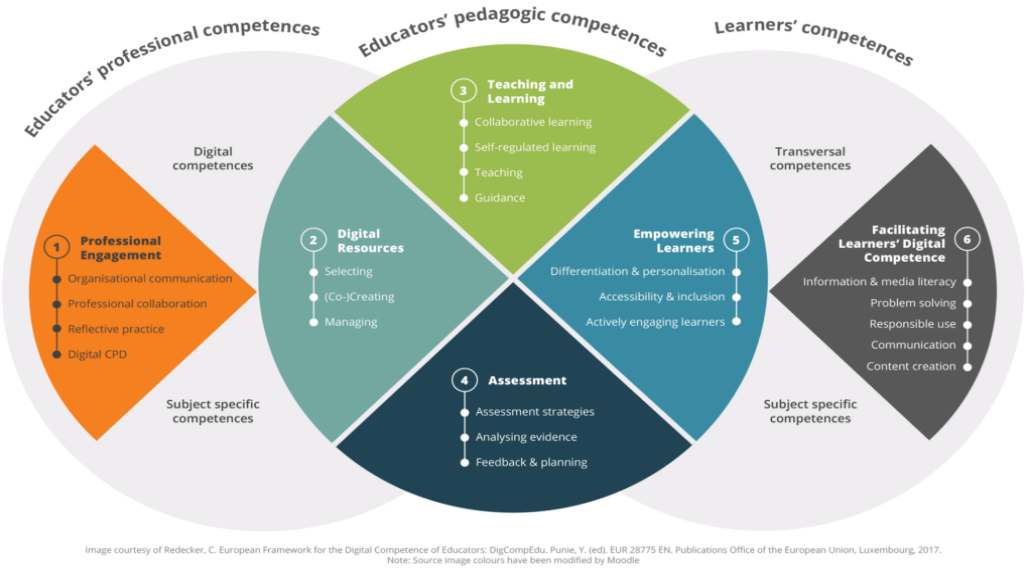

Image courtesy of Redecker, C. European Framework for the Digital Competence of Educators: DigCompEdu. Punie, Y. (ed). EUR 28775 EN. Publications Office of the European Union, Luxembourg, 2017.
Note: Source image colours have been modified by Moodle

Figure 31. DigCompEdu - part 2

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1.10. DigCompEdu Self-reflection Tools

The new self-reflection tool SELFIEforTEACHERS is now available for school education in the 24 EU official languages.

https://joint-research-centre.ec.europa.eu/digcompedu/digcompedu-self-reflection-tools_en

The European Commission designed and developed SELFIEforTEACHERS, a self-reflection tool, that aims to support teachers to develop their digital competence. By responding to the tool 32 items teachers can identify their strengths and gaps and design their learning paths to develop further their digital competence.

SELFIEforTEACHERS is based on the DigCompEdu conceptual framework while at the same time it responds to new pedagogical needs and trends. Moreover, it allows teachers to initiate a self-reflection on their own at any point in time, or complete a self-reflection initiated by a group (that being a group of teachers, a school, an institution, a regional authority) by accepting an invitation. https://educators-go-digital.jrc.ec.europa.eu/

The **CheckIn Higher Education tool** has been revised through a revision of the progression levels based on Bloom's Digital Taxonomy (adapted), an increase in answer options, modification of some terminology, and also the addition of a 7th area, Open Education, based on the OpenEdu Framework (JRC 2016 and 2019). https://publications.jrc.ec.europa.eu/repository/handle/JRC115663

The self-reflcetion tool exists in 2 languages English and Spanish at this moment (2022)

https://ec.europa.eu/eusurvey/runner/CheckIn_HE_v2021_EN

1.11. Digital Scholar

(Evolving as a Digital Scholar, Teaching and Researching in a Digital World - Wim Van Petegem, JP Bosman, Miné De Klerk, and Sonja Strydom, 2022, is published y Leuven University Press as an open ebook https://lup.be/products/139097)

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Examples / suggestions / tips

How to become digitally proficient as a teacher and researcher

What does it take to become a digitally agile scholar? This manual explains how

Figure 32. The Digital Scholar framework

Academics can comfortably navigate the digital world of today and tomorrow. It foregrounds three key domains of digital agility: getting involved in research, education and (community) service, mobilising (digital) skills on various levels, and acting in multiple roles, both individually and interlinked with others.

After an introduction that outlines the foundations of the three-dimensional framework, the chapters focus on different roles and skills associated with evolving as a digital scholar. There is the author, who writes highly specialised texts for expert peers; the storyteller, who crafts accessible narratives to a broader audience in the form of blogs or podcasts; the creator, who uses graphics, audio, and video to motivate audiences to delve deeper into the material; the integrator, who develops and curates multimedia artefacts, disseminating them through channels such as websites, webinars, and open source repositories; and finally the networker, who actively triggers interaction via social media applications and online learning communities. Additionally, the final chapters offer a blueprint for the future digital scholar as a professional learner and as a “change agent” who is open to and actively pursues innovation.

Informed by the authors’ broad and diverse personal experience, Evolving as a Digital Scholar offers insight, inspiration, and practical advice. It equips a broad readership with the skills and the mindset to harness new digital developments and navigate the ever-evolving digital age. It will inspire academic teachers and researchers with different backgrounds and levels of knowledge that wish to enhance their digital academic profile.

Some main findings:

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Dare! Don't wait, don't hesitate, take your chance, don't have cold feet, jump or dive in the deep, take the risk, be adventurous, go for it!

Ignite! Start right away, enlighten your environment, inspire your peers, encourage colleagues, instigate new ideas, light up the fire!

Grow! Broaden your scope, raise to the top, push the limits, expand across borders, mature, and become wiser, increase your impact!

Interact! Don't hide, network with partners, build a community, participate and communicate, connect with like-minded people, cherish relationships!

Try! Experiment and explore new things, practice, give it a chance, don't give up, back off to better blow up, don't reinvent the wheel!

Appeal! Fascinate, attract, charm, please, invite, engage, be stunning, show your best (digital) side!

Learn! Treasure your successes, turn mistakes into learning opportunities, stand on the shoulders of giants, integrate new knowledge, be wise, keep smiling!

Case Studies

Context

The concept of Digital Competences for Educators is very important within European educational policies. Recent definitions of DigCompEdu are provided in a scientifically sound framework describing what it means for educators to be digitally competent (DigCompEdu: European Framework for the Digital Competence of Educators (Punie & all 2017) by JRC Science) and in the EU DEAP defined in Sep 2020. The JRC Science group have researched and published the Policy Approaches to Open Education, Case Studies from 28 EU States (OpenEdu Policies) (Inamorato Dos Santos &all, 2017) and the subsequent Policy recommendations on open education in Europe (OpenEdu Policies, 2018). Going open is a process for all involved: institutions, learners and teachers, also adding technological companies and those involved in open education technologies. It depends on creating both digital and non-digital opportunities to make education more collaborative, transparent, and inclusive. Open education needs support from policies, technological development, and pedagogical approaches, via a multi-stakeholder approach, that can act systemically to create the change to further advance it in schools and create an "open education ecosystem". We will use the momentum created by the pandemic times which showed the importance of both digital competences and existing OERs and OEP that with the support of OET can create this vision.

The shortage of digital skills in Europe reported in "European Digital Progress Report EDPR" (2019) of the European Commission: 45% of Europeans have insufficient or no digital skills. Based on the Digital Economy and Society Index (DESI) index of 2020 the countries partners in this project, Romania and Greece, are almost the last two with the lowest score on DESI, Croatia is in the lower half and Spain is just above the EU average score. The DigiTal education at School in Europe analyse Eurydice (2019), indicates that digital education in primary and secondary schools in Europe is at the lowest for the whole education system, even if most European education policy makers have explicitly included learning outcomes related to all five digital competence areas and provision of continuing professional development (CPD) in the area of digital education. The further analysis realised by EC in the summer

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of 2020 in the consultation phase for the Digital Education Action Plan (DEAP) reveals that the intake of the digital competences for educators (DigCompEdu, 2017) is very low in the participating countries (exception Norway) and especially in primary and secondary education.

In recent years, the options for inclusion of open education principles and opportunities for more inclusion have increased, through MOOCs, OERs, Open Credentials and OEPs. A relevant example are open training materials for teachers developed in the EDUCRED project in Romania, dedicated to professors, which will be considered, even if they are in Romanian and refer only to Math and Romanian. Many schools use digital equipment and strategies to open up their educational methodologies and to increase the digitallness of education. But several of these resources and practices are either in English or in national languages and they are not validated or integrated outside of a small group of schools or communities of practice formed based on regions or subjects taught.

Case Study 1: The European Digital Education Hub

- Continuous and boosted multi-stakeholder discussion- a community on digital education;
- Link national and regional digital-education initiatives and strategies and stakeholders, including a network national advisory services to exchange experience and good practice;
- Share good practices by contributing to research experimentation and systematic collection and analysis of empirical evidence;
- Agile development of policy and practice in digital education- a think-and-do-tank.

Its main purposes are :

- update the **European Digital Competence Framework**
- create a **European Digital Skills Certificate (EDSC)**
- encourage more participation in the **International Computer and Information Literacy Study (ICILS)**,
- target advanced digital skills development though steps such as extending the **Digital Opportunity traineeships**
- **women's participation in STEM** (science, technology, engineering and mathematics)

Case Study 2: Policy implementation at UNIVPM

UNIVPM academic staff use specific pedagogical frameworks for digital education to guide their learning sessions. Specifically, UNIVPM professors use several tools and actions during online courses following the Digital Competence of Educators (DigCompEdu) European framework. Usually, a typical course at UNIVPM is as follows:

- **Teaching and Learning**: The teaching and learning process is adapted to make the most of online classes. The "Whiteboard" is widely used for real-time multi-handed work, while Microsoft Teams' "All Together Mode" or "Breakout Rooms" is for editing material, brainstorming, real-time collaborations, and working group projects. All materials are then usually saved and uploaded to the Microsoft Teams folder repository and Moodle so students can easily reference their work.
- **Digital resources utilization:** UNIVPM professors usually propose several apps and software during classes depending on the subject, to enable students with digital resources. Several applications and software are offered during classes depending on the subject matter to enable students with digital resources. The most used are Microsoft Office tools, mainly for

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sharing learning materials in PowerPoint and for communicating with students on Outlook. Other tools such as Plant Simulation are also used for projects and group work.

- **Students' engagement stimulation**: Great attention is focused on stimulating student engagement, primarily using the Microsoft Teams "Insights app" and "Chat" for questions and reactions and Microsoft Whiteboard for simultaneous implementation of visual learning and activities.
- **Focus on students' empowerment:** Online classes, assignments, and exams are scheduled on Microsoft Teams and Moodle with deadlines and descriptions for learner accountability while also considering students' social-emotional learning and virtual engagement as an essential aspect of courses. As such, Microsoft Whiteboard provides opportunities for students to express themselves and build connections while interacting on the same board.
- **Digital competence development**: Professors are challenged to use Microsoft Teams, Whiteboard boxes, and collaborative spaces to post student work, quickly comment on, and appreciate their classmates' work. These tools accelerate the digitization of the classroom, leading students to complete tasks and assignments using new tools and developing transferable skills for their careers, such as digital skills for content creation, interactive lessons, and multimedia presentation.
- **Digital assessment:** Microsoft Teams and Moodle's assessment, assignment, and grading features are used at UNIVPM for student assessment, e.g., Quiz forms. Trend or outlier analysis helps professors know grade trends and assignment statistics in order to reorganize their classes if necessary. On the other hand, Microsoft Whiteboard is used during online exams, especially in science subjects where lots of exercises need to be solved.

Case Study 3: Other EU projects in the area of digital skills

Several recent Erasmus and other EU funded projects have addressed the need to improve the digital skills of those working in various parts of education and excluded groups, especially teachers who may have been left behind by the speed of technological change. The main EU project within the ideas of our project, but dedicated to school teachers is the SELFIE project for educational institutions and recently the pilot project in 6 countries of SELFIE for Teachers - where the pre-pilot study run in October 2020 in two countries (Italy and Portugal) with 500 teachers, while in March/April 2021 a pilot-study will run in four countries (Italy, Portugal, Estonia and Lithuania) with 1200 teachers.

The Future Teacher 3.0 (2016-1-BE02-KA204-017362) developed the notion that a teacher of adults must be an online critical thinker, creator, communicator, collaborator, facilitator. Teaching digital skills to adults must become more collaborative, partly through access to Open Educational Resources (OER) that can be easily re-purposed and re-shared. The project proposes the idea of a "Digital Thermometer" to measure competences and how they are improving. At the same time, a "Digital Compass" will direct students towards a range of modules as part of a wider "Digital Journey".

Open Virtual Mobility (2017-1-DE01-KA203-003494) was a European strategic partnership dedicated to creating accessible opportunities for achievement of virtual mobility skills to ensure higher uptake of virtual mobility in higher education in Europe and was funded under the European Erasmus+ Program. Virtual Mobility (VM) has a great potential to contribute to the internationalisation, innovation and inclusion in higher education. The barriers to physical mobility of educators and students such as high costs, socio-economic, political and health-related issues, can be dramatically reduced by adding the virtual component to mobility, making mobility accessible to all. The relevance and importance of this project became more obvious during the pandemic period.

ABC to VLE (2018-1-UK01-KA203-048123) was an Erasmus+ funded project that University College of London was leading in collaboration with 12 partner institutions from across Europe. The project

developed support structures to help teaching teams to implement their ABC learning designs within the local Virtual Learning Environment (VLE) or Learning Management System (LMS). ABC is based on the pedagogic theory of Professor Diana Laurillard's Conversational Framework.

Exercises / Applications

Exercise 19:

Please create an account and use

https://education.ec.europa.eu/focus-topics/digital-education/digital-education-action-plan/european-digital-education-hub

What can be found on the European Digital Education Hub?

Search for:

- Information and knowledge-building to support digital education stakeholders in Europe
- Community of practice: Stronger together in the digital transformation of education
- Acceleration of best practices: Innovating education through design thinking and the acceleration of prototypes

series of “Teachers as Researchers weeks” where educators can collaborate on finding answers to the challenges they experience in their day-to-day professional lives.

Exercise 20:

Use the Digital Competence Wheel (https://digital-competence.eu/survey/) to create a profile for yourself. Consult the recommendations for self-improvement and see which ones you could put into practice.

Exercise 21:

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B2: DIGITAL LEARNING RESOURCES

2. Digital Learning Resources

2.1. Introduction

In this module we will focus on how digital learning resources are created and used, their licences and integration.

2.2.Main aim and learning goals of the thematic

The main goal will be to be familiarized with concepts as:

- Characteristics of digital learning resources
- Licences for digital learning resources
- Critical digital awareness

2.3. Dedicated ACADIGIA Training

UniCampus is an initiative of the eLearning Center (CeL) of the Politehnica University of Timisoara (UPT) aimed at developing the first MOOC (Massive Open Online Courses) in Romania, as a virtual online platform for free open courses, available to everyone. UniCampus' initial vision was to strengthen the recognition of Romanian universities by promoting free access to knowledge. The platform now includes also the DigiCulture MOOCs courses developed as part of the Erasmus+ strategic partnership DigiCulture project, as well as other courses, training materials and resources from many more European projects that the eLearning Center was a part of.

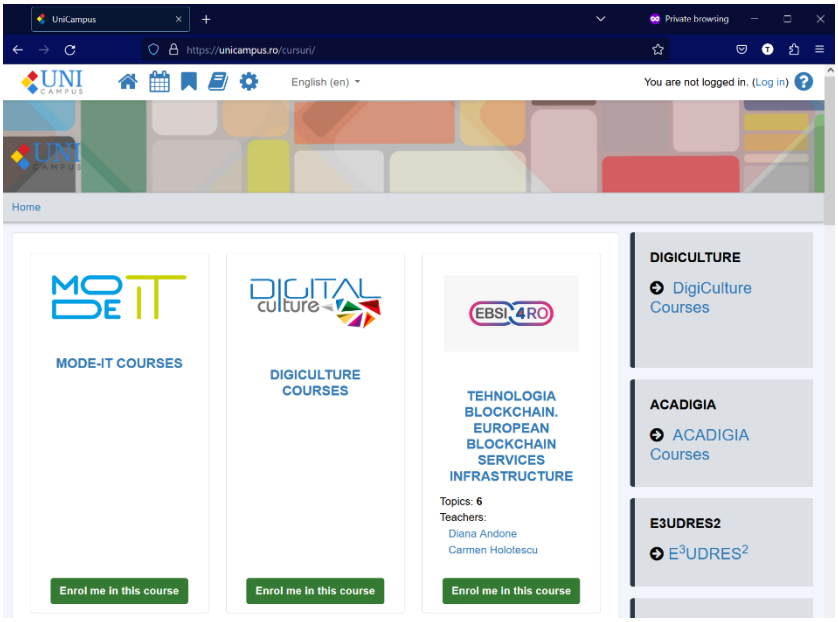

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Figure 33 Frontpage of the UniCampus platform (https://unicampus.ro/cursuri)

UniCampus also hosts valuable resources from the ACADIGIA project, available here: https://unicampus.ro/ACADIGIA . In order to access these materials, you need to:

- Create an account: https://unicampus.ro/cursuri/login/signup.php

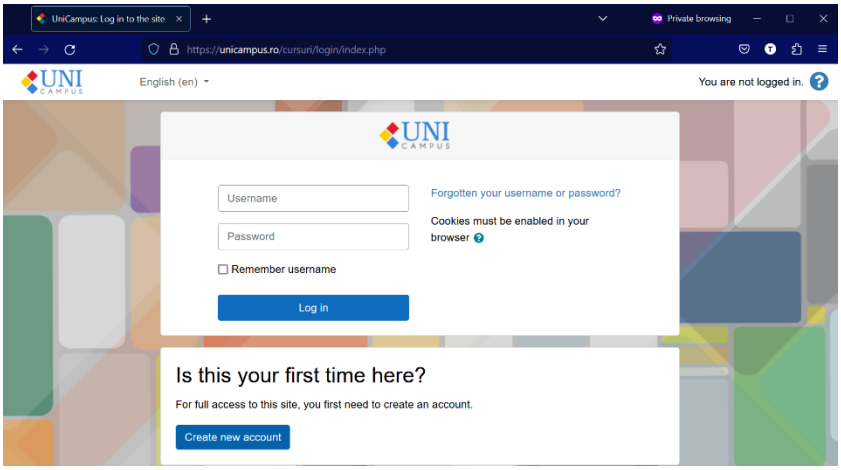

Figure 34 Login interface of the UniCampus platform

- Access the ACADIGIA Training Course (available for free): https://unicampus.ro/cursuri/course/view.php?id=236
- Complete de activities and final quiz to receive an open badge!

Definition of Digital Resources

Digital Resources can be defined as materials that have been conceived and created digitally or by converting analogue materials to a digital format.

The Digital Resources collections encompass online resources that are hosted elsewhere, physical format publications, digital media files and born-digital resources.

2.4. Characteristics

Digital Learning Resources are reusable multimedia objects that are designed to deliver a **single learning outcome**. They can vary a lot from outcome to outcome, and may include readings, infographics, multimedia, videos, or a combination of them.

Digital learning resources, used in education, refer to materials included in the context of a course that supports the learner's achievement of the described learning goals.

They can be easily embedded within course resources in various modules and course sections in a learning management system (like Moodle). *A digital resource that is self-contained, reusable, and may be portable between learning systems.*

2.5. Scope

Digital Learning Resources are making learning more **accessible, engaging, and contextualized.**

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Finding, evaluating, using, and creating digital learning resources in meaningful and responsible ways requires, from teachers, learning design skills and technical abilities.

2.6. Learning objective

“What materials would my learner need in order to understand and master the concepts in this course? The digital learning resources are those materials already in a digital format like audio, video, animations and simulations. I see providing those resources as sort of 'setting the table' so to speak for learning. The materials I select in whatever format must contribute to the students' understanding of the topics I want to cover. Sometimes I find it a challenge to narrow that list to just those materials they need to complete the course. It can be tempting to want to add lots of extras to make the course more interesting, but I know these can also distract the learners from their course outcomes. “- A professor declaration

2.7. Benefits

- ✓ To stimulate and motivate learners.
- ✓ To encourage student discussion and dialogue.
- ✓ To develop conceptual understanding.
- ✓ To support inquiry-based learning.

Case study: Using digital media in teaching JISC Guide (a very valuable resource) https://www.jisc.ac.uk/full-guide/using-digital-media-in-new-learning-models

2.8. Types

Digital Learning Resources consist of a wide variety of digitally formatted resources including:

- ✓ graphics images or photos
- ✓ audio and video
- ✓ simulations
- ✓ animations
- ✓ quizzes
- ✓ games
- ✓ e-books or e-notes
- ✓ prepared or programmed learning modules.

1. Image

This resource aids the teacher's explanation and allows learners to visualise the concept /information.

2. Simulation

This resource aids the teacher's explanation and allows learners to test out their ideas and experiment.

3. Animation

This can demonstrate processes which are difficult to describe or show in two dimensions.

4. Electronic textbook

All learners can access a copy of the relevant resources.

5. Videos

The resource enhances the understanding where the concept is difficult to see in an image, for showcasing a process, portraying an experiment, etc.

6. Quizzes

The resource allows self –assessment or to enhance the understanding where the information needs to be very precise, etc. The use of quizzes on multimedia (images, simulation, animation, videos) with the use of H5P can enhance not only the understanding of concepts but also the assessment, both allowing an increase in the learner's confidence in his/her knowledge validation.

7. Games

This resource allows learners to test out their ideas, strategize their information and knowledge and experiment.

8. Learning object

This resource has been designed to meet specified learning outcomes and can be incorporated into and reused in a range of learning materials.

Searching, finding, creating Digital Learning Resources

Searching, finding, creating Digital Learning Resources is presented in the next section of this module. But to be able to search, find and create digital learning resources you will need to know and understand the use of licenses in education.

2.9. Licenses of Digital Learning Resources

Check your university regulations regarding licensing for educational resources produced by you. Check with your library, your digital media, eLearning, digital education center, your university educational support, the libraries to which you have access or how to use other resources produced by peers, colleagues. A recommended method is based on principles of open education, United Nations Sustainable Development Goal 4 -Quality education, sustainability and is based on creative commons licences.

Public Domain

- Copyright has expired (depending onc country and EU regulations).
- Was never eligible for copyright.
- Clearly donated to the Public Domain.
- NOT the same as “free online”.

Intellectual property license

- permitting free use, reuse, modification, and sharing – Creative Commons

Copyright

- all rights reserved to the owner.

Creative Commons

A simple, standardised way to grant copyright permissions to your creative work.

Creative Commons (CC) is the most developed alternative licensing approach that provides user-friendly open licenses for digital materials and avoids the automatically applied copyright restrictions. CC creates a “some rights reserved” model. The copyright owner retains intellectual property ownership in their work while inviting certain uses of their work by the public. CC licences create choice and options for the owner.

How you can choose which is the right CC license for you - https://creativecommons.org/share-your-work/

Creative Commons licenses can help you to:

- **Share original works** by making them more useable to others.
- Legally (and easily) **incorporate CC-licensed works** authored by others in your own work.

Added bonuses - Using CC-licenses may:

- **Extend your impact**, audience, and the reach of your work.
- Start (and build on) a **virtuous cycle of sharing.**
- **Save money** for your students and other readers.

Step 1 – Choose your licence conditions.

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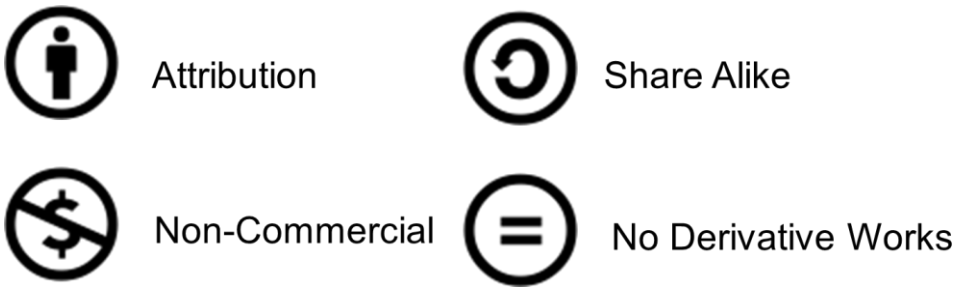
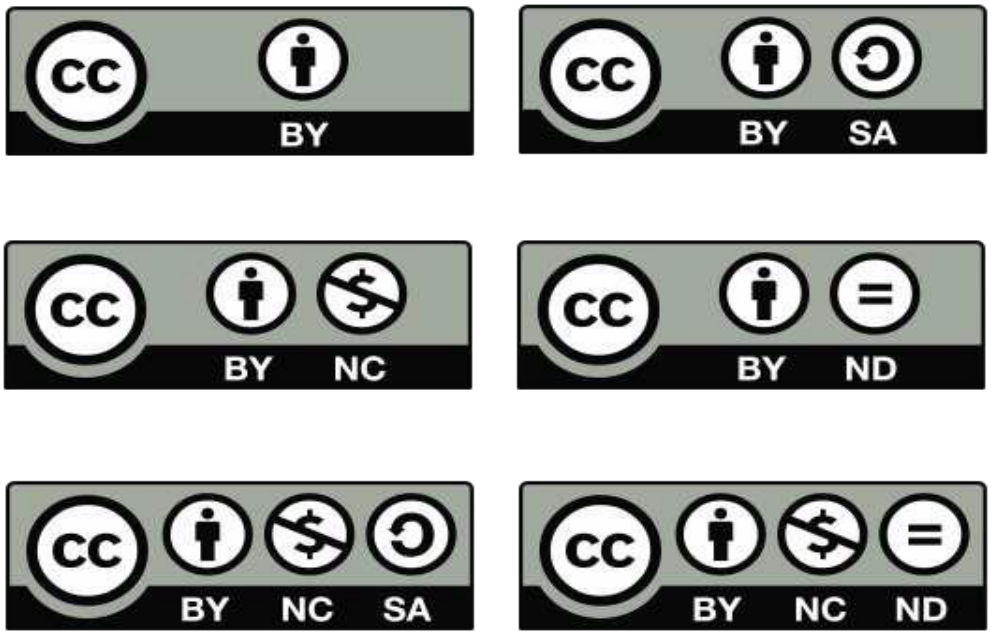


Step 2 – Choose your licence.



CC primary licence elements

There are 4 primary licence elements which are mixed to create a licence:

Attribution – attribute the author 

Non-commercial – no commercial use 

No Derivative Works – no remixing 

Share Alike – remix only if you let others remix 

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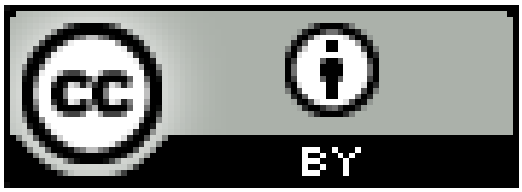
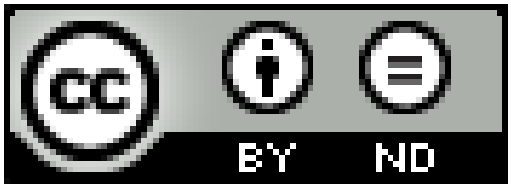
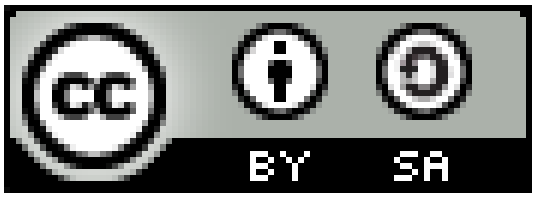
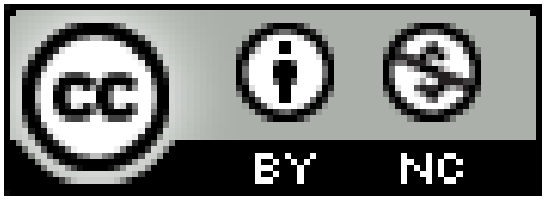
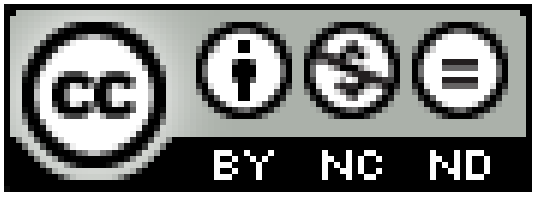
There are six standard CC licences:

Licence Type	Licence Conditions
Attribution 	**Freely use, copy, adapt and distribute to anyone provided the copyright owner is attributed.**
Attribution No Derivatives 	**Freely use, copy and distribute to anyone but only in original form. The copyright owner must be attributed.**
Attribution Share Alike 	**Freely use, copy, adapt and distribute provided the new work is licensed under the same terms as the original work. The copyright owner must be attributed.**
Attribution Non-Commercial 	**Freely use, copy, adapt and distribute for non-commercial purposes. The copyright owner must be attributed.**
Attribution Non-Commercial No Derivatives 	**Freely use, copy, and distribute verbatim copies of the original work for non-commercial purposes. The copyright owner must be attributed.**

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Attribution Non-Commercial Share Alike	Freely use, copy, adapt and distribute for non-commercial purposes provided the new work is licensed under the same terms as the original work. The copyright owner must be attributed.

Which CC licence should you use?

- CC BY is the recommended licence as it allows for the greatest possible reuse of licensed material.
- CC BY ND (No Derivatives) is not recommended as it prevents others from making adaptations.

CC BY NC (Non-Commercial) is also not recommended as it restricts further use and may not be useable by the non-government school sector. Teaching resources can be sold on a cost recovery basis under CC BY.

How to find CC materials? Start by searching on https://ccsearch.creativecommons.org/.

You can also use resources found in courses such as those from UniCampus[7] which are marked with the appropriate CC licences.

Examples / suggestions / tips

UNIVPM e-Learning platform

UNIVPM e-learning platform[8] is the University's Moodle platform[9] for managing available Courses.

All authorized users (students, professors, T/A staff, assignees, and PhD students) can access the system and benefit from the available content. Access to the platform requires user authentication. The credentials (username and password) are the same as for the Reserved Area of the University Portal.

The platform currently hosts:

- profit courses as defined in the educational curricula of Departments and Faculties,
- first and second level Master's courses,
- courses within the framework of PhD,
- Health and Safety training courses,

[7] https://unicampus.ro/cursuri
[8] https://learn.univpm.it
[9] https://elearning.univpm.it/content/piattaforme-attive

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- CSAL courses.

IT tools to support traditional learning are left to the discretion of faculty, but UNIVPM strongly supports them. Each faculty professor is responsible for one or more Moodle courses. All students regularly enrolled at UNIVPM have direct access to the platform. Its interface is web-accessible and is based on an intuitive and user-friendly structure. Through the platform, students can:

- access available material (handouts, audio recordings, collections of valuable links, etc.),
- communicate with their colleagues and with the teacher through tools such as Forums or Chat,
- execute scheduled learning tasks such as assignments, group work, and test questionnaires.

Kallipos Repository – Hellenic Academic e-books

The project Kallipos (https://www.kallipos.gr/en/) regards the first comprehensive effort to introduce electronic interactive, multimedia textbooks in Higher Education in Greece. The Kallipos Repository (https://repository.kallipos.gr/?&locale=en) gathers books, handbooks and learning objects, which were either produced within the framework of the "Hellenic Academic Electronic (Text)books" and "Open Academic Textbooks - Kallipos+" projects or submitted during a set of open calls for Open Access scientific content. The "Kallipos" repository aims at the organized presentation, storage and long-term preservation of open-access (text)books and learning objects for the academic and research community. The aim is to produce high-quality open textbooks for undergraduate and postgraduate courses within the academic institutes in Greece [1].

The project's full-blown objective is the production of more than 3.000 open e-textbooks within the upcoming years, while covering as many different fields of education as possible and avoid duplications [1]. The supported subject/thematic areas are "Mathematics and Computer Science", "Natural Sciences and Agricultural Sciences", "Engineering and Technology", "Medicine and Health Sciences, Life Sciences, Biological Sciences", "Law and Social Sciences", "Humanities and Arts". A balanced production of textbooks within the various thematic fields is targeted.

To develop an e-book, templates are made available in Microsoft Word and Latex, while the usage of figures, tables and multimedia material is strongly suggested. The full body of the textbook as well as each chapter separately are made available and openly accessible, both in pdf and e-pub format, though the project's digital repository. Furthermore, through the technical support provided through the project, further enrichment of the repository has taken place with hundreds of learning objects in the form of chapters, infographics, videos, images etc., available to the academic staff for teaching purposes and for addressing the diverse learning needs of the students [1]. To guarantee a high quality of the produced e-books, an assessment committee is responsible to evaluate the intermediate and the final version of each e-book. Editing and graphics development support is also eligible to produce an e-book. A helpdesk is also available supporting the management of tickets through the osTicket software tool.

Through the population of the Kallipos Repository and the adoption of the available textbooks by the academic community in Greece, it is envisaged to:

- increase the level of access to qualitative learning processes by all students;
- provide motivation of the development of open digital resources that are compatible with the principles of lifelong learning;

- support integration of digital technology in educational systems, ensuring convergence, synergies and an interdisciplinary specialization;
- promote open access to educational resources by all the involved stakeholders;
- promote digital solutions that will power lifelong learning strategies to be a powerful tool for the development of creative characteristics of students and teachers.

[1] Koutsileou, S., Kouis, D., & Mitrou, N. (2018). "Kallipos", the first open academic textbooks initiative during the years of crisis in Greece and its sustainable continuation. Open Education Global Conference, Delft, Netherlands. https://repository.tudelft.nl/islandora/object/uuid%3Abb8a818b-14d3-4903-9c93-c17264140400

UPM Gate – Digital Learning Resources repository and manuals

The UPM has a very extensive catalogue showing the tools available for online education and creation of digital resources [2,3]. The first link shows a list of the different resources for which the UPM has licences and permissions to use. This first link also includes a description of the tool and what its function is. The second link is a catalogue of digital resources classified by function. In this way it will be easier for the end-user to find the available tools according to their needs.

These resources will allow professors and students to create digital content in multiple formats: video, text, audio. In addition, the UPM Gate has a YouTube channel where it provides support for the creation of digital content. This channel is shown in [4], while the content is very diversified. It contains:

- Assistance in the creation of digital content (on platforms such as Moodle or Office)
- Assistance in the use of digital resources
- Creation of digital content in social networks
- Assistance with certificates/licences

With these two sections, the UPM is involved in the creation of digital content by its professors and students. In addition, the UPM Gate has created a blog in which the licensing of digital content created at the UPM is discussed [5]. This blog explains what to do and not to do when using digital contents. In addition, the UPM Gate has collected all the intellectual property, which includes the digital content created by its members [6]. In this repository there is also a FAQ section where you can access frequently asked questions about licensing and the appropriate use of the content created.

[2] http://serviciosgate.upm.es/catalogo/listado.php

[3] http://serviciosgate.upm.es/catalogo/

[4] https://www.youtube.com/playlist?list=PL8bSwVy8_IcMTrUoZC6sQMC5Lj-V8HTeh

[5] https://blogs.upm.es/observatoriogate/2017/11/15/usamos-los-contenidos-de-terceros-en-el-ambito-digital-de-forma-legal/

[6] https://serviciosgate.upm.es/propiedad-intelectual-upm/

Exercises / Applications

Exercise 22:

Starting from this quote:

"What materials would my learner need in order to understand and master the concepts in this course? The digital learning resources are those materials already in a digital format like audio, video, animations and simulations. I see providing those resources as sort of 'setting the table' so to speak for learning. The materials I select in whatever format must contribute to the students' understanding of the topics I want to cover. Sometimes I find it a challenge to narrow that list to just those materials they need to complete the course. It can be tempting to want to add lots of extras to make the course more interesting, but I know these can also distract the learners from their course outcomes. "

try to analyse one of the courses you are teaching and determine if the amount of extra materials (external links, references, Youtube videos) is appropriate for the learning outcomes you are targeting.

Exercise 23:

Creating Digital Learning Resources

Using Jupyter Notebook (https://jupyter.org/try-jupyter/lab/), try to create some digital content that you can use with one of your courses.

Jupyter Notebook is a free, open-source, interactive web tool software that creates a Jupyter notebook. A Jupyter notebook is a document that supports mixing executable code, equations, visualizations, and narrative text. This marriage of content and code makes for a powerful **new form of data-based communication**. Specifically, Jupyter notebooks allows the user to bring together data, code, and prose, to tell an interactive, **computational story**.

More information:

- About Jupyter Notebook:
    - https://acadigia.eu/wp-content/uploads/2022/06/Blended-Learning-Tool-Evaluation-Jupyter-Notebook.pdf
- Tutorial:
    - https://acadigia.eu/wp-content/uploads/2022/06/Jupyter-Notebook-Powerpoint-tutorial.pdf
- Video:
    - https://youtu.be/up1UnUoVTWQ

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Exercise 24:

Licenses of Digital Learning Resources

Using one of the sources mentioned above, locate a video resource with the CC-BY-SA license that you can use with your students.

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B3: DIGITAL LEARNING RESOURCES

3. Designing digitally enhanced learning and teaching

3.1. Introduction and Main Goals

In this part we will analyse the tools and methods to be used from transferring learning from traditional mediums to the digital one. This will be based on the principles of ABCtoLD.

The main goal of this chapter is to explain how to integrate digital learning resources in technical higher education.

3.2. The ABCtoLD framework

The ABCtoLD (ABC to Learning Design) framework revolves around six learning activities and is based on ABC Learning Design method by Clive Young and Natasa Perovic, UCL. (2015). Learning types, Laurillard, D. (2012). The initial resources are available from https://blogs.ucl.ac.uk/abc-ld/

The digital resources and interfaces were developed for online and blended learning during the Erasmus+ Strategic Partnership project, ABCtoVLE, and you can find them in several languages at https://abc-ld.org/abctovle/updates/.

ABC has now been adopted by several UK and European universities and translated in several languages and, since the Covid-19 pandemic has taken strong digital features and was adapted for several learning digital structures, platforms, and delivery.

The ABCtoVLE curriculum design method has different actions, tools and activities which are run jointly: a ninety-minute hands-on rapid-development workshop for teachers, students to develop a module, a curriculum, or programme; a toolkit made of ABCtoLD Storyboard, Learning types cards, Storyboard of student journey, ABCtoLD additional online and digital activities, Tool Wheel.

The precise mix of these activities will be influenced by the educators' teaching philosophy: as the table below illustrates, if you believe strongly in learning by doing (i.e., Constructivist) approaches, your blend is likely to draw more from Practice and Production activities than more passive "learning by listening" approaches.

Table 2 The six learning activities of the ABCtoLD framework

Learning through…	**Digital (online & blended)**	**Conventional method**
Acquisition: Learning through acquisition is what learners are doing when they are listening to a lecture or podcast, reading from books or	reading multimedia, websites, digital documents and resources; listening to podcasts, webcasts; watching animations, videos	reading books, papers; listening to teacher presentations face-to-face, lectures; watching demonstrations,

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websites, and watching demos or videos		master classes
Investigation: Learning through investigation guides the learner to explore, compare and critique the texts, documents and resources that reflect the concepts and ideas being taught	using online advice and guidance; analysing the ideas and information in a range of digital resources; using digital tools to collect and analyse data; comparing digital texts; using digital tools for searching and evaluating information and ideas	using text-based study guides; analysing the ideas and information in a range of materials and resources; using conventional methods to collect and analyse data; comparing texts; searching and evaluating information and ideas
Practice: Learning through practice enables the learner to adapt their actions to the task goal and use the feedback to improve their next action. Feedback may come from self-reflection, from peers, from the teacher, or from the activity itself, if it shows them how to improve the result of their action in relation to the goal	using models; simulations; microworlds; virtual labs and field trips; online role play activities	practising exercises; doing practice-based projects; labs; field trips; face-to-face role-play activities
Production: Learning through production is the way the teacher motivates the learner to consolidate what they have learned by articulating their current conceptual understanding and how they used it in practice	producing and storing digital documents; representations of designs; performances, artefacts; animations; models; resources; slideshows; photos; videos; blogs; e-portfolios.	Statements; essays; reports; accounts; designs; performances; artefacts; animations; models; videos
Discussion: Learning through discussion requires the learner to articulate their ideas and questions, and to challenge and respond to the ideas and questions from the teacher, and/or from their peers	Online tutorials; seminars; email discussions; discussion groups; discussion forums; web-conferencing tools synchronous and asynchronous	Tutorials; seminars; discussion groups; class discussions
Collaboration: Learning through collaboration embraces mainly discussion, practice, and production.	small group projects using online forums, wikis, chat rooms, etc.	small group project; discussing others'

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Building on investigations and acquisition it is about taking part in the process of knowledge building itself.	for discussing others' outputs; building a joint digital output	outputs; building joint output

In other words, how you blend will be influenced by the direction of your personal pedagogical compass. Many ABCtoLD Toolkit guides, Workshop information, plans and, more important, communities are created in different languages and exist around the globe. https://abc-ld.org/

3.3. Searching, finding Digital Learning Resources

"What materials would my learner need in order to understand and master the concepts in this course? The digital learning resources are those materials already in a digital format like audio, video, animations, and simulations. I see providing those resources as sort of 'setting the table' so to speak for learning. The materials I select in whatever format must contribute to the students' understanding of the topics I want to cover. Sometimes I find it a challenge to narrow that list to just those materials they need to complete the course. It can be tempting to want to add lots of extras to make the course more interesting, but I know these can also distract the learners from their course outcomes. "- A professor declaration

3.4. Finding Digital Learning Resources

Finding digital content that is meaningful is about:

- employing various search strategies to help source quality information;
- using multiple search engines to challenge personal filter bubbles;
- using written, visual, and audio resources to navigate information in a variety of modes;
- collecting a range of information that can then be evaluated to meet your requirements.

3.5. Planning

Before you begin searching for relevant digital content, consider:

- what is the inquiry question you are trying to answer or topic you are exploring?
- the information you already have;
- what digital resource you need;
- the type of digital resource you need, for example, a text, an image, a simulation, a video, or statistics;
- how much information in the digital resource you need — what gaps are there in your course.

Also, it could be worth to do the following:

- Identify 5-10 topics which are either important or gaps in your course.

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- Identify 3 different learning resources for each of them (text, image, video, quiz) as to approach in-depth learning.

Tips when searching for Digital Learning Resources

Better results can be obtained by using precise keywords and search strategies:

- Think of keywords from your inquiry question or topic, including synonyms. Dictionaries and a thesaurus are useful for compiling a list of keywords.
- Look at the question or topic you want information on and choose the most relevant source for your search, for example, search engine(s) and/or online databases.
- Try using different keywords and search techniques to broaden or narrow your search.

Useful guides for efficient searching of resources

This guidance provides useful information about effective searching:

- http://www.open.ac.uk/libraryservices/beingdigital/pathways/12/11

Choosing good keywords:

- http://www.open.ac.uk/libraryservices/beingdigital/activity/XK1101#page1

Filtering information quickly. How to search like a pro: 10 tips and tricks for Google and beyond:

- https://www.freecodecamp.org/news/how-to-google-like-a-pro-10-tips-for-effective-googling/
- https://guides.lib.berkeley.edu/GoogleTips
- https://www.pcmag.com/how-to/23-google-search-tips-youll-want-to-learn

Google Refine web searches, use operators:

- https://support.google.com/websearch/answer/2466433

Google Advanced Search for images / videos:

- https://www.google.com/advanced_image_search

Google What's new in Image Search:

- https://support.google.com/websearch/answer/9792245

Best practices when evaluating Digital Learning Resources

- look critically at information to determine its relevance, suitability and reliability
- be critical and sceptical about sources and information to ensure authenticity
- check for accuracy, validity and currency as measures of information quality

Make sure all information and resources are fit for purpose.

Anyone can put information online and for any number of reasons. Digital content — blogs, wikis, websites, social media and now even videos or animation — can contain misinformation or fake information.

Digital literacy is about being able to identify good quality digital content.

Critical evaluation is key to assessing:

- Accuracy

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- Authorship
- Reliability
- Reputation of author/institution
- Standard of technical production
- Authenticity
- Accessibility
- Fitness for purpose

Tools for evaluating Digital Learning Resources

The following are examples of tools that are often used to evaluate digital content:

- SIFT (the four moves) — SIFT stands for stop, investigate the source, find better coverage, trace claims, quotes, and media to the original context.
- 5 Ws of website evaluation (pdf, 28KB) — poster showing: who, what, when, where andwhy.
- Evaluating information: applying the CRAAP test — CRAAP stands for currency, relevance, authority, accuracy, and purpose.
- RADCAB — your vehicle for information evaluation — RADCAB stands for relevance, appropriateness, detail, currency, authority and bias.
- Evaluate it — a guide from Community College of Baltimore Library in the USA.
- Evaluating resources — a comprehensive guide from Berkeley University in California for both print and digital resources.
- Truth, truthiness, triangulation: A news literacy toolkit for a 'post-truth' world – a blog post by Joyce Valenza for the School Library Journal.

Curating / adapting Digital Learning Resources

Content curation is the process of selecting, sorting, and arranging content on a specific topic or theme, adding value and meaning to what has been curated for your learners.

Content curation is about:

- selecting the best quality digital content for your intended audience
- organising and publishing it on a tool your learners can access
- adding value to the curated content through selecting, arranging, and providing insights.

The value teachers add includes:

- making a high standard of digital resources and content available
- grouping the resources in helpful ways
- providing annotations to help your students' understanding
- giving context to the information — especially for learning objectives
- saving students' time
- directing students towards quality resources for learning.

This type of tools generally falls into 2 categories:

- news discovery
- curation

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Curating: Creatively filtering content — Sue Waters' comprehensive guide to all things content curation.

Examples of methods of discovery/curation:

- news discovery - to help select and aggregate information
- following a hashtag (#) on Twitter - https://twitter.com/
- curations ('sources' or 'feeds') on Feedly - https://feedly.com/
- saving a search or following topics in Google News - https://news.google.com/

Examples of curation tools:

- Diigo (https://www.diigo.com/)
- Google Keep (https://keep.google.com/)
- Pinterest (https://pinterest.com/)
- Padlet (https://padlet.com/)
- Wakelet (https://wakelet.com/)

Publishing models for Digital Learning Resources

Downloadable

- a resource that is to be used in the learner's own time, on their own device (laptop/mobile phone) – to be published in a learning network.

Embedded

- to be used within a larger framework such as the VLE like Moodle (embedded video, with supporting text and/or other media enhanced with tools like H5P provides context to maximise its effectiveness)

Streamed media

- used for live events/live courses / webinars / demos with a live feed to the web is required, recommended to also recorded locally and made available at a later date.

Augmented reality

- Augmented reality (AR) involves the use of digital technology to overlay information onto a representation of the real world, mainly to be used science, medical science or where teaching in location is not easy.

Using QR codes

- To send the learner to relevant media/web services such as a video/audio clip.

Using social media platforms

- The use of social media as a 'space/conversation' where students are actively engaged, learners are looking for learning content to be pushed to them through this medium.
- With the use of mobile devices as a method of creating digital media, images, audio and video can be easily shared at the touch of a button.

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- Online media collections also provide the facilities to share easily via this method as well as providing a facility to comment, therefore offering a platform for discussion and collaboration.

Technologies are emerging that will help educators share resources.

Examples / Suggestions / Useful resources

Online lab for geospatial database development – Case Study from NTUA

The lab "geospatial database development" of the School of Rural and Surveying Engineering in NTUA is targeted to the familiarization of students with the development of a geospatial database, the population of the database with available open data and the production of a set of geospatial visualisations. Prior to the pandemic period, the lab was taking place in-person in the IT laboratory of the school. During the pandemic period, the lab execution was re-organized, following the ABCtoLD framework. Following, the basic activities that took place per part of the ABCtoLD framework are detailed.

Acquisition: To manage to properly guide the students, the lab steps were executed online by the tutor through Microsoft Teams, while the recorded video was made available to the students. Access to a set of online tutorials, software documentation and e-books was provided through the MyCourses platform (https://mycourses.ntua.gr/) that is an online learning management system (LMS) deployed in NTUA.

Investigation: Online advice and guidance was provided to the students in a synchronous (e.g., problems solving during the live sessions) and asynchronous way (e.g., exchange of e-mails). For the lab exercises, documentation regarding the steps, as well as access to the source code for the queries to be executed was made available through the MyCourses platform (https://mycourses.ntua.gr/). Upon the demonstration of the steps for the lab by the tutor, the students had to repeat the same steps in their dedicated part of the infrastructure. During the lab, online discussion was taking place for providing guidance to students, responses to questions, tackling of any identified errors and presentation of the produced visualizations on behalf of the students.

Practice: An ICT infrastructure was deployed, aimed at providing student access to the required software tools to replicate the lab steps and manage their own geospatial database. A PostgreSQL[10] server was setup, where each student had access through an online account to it. The PostGIS[11] extension has been enabled to support the development of spatial databases. The tool used for getting access to the server is pgAdmin[12]. Each student was able, through remote access, to create its database and apply a set of queries for geospatial data management. Moving one step further, online access was given to students to an online software (GeoServer[13]) that enables them to create and make publicly available geospatial

[10] https://www.postgresql.org/
[11] http://postgis.net/
[12] https://www.pgadmin.org/
[13] https://geoserver.org/

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visualizations. Furthermore, guidance was provided for locally installing the QGIS[14] Open-Source Geographic Information System. By having access to these tools, the lab environment was made available to all the students in a full analogous way with the setup in case of the in-person lab. In Figure 35, a high-level view of the testbed setup is provided.

Production: The overall conceptualization, design and development of the geospatial database was based on the usage of digital tools and the relevant production of digital documents. The design of the database (entity-relationship diagram, relational model) was facilitated by the usage of the ERDPlus[15] database modelling tool. The produced designs were made available and evaluated by the teacher in the MyCourses platform (software developed based on Moodle[16]). Similarly, the developed source code and the reporting for the various exercises was made available to the MyCourses platform.

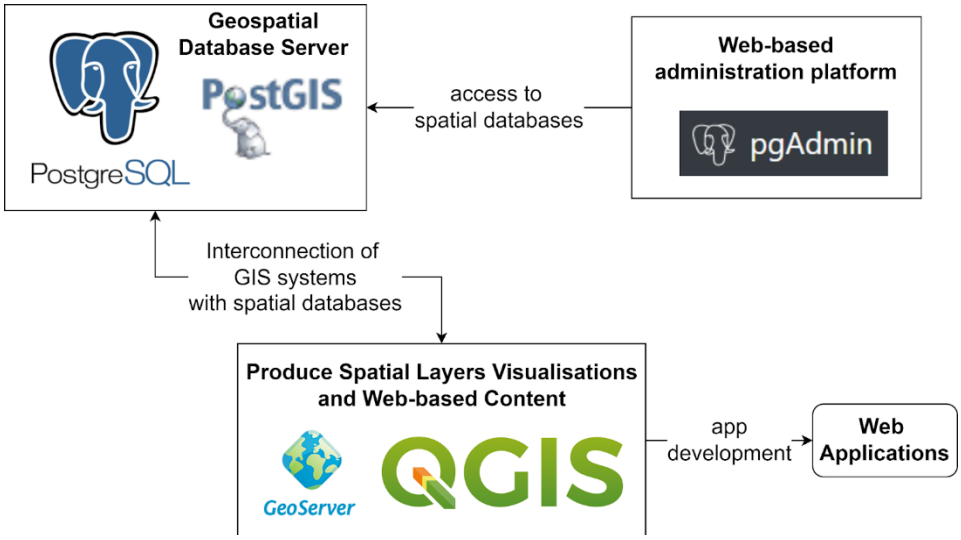

Figure 35 Geospatial Databases Lab Testbed

Discussion: To assess the conceptual understanding of students, online presentations were scheduled, where each student had to shortly present the main activities realized in the labs, the produced outcomes, and the faced problems. E-mail discussions were also active during all the course duration, enabling problem resolving and knowledge sharing processes.

Collaboration: Collaboration among students on the selection of proper open geospatial data for the development of the database, as well as knowledge sharing regarding identified problems and the way that they were solved was strongly promoted through an online forum.

The UPM Case Study

Following the ABCtoLD methodology, the UPM can contribute to each of the six stages of the methodology.

Acquisition: With Covid-19 pandemic, the UPM provided "Ingenio-Biblioteca UPM"[17] in which there is a repository of documents accessible online. This online library contains exclusive

[14] https://qgis.org/en/site/
[15] https://erdplus.com/
[16] https://moodle.org/
[17] https://ingenio.upm.es/primo-explore/search?vid=34UPM_VU1&lang=es_ES

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content for UPM members, but also has a wide range of open access resources. The open access resources generated by the UPM are:

- UPM Digital Archive
- Poly-Network
- Polytechnic Digital Collection
- Eciencia Datos: Databank for research
- UPM Library's Digital Historical Archive
- UPM Open Access Policy

In addition to this repository, the UPM also has a website that serves as a repository for digital content generated, in a similar way to "Ingenio-Biblioteca UPM"[18].

Investigation: The UPM allows access to the "Web of Science" website[19]. As a Spanish public university, the UPM has an agreement with the Ministry of Science, Innovation and Universities, through the Spanish Foundation for Science and Technology (FECYT). This agreement allows it access to "Web of Science". This website is a massive online repository of scientific articles. This repository offers a great research tool, as UPM staff can base their work on articles without additional costs. The search tool in "Web of Science" is intuitive to helps researchers.

Practice: The UPM has acquired various software for the exclusive use of staff and students for educational and research purposes[20]. In this website, all available software, download links and user manuals are shown. As this website is for the exclusive use of UPM members, an image is also shown below.

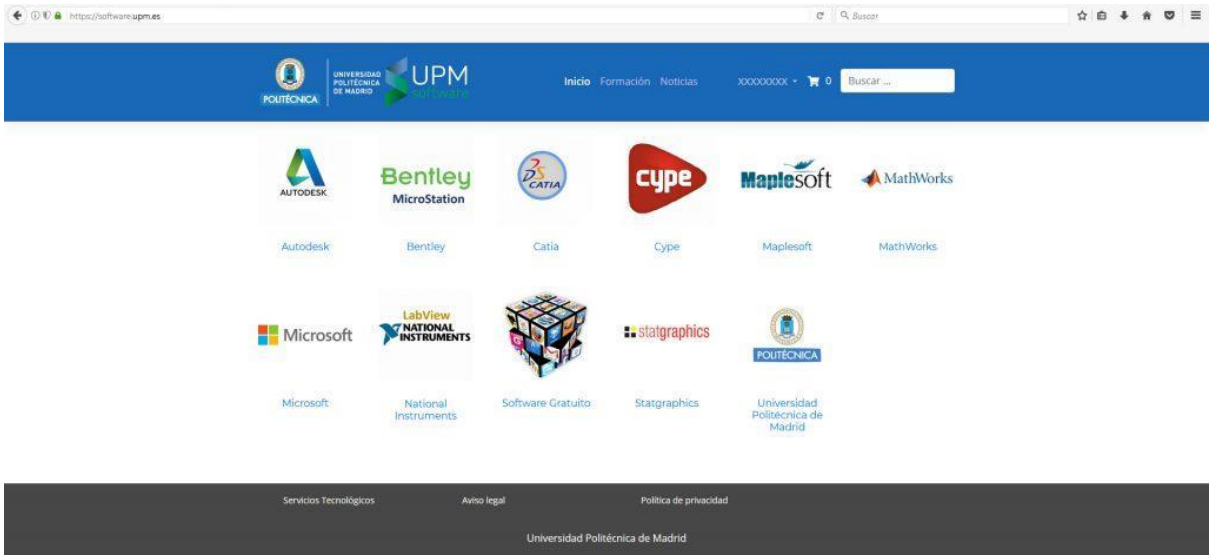

Figure 36 UPM Software website

In addition, the UPM also tries to make students carry out practices that are more didactic and closer to real laboratory practices. To this end, the UPM has developed a virtual laboratory[21] that can be used for experimentation, to get to know what a laboratory is like

[18] http://dem3dtv.gti.ssr.upm.es/index.php/contenidos-digitales
[19] https://www.webofscience.com/wos/woscc/basic-search
[20] https://software.upm.es/
[21] https://3dlabs.upm.es/web/index.php

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from the inside or to familiarize students with the material handled here without the need to expose them to danger.

Production: The UPM has made the submission of assignments online. Many of the deliveries that evaluate the subjects are pdf or PowerPoint documents, so the UPM has developed delivery tabs in the Moodle platform to make the delivery as optimal as possible.

Discussion: The UPM has always been a very active outreach university. Before the pandemic, courses and seminars were already being offered in the areas of research, education and professional orientation. After the Covid-19 pandemic, the UPM had to adapt to new media, but continued to organize courses and seminars through online platforms such as Zoom or Microsoft Teams. Intuitive access to these seminars can be found on the UPM website[22].

In addition to these courses and seminars, UPM professors themselves encourage the active participation of students. To this end, many professors organize debate forums and discussions in their own classes. These discussions have been moved online through Zoom and Microsoft Teams. Thanks to the options provided by these two tools, the discussion forums are fluent, and the results are as expected.

Collaboration: The UPM online classes allow a high level of collaboration thanks to the possibilities offered by the Zoom and Microsoft Teams tools. In addition to this, the UPM has acquired the Wooclap software[23]. This can be used as an add-on to Microsoft Teams or PowerPoint, as an application from Zoom, or as its own web application. The function of this software is to extend the possibilities of collaboration, allowing, for example:

- Polls
- Numerical questions
- Questionnaires
- Word Clouds

The function of this application is to complement the other tools and make collaboration in the online classroom even easier.

ABCtoLD at UNIVPM – Case Study

UNIVPM has digitally enhanced learning and teaching, especially during Pandemic Covid-19, organized based on the ABCtoLD framework as follows:

Acquisition: UNIVPM has provided "C.A.D." as the University's Documentation Center[24], where a repository of documents is accessible online. The interface highlights some recommended research topics organized by area and allows professors to highlight exciting publications related to their topic.

Investigation: UNIVPM provides access to scientific databases[25] such as Web of Science, Scopus, and Emerald. These are repositories that offer the opportunity to broaden the research base by capitalizing on the latest and most innovative contributions from worldwide researchers.

[22] https://www.upm.es/Investigacion/difusion/SeminariosUPM
[23] https://www.upm.es/Personal?id=6cb8d43c046cc710VgnVCM10000009c7648a____&prefmt=articulo&fmt=detail
[24] https://cad.univpm.it/SebinaOpac/.do
[25] https://cad.univpm.it/SebinaOpac/article/banche-dati-e-portali-degli-editori/banche-dati

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Practice: UNIVPM provides faculty, staff, and students with several software licenses such as Microsoft Office[26] (Excel, PowerPoint, Word, Microsoft Teams, ...), simulation platforms[27]

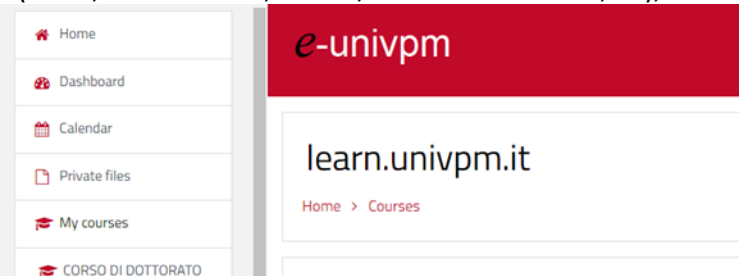

Figure 37 e-univpm platform interface

(AnyLogic, Plant Simulation, Marketplace), design tools (Autocad[28]), multipurpose tools (Matlab[29]), and other open-access software are available and used during classes to ensure that students can use both closed-source and open-source tools (Rapid Miner[30] and Phyton[31]).

Production: The platform "e-univpm"[32] is the Moodle platform of the university to manage the courses of the educational offer. The Moodle[33] tool provides students with easy access to all course materials. The material uploaded by teachers on this Moodle platform has purely didactic and illustrative purposes. It cannot be modified by students, who can only view and/or download it, excluding any possibility of redistribution without the explicit permission of the teachers, as well as any possibility of commercialization.

Discussion: Teachers encourage student engagement through activities offered in Microsoft Teams[34] and in Moodle. For example, UNIVPM professors often use the Forum[35] activity by providing students with an introduction text or posting a simple question for discussion. In addition, UNIVPM also organizes student groups on Microsoft Teams by inviting classmates and discussing with them through group video calls, lectures, and online seminars.

Collaboration: In Microsoft Teams, workgroups can collaborate on projects in different ways at UNIVPM, for example, by creating SharePoint[36] folders accessible to all participants and the teacher for assessment but can only be editable by members of the working group. Collaboration is then designed into UNIVPM by encouraging students to:

- Use the Conversations tab for student collaboration like a social media thread, but for getting work done.
- Work together on documents (Word, PowerPoint, Excel, etc.), exchanging ideas.
- Work together on notes in Teams' OneNote in the Collaboration Space.
- Use accessible interactive Microsoft Whiteboard[37] for teachers and students.

[26] https://www.youtube.com/watch?v=k-JaQOKjSp0
[27] https://www.youtube.com/watch?v=lE4qew5yvHs
[28] https://www.youtube.com/watch?v=B1DHB6hz07Y
[29] https://www.youtube.com/watch?v=OHxR8iMHDWw
[30] https://www.youtube.com/watch?v=Gg01mmR3j-g
[31] https://www.youtube.com/watch?v=WvhQhj4n6b8
[32] https://elearning.univpm.it/content/piattaforme-attive
[33] https://www.youtube.com/playlist?list=PLxcO_MFWQBDc-Me7DllOSTe6FMh8JYjJ3
[34] https://support.microsoft.com/en-us/office/microsoft-teams-video-training-4f108e54-240b-4351-8084-b1089f0d21d7
[35] https://docs.moodle.org/400/en/Using_Forum
[36] https://www.youtube.com/watch?v=r8OXAjhhGAQ
[37] https://www.youtube.com/watch?v=sikbiCslM54

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ABCtoLD at UPT – Case Study

Politehnica University of Timisoara was part of the **ABC to VLE: beyond curriculum design** Erasmus + Project (2018 –2020), that developed further the ABCtoLD tools and created teaching teams to implement their ABC learning designs within the local Virtual Learning Environment (VLE) or Learning Management System (LMS). PT work inside the Erasmus+ project ABC2VLE, the localization of the project tools inside UPT, the workshops held by UPT and the results obtained after these workshops. In order to disseminate the project and the ABC to LD method, the experts from the eLearning Center of Politehnica University of Timisoara (UPT) organized six workshops in the University, in a period of one year in 2019. The workshops in Timisoara were build up on the previous experience in developing learning design with the use of technology in higher education, in online learning, of mobile technology in education. The eLearning Center translated and adapted the ABCtoLD design, plan, workshop and toolkit into Romanian and all materials are published with CC license online https://elearning.upt.ro/en/project/abc-to-vle-beyond-curriculum-design-2/ and published papers. ABC is especially useful for new specialties or in the process of modification, but also for those that turn into an online or blended learning format (with technology support). We invited teachers and students, to participate in these workshops, which were meant as the first step towards improving the course or their specialization, for the efficient integration of the course in the CVUPT Virtual Campus of the UPT which is Moodle based, on to all the tools used and supported by UPT.

ABCtoLD Toolkit translated and adapted to the university educational environment in Romania includes the following: https://elearning.upt.ro/en/educatie/noutati-educatie/abctold-toolkit-abc-learning-design/

01 ABC LD Space for collaborative blended learning design

02 ABC LD Cards Types of learning

03 ABC LD Abstract and Structure

04 ABC LD Workshop Presentation

05 ABC LD Action Plan

07 ABC LD Additional online activities

10 ABC LD Leaflet

11 ABC LD Digital Tool Guide

In 2020 and 2021 during the Covid-19 Pandemic, UPT team adapted the tools to fully online education delivery, developed tutorials and held webinars, all available online. https://elearning.upt.ro/en/educatie-digitala/

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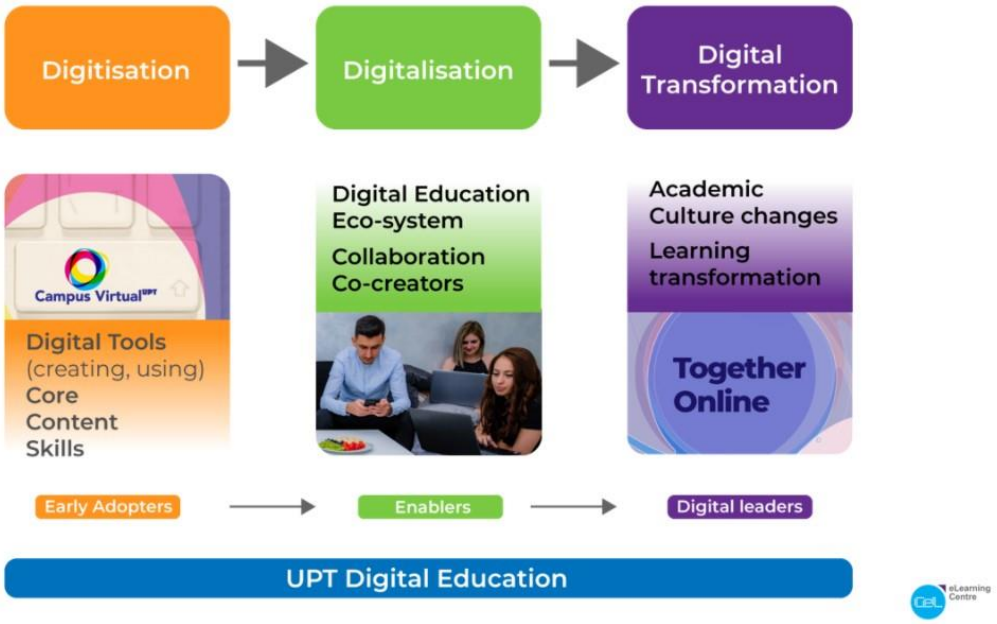

Figure 38 Politehnica University of Timisoara graph for digital education development

Exercises / Applications

Exercise 25:

Analyse the following digital tools for acquisition, practices, investigation, production, discussion, collaboration in the digital learning space.

Google Classroom
Google Classroom is a free web service developed by Google for schools that aims to simplify the process of creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students.
More information:

- About Google Classroom:
  - https://acadigia.eu/wp-content/uploads/2022/06/Blended-Learning-Tool-Evaluation-Google-Classroom.pdf
- Tutorial:
  - https://acadigia.eu/wp-content/uploads/2022/06/Google-Classroom-Powerpoint-tutorial.pdf
- Video:
  - https://youtu.be/oeKunTmFV3A

Blackboard
Blackboard is a popular and widely used collaborative learning platform in many HEIs across the globe. It is primarily used for teaching and storing module content such as documents and

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other files, but can also be used for examinations, setting quizzes, as a chatroom function and student interaction in a variety of other virtual learning spaces.
More information:

- About Blackboard:
  - https://acadigia.eu/wp-content/uploads/2022/06/Blended-Learning-Tool-Evaluation-Blackboard.pdf
- Tutorial:
  - https://acadigia.eu/wp-content/uploads/2022/06/Blackboard-Powerpoint-Tutorial.pdf
- Video:
  - https://youtu.be/F5vIVK1XfIE

Moodle
Moodle (Modular Object-Oriented Dynamic Learning Environment) is the world's most popular opensource platform for Learning Management Systems (LMS). The platform offers the possibility to manage educational resources, such as: course support materials, auxiliary teaching materials, audio or video files, as well as other information on the evolution of the learning process.
More information:

- About Moodle:
  - https://acadigia.eu/wp-content/uploads/2022/06/Blended-Learning-Tool-Evaluation-Moodle.pdf
- Tutorial:
  - https://acadigia.eu/wp-content/uploads/2022/06/Moodle-Powerpoint-tutorial.pdf
- Video:
  - https://youtu.be/pDeZulaENPQ

Exercise 26:

Find out how you can use **Microsoft Whiteboard** to create Digital Learning Resources.

Microsoft Whiteboard is a digital application that functions like a traditional whiteboard but is hosted virtually. Digital whiteboards can integrate with other video conferencing and screen sharing platforms to allow for collaboration even when you are not physically in the same room. A virtual whiteboard has multiple colours, shapes, and templates to choose from and allows whiteboards to be saved in shareable files for easy access in the future.

More information:

- About Microsoft Whiteboard:
  - https://acadigia.eu/wp-content/uploads/2022/06/Blended-Learning-Tool-Evaluation-Digital-Whiteboard.pdf
- Tutorial:
  - https://acadigia.eu/wp-content/uploads/2022/06/Whiteboard-Powerpoint-tutorial.pdf
- Video:

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4. Locating, assessing the quality, and using Open Educational Resources

4.1. Introduction

After completing this lesson you will be able to locate, assess the quality, and use Open Educational Resources.

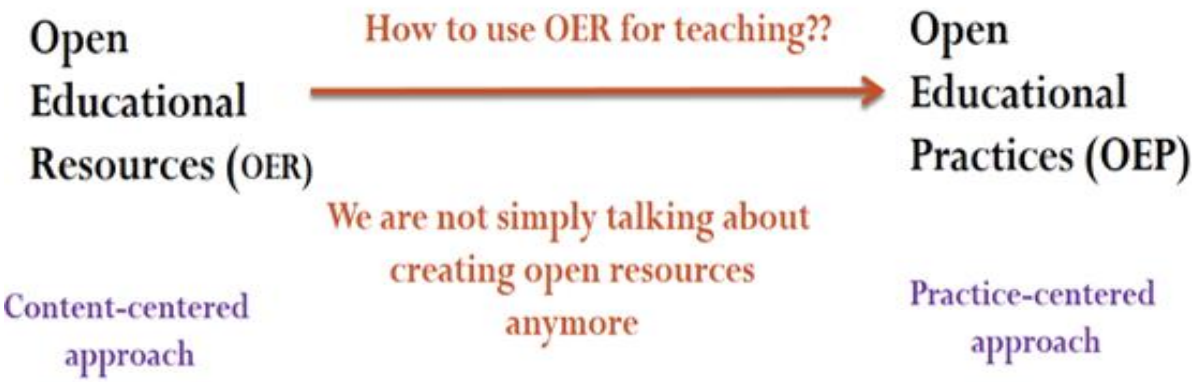
What are Open Educational Resources (OERs) and Open Educational Practices (OEP)

Open Educational Resources (OER) are freely and publicly available teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use, reuse, modification, and sharing with others.

OER is 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, [reuse], [repurpose], adaptation, retention and redistribution by others (Stracke et al., 2019; UNESCO, 2019).

OER Authoring Tools: Authoring tools that enables users to create OERs, including open contents – DLR (e.g. images, videos, texts, animations and audios) and open online courses. Wikis are already extensively used in many higher education programmes for educational purposes, and are one of the authoring tools being used to generate 'open' content (UNESCO, 2015).

OER Repository: A place on the internet as well as in the physical world for storing digital OER for later search and retrieval, such as MIT OCW (http://ocw.mit.edu) and OpenLearn (http://openlearn.open.ac.uk) (UNESCO, 2015). OER Directory Sites: OER directory sites do not act as a repository, but have identified quality OER and store them in a database of web links, such as **OER Commons** (www.oercommons.org) MERLOT and Commonwealth of Learning (www.col.org/OER) (UNESCO, 2015).



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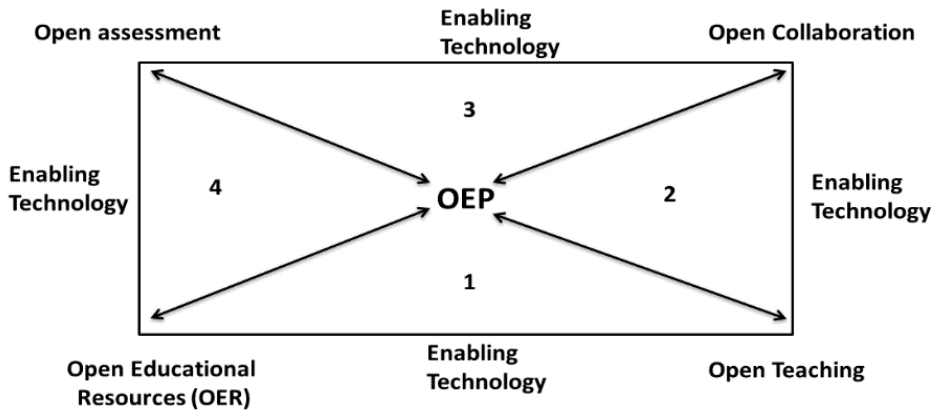
Open Educational Practices (OEP) is all about sharing and developing best practice in education in an open and accessible manner. Open Educational Practices (OEP) – including open pedagogy, open collaboration, and open assessment – should be implemented to keep the learners motivated and engaged in online learning. https://link.springer.com/referenceworkentry/10.1007%2F978-981-287-532-7_710-1



1. OER-Enabling technology-Open teaching
2. Open teaching- Enabling technology-Open collaboration
3. Open collaboration- Enabling technology-Open assessment
4. Open assessment- Enabling technology-OER

4.2. OER finding, searching and validation

Finding digital content that is meaningful is about:

- employing various search strategies to help source quality information.
- using multiple search engines to challenge personal filter bubbles.
- using written, visual, and audio resources to navigate information in a variety of modes.
- collecting a range of information that can then be evaluated to meet your requirements.

Planning

Before you begin searching for relevant digital content, consider:

- what is the inquiry question you are trying to answer or topic you are exploring.
- the information you already have.
- what digital resource you need.
- the type of digital resource you need, for example, a text, an image, a simulation, a video, or statistics.
- how much information in the digital resource you need — what gaps exist in your course.

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Better results are obtained using precise keywords and search strategies:

- ✓ Think of keywords from your inquiry question or topic, including synonyms. Dictionaries and a thesaurus are useful for compiling a list of keywords.
- ✓ Look at the question or topic you want information on and choose the most relevant source for your search, for example, search engine(s) and/or online databases.
- ✓ Try using different keywords and search techniques to broaden or narrow your search.

This guidance provides useful information about effective searching:

http://www.open.ac.uk/libraryservices/beingdigital/pathways/12/11

Choosing good keywords:

MERLOT
Multimedia Educational Resource for Learning and Online Teaching

OER COMMONS
OPEN EDUCATIONAL RESOURCES

http://www.open.ac.uk/libraryservices/beingdigital/activity/XK1101#page1

Filtering information quickly

How to search like a pro: 10 tips and tricks for Google and beyond

https://guides.lib.berkeley.edu/GoogleTips

https://www.pcmag.com/how-to/23-google-search-tips-youll-want-to-learn

Google Refine web searches, use operators

https://support.google.com/websearch/answer/2466433

Google Advanced Search for images / videos

https://www.google.com/advanced_image_search

Google What's new in Image Search

https://support.google.com/websearch/answer/9792245

Open Scholars Use and Contribute - Open Educational Resources

OER searching - please read page 27 from:

https://iite.unesco.org/wp-content/uploads/2020/05/Guidance-on-Open-Educational-Practices-during-School-Closures-English-Version-V1_0.pdf

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Examples of OER repositories and MOOCs platforms (page 30):

https://iite.unesco.org/wp-content/uploads/2020/05/Guidance-on-Open-Educational-Practices-during-School-Closures-English-Version-V1_0.pdf

OER Repositories	Subject Domain	Educational Level	Resource Creator	Educational Services
OER Commons	Multidisciplinary	Different levels	Teachers	Share, download
OpenLearn	Multidisciplinary	Higher Education and Vocational Education	Everyone	Collaboration
MIT OCW	Multidisciplinary	Higher Education	Teachers Institutions	Category search guide
OpenStax	Multidisciplinary	Higher Education	Teachers Students	Online Recommendation
Connexions（OpenStax CNY）	Multidisciplinary	Higher Education	Teachers Students	Collaboration
African Storybook	Multidisciplinary	K12 Education	Teachers	Share, rate or comment
OER Africa	Multidisciplinary	College/university	Teachers	Download
COL's Open Access Repository	Multidisciplinary	Higher Education K12-Education	Teachers	download
OpenupEd	Multidisciplinary	Higher Education	Institutions	Diversity
Curriki	Multidisciplinary	Cross-stage K12	Institutions	Diversity
The Orange Grove	Multidisciplinary	Higher Education K12-Education	Institutions	Dashboard Suggestion Box
NCLOR: Open Educational Resources	Multidisciplinary	Higher Education K12 Education	Institutions	Resource suggestion
***xuetangX**	Multidisciplinary	Higher Education	Teachers Institutions	Category search guide

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***iCourse**	Multidisciplinary	Higher Education	Teachers Institutions	Category search guide
***eduYun**	Multidisciplinary	K12 Education	Teachers Institutions	Dashboard

*denotes educational resources that reside in the public domain without any costs, but without an open license.

Evaluating

Look critically at information to determine its relevance, suitability and reliability. Be critical and sceptical about sources and information to ensure authenticity. Check for accuracy, validity and currency as measures of information quality. Make sure all information and resources are fit for purpose.

Anyone can put information online and for any number of reasons. Digital content — blogs, wikis, websites, social media and now even videos or animation — can contain misinformation or fake information.

Digital literacy is about being able to identify good quality digital content.

Critical evaluation is key to assessing:

- Accuracy
- Authorship
- Reliability
    - Reputation of author/institution
    - Standard of technical production
- Authenticity
- Accessibility
- Fitness for purpose

Tools for evaluating digital content

The following are examples of tools that are often used to evaluate digital content:

- SIFT (the four moves) — SIFT stands for stop, investigate the source, find better coverage, trace claims, quotes, and media to the original context.
- 5 Ws of website evaluation (pdf, 28KB) — poster showing: who, what, when, where, why.
- Evaluating information: applying the CRAAP test — CRAAP stands for currency, relevance, authority, accuracy, and purpose.

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- RADCAB — your vehicle for information evaluation — RADCAB stands for relevance, appropriateness, detail, currency, authority and bias
- Evaluate it — a guide from Community College of Baltimore Library in the USA.
- Evaluating resources — a comprehensive guide from Berkeley University in California for both print and digital resources.
- Truth, truthiness, triangulation: A news literacy toolkit for a 'post-truth' world – a blog post by Joyce Valenza for the School Library Journal.

4.3. Evaluating OERs

Not everything on the internet is OER, and some works labeled as “open” may not have the legal permissions to exercise the 5Rs.

So how do you recognize OER and how do you choose which OER will work best in your class?

Remember: for a resource to be an OER – it has to:

(a) be available to everyone at no cost and

(b) be in the public domain or under an open license that gives everyone 5 Rs legal permissions to modify the resource.

The **5Rs** include:

Retain – permission to make, own, and control copies of the content (e.g., download, duplicate, store, and manage)

Reuse – permission to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video)

Revise – permission to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language)

Remix – permission to combine the original or revised content with other material to create something new (e.g., incorporate the content into a mashup)

Redistribute – permission to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of to a friend)

4.4. OER curating/adapting tools

Some Creative Commons licenses require you to leave the work unchanged. Make sure you check the license on a resource before you start adapting it.

- BCCampus OpenEd: Modifying an Open TextbookSix steps and detailed instructions on how to modify an open textbook for your course.

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- OpenStax CNX: Localization and OERInformation and exercises to help you learn how to adapt OER for different contexts.
- Some OER repositories have built-in authoring tools to help you adapt their OER.
- OER CommonsThe OER Commons is a single search source that pulls from multiple OER collections.
- OpenStax CNX: Creating AdaptationInformation on creating a derivative work from a published module or collection in OpenStax.

Creating, remixing and revising OER

OER creation

To simplify the process of creating and sharing OER, basic steps should be followed. Specifically, the following five steps are presented during the creation of a Word supplemental course material as OER.

Step 1: The teacher should prepare the learning content (text, pictures, link, etc.) within a Word document. During this process, the teacher should carefully check the accuracy of the provided information as well as the correct citation of others' work. The teacher should also ensure that the provided content can be read by everyone by considering, for instance, text size, fonts, colors, spacing, etc.

Step 2: To ensure the accessibility to this created OER, the teacher can use the accessibility checker in Microsoft Word, as shown in Figure 1, to detect the content parts that might be challenging for persons with disabilities.

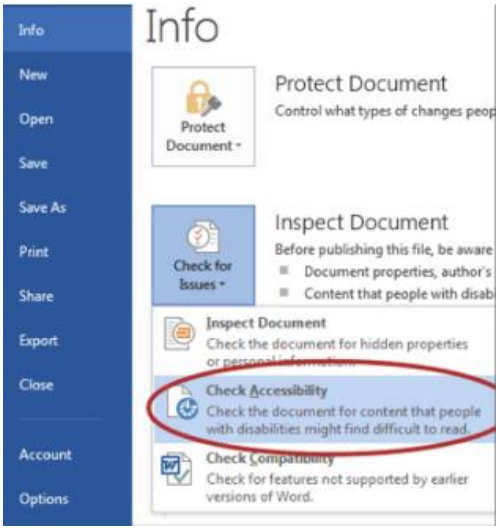

Figure 39: Accessibility checker in Microsoft Word

Step 3: The teacher should then add different tags to his/her OER, as shown in Figure 2. These tags should be related to the content of his/ her OER and will be used by search engines later on to find

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this OER. For instance, if the teacher is preparing an OER about distance education, he/she can use the following tags, online education, cyberlearning, synchronous learning, asynchronous learning, etc. Furthermore, several important information should be filled by the teacher, which can also help the indexing process of their OER by search engines, such as author, title, subject, etc.

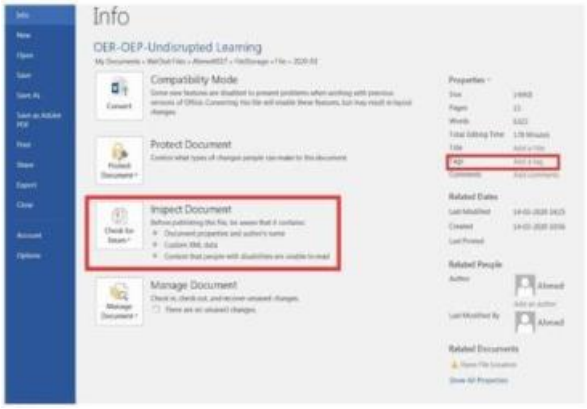

Figure 40: Adding tags in Microsoft Word

Step 4: The teacher should attribute an open license to his/her OER. The attributed license should be carefully chosen to meet the preferred ways of using his/her OER in the future (see Course 1. Digital Learning Resources for more information). At the end, the teacher can copy the needed license and paste it in his document, as shown in Figure 3.

Step 5: Finally, the teacher can save his/her Word document as PDF and share with others by publishing it on his/her personal website or by uploading it on a public OER repository. To promote their published OER, teachers and learners can use social networks to share links about their OER. They can also use institutional communities to share with their colleagues their OER.

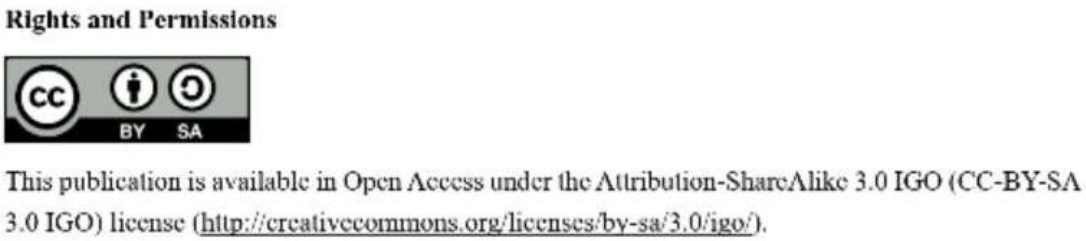

Figure 41: An example of a CC license

Furthermore, several OER repositories and platforms are now offering integrated authoring tools to facilitate the process of creating OER that teachers and learners can further use, as mentioned in the table below.

OER authoring tools	**Links**
Open Author	https://www.oercommons.org/authoring-overview

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Pressbooks Authoring	https://guide.pressbooks.com/
Connexions Authoring Tool	https://oeraccess.merlot.org/authoring_oer/index.html
H20 from Harvard Law	https://h2o.law.harvard.edu/
SoftChalk Cloud	https://www.softchalkcloud.com/
20 Million Minds Mix	https://20mmix.sharedbook.com/serve/ac/tmmix/login.html?next=/serve/ac/tmmix/

OER remixing and revising

Step 1: The teacher or learner should first search for the OER that he/she needs to remix. In this context, both teachers and learners should choose OER that can be easily remixed and adapted to their context. They should also pay attention to the attributed open license of the material to be used, as this can affect how this material can be remixed. This can also affect the new possible attributed open license to the new remixed OER by teachers or learners.

Step 2: The teacher or learner should then prepare the learning materials that they want to add to the original OER (identified in step 1). For instance, teachers or learners can remix or revise an OER by: (1) adding text as a description to a diagram or picture you are reusing; (2) combining your OER with the original OER. For instance, a teacher can add several slides to a PPT presentation he/she downloaded to meet his/her course needs; (3) inserting more sound effects (e.g., sound claps) to a video in order to make it more immersive; and, (4) translating it to different languages.

Step 3: The teachers or learners need to attribute a license to their new remixed OER.

Step 4: The teachers should assess the accessibility of their new remixed OER, for instance, using Accessibility Checker in Microsoft Word and add the needed information that facilitates the indexing of their OER later on, such as tags, author, subject.

Step 5: The teachers or learners can share their remixed OER by sharing it on their personal websites or by uploading it on a public OER repository**.**

It should be noted that teachers and authors can also use authoring tools, as these tools also provide the possibility of remixing OER.

Digital Learning Resources – publishing

Publishing OERs

- *For a work to be considered an OER, it is necessary to distribute it online and permit users to retain, reuse, revise, remix, and redistribute the resource.*

Publication:

- Many platforms are available to distribute OERs online. For example, OER Commons and MERLOT II have free content builders for the creation of lessons, courses, and other types of OERs.

Permissions:

- The Creative Commons 'Choose a License' tool helps in finding a license that supports how you want others to use your work.

Examples / suggestions / tips

80 Open Education Resource (OER) Tools for Publishing and Development Initiatives

https://oedb.org/ilibrarian/80-oer-tools/

Open Educational Resources (OER) for Faculty: Publishing OER

https://ucsd.libguides.com/OERforfaculty/publish

OER Info

https://nsufl.libguides.com/oer/moreinfo

Open Textbook Authoring and Editing

https://guides.lib.vt.edu/oer/authors

The UniCampus platform

UniCampus (https://unicampus.ro/cursuri) is an initiative of the eLearning Center (CeL) of the Politehnica University of Timișoara (UPT) to develop the first MOOC (Massive Open Online Courses) in Romania, as a virtual online platform for free open courses, for everyone. UniCampus' vision is to strengthen the recognition of Romanian universities, the power to support and reach into the economic, social, and educational life in Romania of quality, academic education, by promoting free access to knowledge. The UniCampus platform is an open platform, developed by UPT and is supported by CeL, through the development of MOOC-like courses in Romanian, English and 10 other languages. There are currently almost 150 courses available.

Experience with Open Access resources at UPM

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The first place where professors and students from UPM can find Open Access resources is "Ingenio-Biblioteca UPM"[38] in which there is a repository of documents accessible online. This online library contains exclusive content for UPM members, but also has a wide range of open access resources. The open access resources generated by the UPM are:

- UPM Digital Archive
- Poly-Network
- Polytechnic Digital Collection
- Eciencia Datos: Databank for research
- UPM Library's Digital Historical Archive
- UPM Open Access Policy

In addition, the UPM also has access to the "Web of Science"[39]. This website belongs to the Ministry of Science, Innovation and Universities. This website is a repository of open access scientific articles for UPM members and all the public universities.

In addition, the UPM is committed to Open Access to generate and transfer technical and scientific knowledge to society as a whole, and has developed this collection of its own open resources, aimed especially at the Spanish-speaking university community[40]. Specifically, this website is divided into Resources for research, Resources for discovery and Resources for learning. This facilitates the search for resources.

NTUA's experience with OERs

The lab "geospatial database development" of the School of Rural and Surveying Engineering in NTUA was purely based on the usage of open education resources, tools and practices.

Specifically, for the setup and operation of the lab (as detailed in Section B2.2), open-source software was used that can be easily installed in local PCs of the students. This software regards:

- PostrgreSQL database server – https://www.postgresql.org/
- pgAdmin administration and development platform for PostgreSQL - https://www.pgadmin.org/
- ERDPlus database modeling tool - https://erdplus.com/
- GeoServer server for sharing geospatial data - https://geoserver.org/
- QGIS Open-Source Geographic Information System - https://qgis.org/en/site/

[38] https://ingenio.upm.es/primo-explore/search?vid=34UPM_VU1&lang=es_ES
[39] https://www.webofscience.com/wos/woscc/basic-search
[40] https://blogs.upm.es/recursosenabiertoupm/

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The development and population of the geospatial database was based on the exploitation of open data made available by open data repositories, such as (indicative list):

- Open Geospatial data in Greece - http://geodata.gov.gr/en/
- Regulatory Authority for Energy (RAE) open data - https://geo.rae.gr/
- Urban dataset to study congestion - https://open-traffic.epfl.ch/
- HELLENIC CADASTRE (Land Registry) Open Data Portal - https://data.ktimatologio.gr/
- INSPIRE Geoportal - https://inspire-geoportal.ec.europa.eu/

Furthermore, it should be noted that an open-access textbook for the specific course (Geospatial Databases) is under preparation, within the framework of the Kallipos+ project, where the produced outcomes are made openly available to students and teachers in a digital repository (https://repository.kallipos.gr/?&locale=en).

OERs at UNIVPM

UNIVPM provides several open education resources for e-learning. For example, MOOC-EUDOPEN (Massive Open Online Courses)[41] are short-term online courses and allow students to take distance learning courses and acquire university credits.

Students can also find open access resources using UNIVPM's "C.A.D." system, i.e., the University Documentation Center. UNIVPM Open Access (OA)[42] is a movement that aims to take back ownership of scholarly communication, making it free and accessible to everyone since access to knowledge is considered a human right. UNIVPM's policy is that broader dissemination of information promotes knowledge sharing and, thus, knowledge advancing rapidly, without barriers, worldwide. Therefore, it is a goal that every research institution should pursue. OA provides immediate and unrestricted web access to data and research results in any area of knowledge. UNIVPM authors who wish to publish in Open Access may:

- Submit a version of their work in IRIS (Institutional Research Information System[43]), the University's repository, to facilitate collecting and managing data and activities related to research product. With the Open Access Policy, the UNIVPM intends to implement the principles of the Berlin Declaration[44] on Open Access to scientific production.
- Publish in fully open access and peer-reviewed (Gold OA) journals and publishing platforms.
- Publish in Open Access on hybrid journals of commercial publishers (Transformative Economic Model)

UNIVPM Proxy service[45] for remote access allows to consult, from anywhere outside the University network (e.g., home networks or other public networks), the electronic resources with restricted

[41] https://elearning.univpm.it/content/mooc-eduopen
[42] https://cad.univpm.it/SebinaOpac/article/conoscere-lopen-access/oa-generico
[43] https://iris.univpm.it
[44] https://digital-strategy.ec.europa.eu/en/news/berlin-declaration-digital-society-and-value-based-digital-government
[45] https://cad.univpm.it/SebinaOpac/article/banche-dati-e-portali-degli-editori/banche-dati

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access (databases such as Web Of Science and Scopus, journals, and ebooks) of UNIVPM with any device, including mobile, and any operating system and browser, without installing additional software.

Access to the service is strictly personal and allowed only to authorized users (professors, students, technical-administrative staff, research fellows, PhD students) through the University credentials.

Exercises

Exercise 27:

Investigate from the point of view of creating and/or integrating OERs the following tools and platforms:

- Kaltura (about, tutorial, video)
- Moodle (about, tutorial, video)
- YouTube (https://www.youtube.com/)
- Vimeo (https://vimeo.com/)

Exercise 28:

After consulting the resources from this module and lesson, search and identify 2 OERs of different types and comment on their validity, accuracy and quality using the Learning Cafe in Module 2.

Exercise 29:

Browse the courses freely available on the UniCampus platform (https://unicampus.ro/cursuri) and identify materials that you could use as OERs with your students

(*Remember to check for the licensing information!*)

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