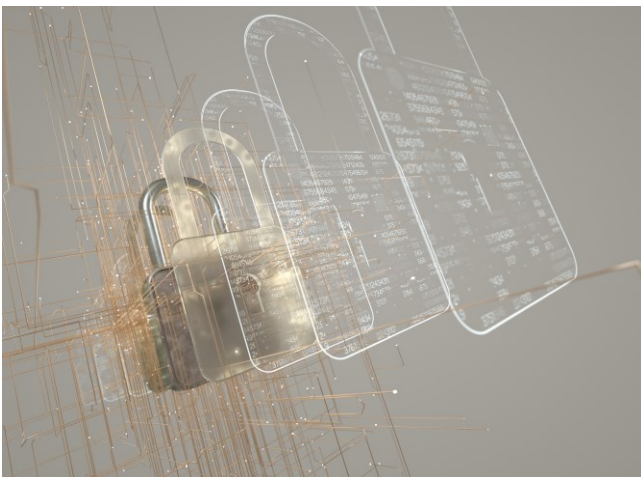




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DIGITOOLS project

Innovative Tools for Enhancing E-Learning Solutions in Universities

Blended Curriculum

Editors:

Angela Repanovici
Manolis Koukourakis
Santiago Ferrándiz



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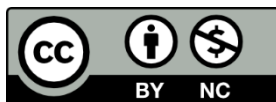
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Contents

Introduction	4
MODULE 1: PEDAGOGICAL APPROACH IN DIGITAL EDUCATION	5
Introduction	6
LU 1. Blended learning	8
LU 2. Gamification	12
LU 3. Project-based learning	16
LU 4. Flipped classroom	19
LU 5. Personalized learning	22
MODULE 2: INTRODUCTION TO LEARNING MANAGEMENT SYSTEMS	26
Introduction	27
LU 1. LMS tools assessment	28
LU 2. LMS tools communication.....	30
LU 3. LMS tools management / organizing	32
LU 4. LMS data collection / reporting.....	34
LU 5. LMS selection and evaluation	35
MODULE 3: THE PROCESS OF E-LEARNING IMPLEMENTATION	50
Introduction	51
LU 1. The design of an e-learning course	55
LU 2. To plan an e-learning course	57
LU 3. To create an e-learning course	58
LU 4. To implement an e-learning course	59
LU 5. To evaluate and improve an e-learning course	60
MODULE 4: INTRODUCTION TO DIGITAL CONTENT CREATION: AUTHORING AND COPYRIGHT	63
Introduction	64
LU 1. Digital content authoring	66
LU 2. Copyright and licenses	72
LU 3. Content authenticity	81
LU 4. Open educational resources (OER)	84
LU 5. Reusable content	88
MODULE 5: SMART TOOLS FOR DIGITAL CONTENT CREATION	92
Introduction	93
LU 1. KAHOOT – web tool for teaching and assesment	95
LU 2. Doodly – Super Engaging tool	98
LU 3. Google Jamboard	102



LU 4. SLIDO - engage audience through live polls, quizzes, and Q&A sessions	105
LU 5. How to use Padlet in teaching-learning activities	108
LU 6. Coggle -a visual mind -mapping tool in online teaching activities.....	111
LU 7. Miro – whiteboard and more for remote classes, distance learning and working groups	114



Introduction

The crisis generated by the COVID 19 pandemic has forced European universities to move their teaching activities to the online environment. Although most Higher Education Institutions have implemented E-Learning platforms years ago, the teaching staff are now experiencing difficulties in using these platforms and in creating and adapting the course content, needed to quickly adapt to a fast evolving and complex situation.

DIGITOOLS project aimed at introducing enhanced digital tools and methods to help university staff deliver quality education through online means. The project brought together six Higher Education Institutions and one consulting SME, specialized in digitization, from six countries, focusing on the implementation of online and blended teaching, encouraging, at every step, unitary practice.

As a result of the DIGITOOLS project, the universities will be able to provide, through teaching staff and libraries, high quality online training courses, with a focus on subject-specific teaching.

The Blended Curriculum presented in this e-book, one of the five Outputs of the project, will support the teaching staff from Higher Education Institutions to acquire the skills and competencies needed to create and deliver high quality online courses, including blended teaching. The role of university libraries is crucial in this project, as they have to adapt their services and provide digital learning materials as well as information and digital skills training, both to teaching staff and to students.

This volume is structured into 5 modules:

Module 1: Pedagogical Approach in Digital Education

Module 2: Introduction to Learning Management Systems

Module 3: The Process of E-Learning Implementation

Module 4: Introduction to Digital Content Creation: Authoring and Copyright

Module 5: Smart Tools for Digital Content Creation.

This material is intended to provide minimal support for the use of digital technologies in the teaching-learning-assessment process, both for teaching staff, librarians, and teaching assistants.



MODULE 1: PEDAGOGICAL APPROACH IN DIGITAL EDUCATION

**TECCHNOLOGICAL UNIVERSITY OF THE
SHANNON**

PADRAIG KIRBY

**TRANSILVANIA UNIVERSITY OF
BRASOV**

DANIELA POPA



Introduction

The module *Pedagogical approach in digital education* refers to the methods and strategies used by educators to design and deliver effective learning experiences for students in a digital or online environment. A successful pedagogical approach in digital education should prioritize student engagement, interaction, and collaboration, as well as the integration of technology to enhance the learning experience.

Some common pedagogical approaches in digital education include:

- Blended learning - combining traditional face-to-face instruction with online learning activities;
- Gamification - using game-like elements to engage students in learning;
- Project-based learning - using real-world projects and problems to drive student learning;
- Flipped classroom - flipping the traditional lecture-homework model, with students engaging in pre-class activities and in-class activities focused on application and practice;
- Personalized learning - using technology to tailor learning experiences to the individual needs and interests of each student.

In addition to these approaches, digital education also emphasizes the development of important 21st-century skills such as critical thinking, problem solving, communication, and collaboration. The goal is to create engaging and meaningful learning experiences that help students develop the skills they need to succeed in the digital age.



Module aims

The “*Pedagogical approach in digital education*” module aims to provide basic information so that the learners can develop skills to select, use and integrate the most effective teaching methods appropriate to the target audience and the type of skills to be developed.



Learning outcomes

By following the activities proposed in the learning units, the learner will be able:

- to develop of the ability to use appropriate terminology specific to the field of pedagogy in order to explain processes and interpret educational situations;
- to develop the ability to appropriately apply principles, norms, operational rules in concrete training and evaluation design or actual training/evaluation



situations;

- to cultivate the future teacher's ability to reflect on his/her own teaching - instructional and evaluative performance.
- to develop an interest in and a responsible attitude towards the teaching profession and towards identifying and interpreting educational, life and school practice issues.



Module structure

LU 1. Blended learning

LU 2. Gamification

LU 3. Project-based learning

LU 4. Flipped classroom

LU 5. Personalized learning



LU 1. Blended learning



1.1. Introduction

Blended learning is an educational approach that combines traditional classroom instruction with online learning. It leverages technology to create a flexible and personalized learning environment, where students can access online resources and interact with their peers and teachers both in-person and online. Blended learning allows for a combination of face-to-face interaction with a teacher, self-paced online learning, and collaborative group work. This approach can accommodate a variety of learning styles and allows students to learn at their own pace, while also providing the structure and support of a traditional classroom. Blended learning can improve student engagement and motivation, while also providing opportunities for individualized and self-directed learning.



1.2. Learning unit objectives

By following the learning unit, the learners will be able to:

- to explain the ambiguous meanings that the term blended learning has;
- to develop simple educational activities in both formats;
- to predict advantages and disadvantages of blended learning.



1.3. Theoretical framework

We are witnessing in contemporary society a transition from the traditional face-to-face teaching model to a new model of approaching the teaching process, which applies new ways of relating to educational actors, which resizes the use of teaching aids, favouring the predominantly technological and digital ones and responds to the particular needs of the digital native generation. In this context, some authors invoke a variety of arguments (e.g. evolution of technology, cost constraints, special needs and situations) and argue that distance learning is more attractive to all involved (teachers and students) than traditional face-to-face learning (Kentnor, 2015). Recent studies highlight the catalytic role of the Covid-19 pandemic as it has accelerated the implementation of alternatives to modernise, digitise and streamline education systems around the world (Kusmaryono et al., 2021).



Massive implementation of distance learning has been imposed with the help of digital technologies, in most cases with poor training of teachers, even in situations where such a solution is not generally considered appropriate. We cannot ignore the fact that changes in education take time to be successfully implemented, and solid research is needed before these changes are widely adopted. Although no longer a novelty, the term blended learning is often considered to be used with an ambiguous understanding (Hrastinski, 2019) that can mean the mixing of two or more teaching methods or pedagogical approaches, learning contexts and is sometimes disputed for its appropriateness as a concept.

Nevertheless, it is most commonly formulated as including a composite of online and face-to-face teaching (Graham et al., 2014). This is a model that combines features of the face-to-face and distance learning models and can be used for a variety of educational contexts, including initial and in-service teacher training. In order to achieve an authentic and effective blended learning context, it is necessary to pay more attention to the most important aspects, namely: design aspects, the blended model as an educational strategy, effectiveness factors, evaluation, methodological aspects, literature review of its effectiveness and suitability of use for different levels of education.

Recent investigations into the application of blended learning in teacher education have sought to explore the feasibility of integrating interactive e-learning and face-to-face learning, particularly when learners are in constructivist pedagogical contexts of professional competence training. The results of some current studies have also revealed that combining different training models (traditional and online, workshops, etc.) was perceived by teachers in professional development contexts as a challenging innovation and attracted their interest (Mouzakis et al., 2012).

There have been particular difficulties, however, in designing a blended learning model for ICT teacher education (Seethal, 2019).

A recent case study conducted on a substantial population of teachers in Greece in a context of in-service training for the use and application of digital technologies in teaching practice had a blended learning training design and met with resounding success (Zagouras, 2022). The research compared the results of this programme with a similar one run in a traditional training context only. The blended learning model comprised: 8 face-to-face activities in 3-hour training sessions, 12 synchronous, 3-hour online sessions, 12 asynchronous activities, each estimated at 3 hours, 8 online, 3-hour sessions to advise teachers in solving classroom applications. The whole programme lasted 5-6 months and a total of 120 hours of training.

The research results show better performance for teachers who participated in blended teacher education programmes compared to those who participated in traditional face-to-face teacher education programmes. The main advantages for trainees who used the mixed learning model were:

- Increased degree of comfort in participating in examinations to certify acquired knowledge and skills,



- They showed a slightly higher level of success and
- Achieve slightly higher marks in these types of examinations.

The findings of this study showed that the learning outcomes achieved by applying blended learning in this approach to teacher education exceeded those of the 'classical' model.



1.4. Methodological guidelines

For teachers:

Present the training module, materials, methods and tools to trainees and clarify their expectations.

Highlight the importance of knowing information about the specifics and particularities of the two pedagogical approaches.

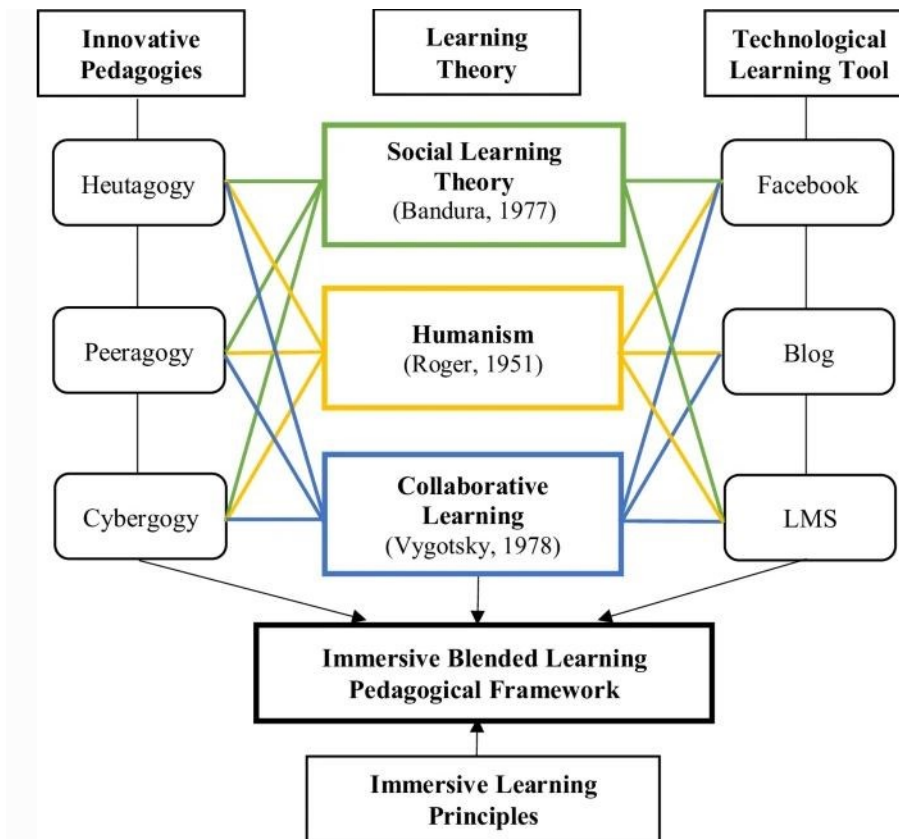
Application



Create a cognitive map of the definition of educational psychology based on the definitions you will find in the following documents:

1. Bizami, N. A., Tasir, Z., & Kew, S. N. (2022). Innovative pedagogical principles and technological tools capabilities for immersive blended learning: a systematic literature review. *Education and Information Technologies*, 1-53. <https://link.springer.com/article/10.1007/s10639-022-11243-w>
2. Belur, J., Glasspoole-Bird, H., Bentall, C., & Laufs, J. (2023). What do we know about blended learning to inform police education? A rapid evidence assessment. *Police Practice and Research*, 24(1), 32-52. <https://www.tandfonline.com/doi/pdf/10.1080/15614263.2022.2073230?needAccess=true&role=button>

TIP: You can start from the model designed in the first article (Bizami et al., 2022)



Theoretical framework of immersive blended learning pedagogical framework



LU 2. Gamification



2.1. Introduction

Gamification is the application of game design techniques and mechanics to non-game contexts, such as education, marketing, and productivity, to motivate and engage users. It involves adding elements such as points, badges, leaderboards, and challenges to increase user involvement and drive specific behaviors. Gamification can be used to improve learning outcomes, encourage customer loyalty, or enhance employee performance, by making tasks and activities more enjoyable and rewarding. The key principles of gamification include clear goals, immediate feedback, and a sense of progress and achievement.



2.2. Learning unit objectives

By following the learning unit, the learners will be able to:

- explain the modern trends in gamification;
- differentiate between the expectations and demands that different educational actors have towards gamification;
- identify the effects of gamification on learning.



2.3. Theoretical framework

Gamification in education involves incorporating game elements into the learning process to increase student engagement and motivation. This can take the form of educational games, interactive simulations, or adding elements such as points, levels, and rewards to traditional classroom activities. The aim is to make learning more fun and engaging, while also helping students to develop important skills such as problem-solving, critical thinking, and teamwork. Gamification can also be used to personalize learning by allowing students to progress at their own pace and providing immediate feedback on their performance. By using gamification techniques, educators can create a more dynamic and interactive learning experience that can help students retain information and develop a deeper understanding of the subject matter.

Although play is one of the golden methods of education, especially at young ages, its potential is often overlooked in educational contexts for adolescent and adult learners. Gamification has come in response to the undesirable effects observed by researchers in adolescent and adult education. Some of these undesirable effects, often mentioned in academic studies, are: lack of active engagement in one's own learning, tendency to avoid solving school and academic tasks, procrastination, lack of interest or motivation on the part of learners.

The purpose of using gamification in educational contexts is to improve learners' concentration levels in teaching activities, to boost their engagement in the



activity and stimulate better academic and school performance, and to reduce students' frustration and demotivation in educational contexts considered typical. Gamification is an interesting process not only for education but also for industry. The human-digital interaction has been explored enough and is still being studied and continuously developed to create new ways of spending time. Recent literature review studies show what are the emerging trends in gamification and e-learning for young learners (Behl et al., 2022). In the aforementioned study, the authors tried to discover the most interesting themes in the literature. The results highlighted several major research themes for the near future: personalization of didactic game play, game elements with educational impact, game correlations with learning styles and learner engagement.

Some literature review studies highlight the need to bring elements of gamification into the teaching process (Caponetto, Earp, & Ott, 2014). The authors of the study state that the phenomenon of gamification is extremely attractive to researchers, both in terms of theoretical underpinning and its use in empirical studies. Also, the vast majority of research studies distinguish between game-based learning and gamification. Gamification techniques can be used in a wide range of curricular areas (e.g., science, mathematics, economics, language and communication, etc.), sometimes also addressing interdisciplinary perspectives (Oliveira et al., 2023). The use of gamification in the teaching process addresses the need to differentiate learning (Santos et al., 2021). *“Researchers stated the differences between “gamification” and “game-based learning” and explained that in “game-based learning,” students reach their educational goals by playing games. In learning by playing, “playing” often plays an essential role in the learning process. Game-based learning is the use of games to improve the learning experience. However, gamification takes place entirely outside the game context and makes learning more active. Gamification is the process of adding game elements to a non-game situation. Students are rewarded for completing specific tasks (Kim et al. 2009; Al-Azawi et al. 2016; Ceker & Ozdamli 2017). For this reason, the research community has developed a greater interest over gamification” (Saleem, Noori, & Ozdamli, 2022, p.142).*

Some authors consider that the main types of approaches in game-based didactic learning are: 1. memory games, 2. simulation games, 3. interactive games, 4. question games, 5. puzzles, 6. strategy games and 7. reality testing games (Dimitra et al., 2020).



2.4. Methodological guidelines

After defining gamification and presenting the elements that differentiate the concept from game-based learning, allow 10 minutes for individual reflection. If necessary, you can direct this stage towards discovering the advantages and disadvantages of the two designated realities as well as building arguments for using one of the two modalities. Provide learners with several systematic literature reviews. Some are already suggested in the bibliography.



Application



Creating an educational game

Short description of the activity

Students are divided into groups of 5-7, with the task of creating a didactic game to develop a moral competence. They receive a worksheet to structure the game in such a way that it can be played by another team of colleagues without further explanation.

The aim of the activity is to practice the ability to design and moderate learning activities appropriate to the speciality, the chosen topics and the age group they work with. To train the ability to implement the proposed objectives in a targeted, structured and effective way. Last but not least, training teamwork skills and creativity.

It is important for a teacher to initiate contact and build trust, to give reassurance, to be flexible, to give creative ideas, to mediate authority, neutrality and to give feedback. The proposed activity facilitates all this in a structured working environment, where there is freedom of expression and creativity.

Creating exercises

1. Gathering information

- a) Clarify the general conditions: place, duration, topic, etc.
- b) Gathering information about the problem, purpose and resources

2. Naming the purpose of the exercise

What is the purpose of the game?

3. Record

How do you know that the game has achieved its purpose?

4. Pathways to the goal

What possibilities are there to convey this goal to students?

What possibilities exist for activating the necessary resources?

5. Naming the process

- a) What process needs to be carried out to achieve this goal?



- b) Through which process do you want to guide someone towards achieving this goal?
- c) What are the elements of the process?
- d) How do you recognise that the process has been successful?

6. Choice of methods

Which methods are appropriate for the learners, purpose, general conditions?

7. Establish the process

- a) Introductory phase: how do you start?
- b) Process phase: how do you divide the process into distinct steps?
- c) Transfer phase: how will you build the bridge to everyday life?

8. How will you verify that the proposed objectives will be achieved?

9. How do you ask for feedback from the learners on the content of the activity, on the learning opportunities, on the inner state created?

10. How do you evaluate the effort of designing such a learning activity?



LU 3. Project-based learning



3.1. Introduction

Project-based learning is an educational approach where students learn by actively engaging in real-world and personally meaningful projects. It emphasizes hands-on, experiential learning and focuses on solving complex, authentic problems and creating tangible products. Projects are often interdisciplinary and may include collaboration, problem-solving, critical thinking, and decision making. The goal of project-based learning is to provide students with deeper understanding and transferable skills that can be applied beyond the classroom.



3.2. Learning unit objectives

By following the learning unit, the learners will be able to:

- Identify key elements of project-based learning
- Analyse a teaching situation through project-based learning, based on a set of criteria
- evaluate the impact of using this pedagogical approach on the learner



3.3. Theoretical framework

The main elements mentioned by experts who have investigated this type of learning, and which give it its constructivist specificity are: learning is contextualised, learners are actively involved in the teaching process and with the help of their peers, information is transferred and knowledge is constructed. It is an investigative, highly contextualised type of learning that addresses real problems typical of the learner's environment. In this way, not only is the learner's interest and motivation stimulated, but broader meaning is given to the understanding of abstract, theoretical knowledge, leading to meaningful learning experiences (Kokotsaki, Menzies, & Wiggins, 2016).

Project-based learning starts in a heuristic approach from a question or task. Its specificity is, as mentioned above, its most important feature, namely to address a real and meaningful fact for the learner's life context. Extremely important is the appropriateness of the question or task to the learner's level of knowledge and development.

The teacher's main role is to guide and guide learners in the process of discovery, guiding the process of reflection, suggesting appropriate aids or materials, but the whole process belongs to the learners. Even the evaluation of the achievement of the task or the attainment of the objectives is oriented by the



teacher to be self-evaluation or to determine the learners' level of effectiveness of the individual and group work. If the problem addressed proves to be too complicated, the teacher can intervene and offer possible solutions or strategies to guide them in overcoming bottlenecks. It is important to bear in mind that the whole approach is intended to be pleasant and stimulating, not to create frustration and disappointment. Project-based learning is not limited to the school/academic environment. It is even desirable that other resource persons or other sources of acquiring the necessary information or even the local community can be involved.

Recent systematic literature review studies highlight that the major benefits of using this approach include:

- increasing motivation for learning (Saad, & Zainudin, 2022);
- facilitates critical thinking (Duc, 2022);
- develops social competence (Guo, 2020);
- stimulates in-depth learning (Du, & Han, 2016);
- acquiring high-level thinking skills (Ferrero, Vadillo, & León, 2021);
- facilitates a sense of personal achievement;
- learners make connections between knowledge from different curricular areas;
- self-directed learning is stimulated;
- the techniques of independent work and teamwork are improved,
- etc.

Additional resources

Guo, P., Saab, N., Post, L. S., & Admiraal, W. (2020). A review of project-based learning in higher education: Student outcomes and measures. *International journal of educational research*, 102, 101586.

<https://www.sciencedirect.com/science/article/pii/S0883035519325704>

<https://www.pblworks.org/what-is-pbl>



3.4. Methodological guidelines

One of the most elegant pedagogical approaches to this topic would be to teach it through the very pedagogical approach it is intended to teach. If, however, you feel that you have not mastered it sufficiently, it is sufficient to lead the activity through heuristic conversation and to facilitate solving the following task in teams.

Application



Conduct a comparative analysis between project-based learning and the project teaching method. Use what materials you think will be useful, including the



bibliography recommended in this module.

<i>CRITERIA</i>	<i>PROJECT-BASED LEARNING</i>	<i>PROJECT TEACHING METHOD</i>



LU 4. Flipped classroom

4.1. Introduction



The flipped classroom is a pedagogical approach that reverses the traditional model of teaching by having students engage in pre-class activities, such as watching lectures or reading materials, before coming to class. This frees up class time for more active, hands-on learning activities, such as problem-solving, group work, or discussion.

4.2. Learning unit objectives



By following the learning unit, the learners will be able to:

- to present the key aspects of the flipped classroom;
- identify the principles of learning in this approach;
- reflect on their own experience as a participant in a flipped classroom training module.

4.3. Theoretical framework



The flipped classroom is a pedagogical approach that reverses the traditional model of teaching by having students engage in pre-class activities, such as watching lectures or reading materials, before coming to class. This frees up class time for more active, hands-on learning activities, such as problem-solving, group work, or discussion.

The idea behind the flipped classroom is that students can learn at their own pace and on their own schedule before class, and then use class time for more personalized instruction and guidance from the teacher. This approach has been shown to be particularly effective for students who need more time to understand difficult concepts, as well as for students who benefit from more individualized attention.

To implement a flipped classroom, teachers typically use digital tools such as video lectures, screencasts, or interactive simulations to deliver content outside of class. In-class activities can include group work, discussion, problem-solving, or hands-on projects. The goal is to create an environment where students are more engaged and actively participating in their own learning, while teachers are able to provide more individualized support and feedback.

Overall, the flipped classroom has been shown to be a highly effective pedagogical approach for a wide range of subjects and students, particularly in STEM fields. It has been found to improve student engagement, motivation, and



achievement, as well as to promote the development of important 21st-century skills such as critical thinking, problem solving, and collaboration.

The most interesting aspects of this pedagogical method are given by the unique combination of learning theories considered as diametrically opposed - learning activities typical of the constructivist approach, highlighting their active, problem-based character, and teaching aspects with a deep behaviourist foundation, strongly structured and directed by the teacher (Bishop, & Verleger, 2013).

This approach is suitable for blended learning design, allowing both time savings in face-to-face learning activities and individual, personalised time, as everyone can spend as much time before the lesson as they need to understand a concept. Although, from the teacher's point of view, it is an ideal organisation of the teaching activity, it nevertheless has great disadvantages in practice. Few learners are interested enough to study individually before face-to-face meetings (Akçayır, & Akçayır, 2018).

In order to counteract negative effects, it is necessary that the teacher prepares and critically evaluates the materials that will be sent to the learners for the preparation phase prior to the face-to-face meetings. This material should arouse learners' curiosity, trigger cognitive dissonance, incite reflective and, why not, individual study of the additional supporting material.

If these first conditions are met, face-to-face time is made more efficient. The teacher/trainer and learners can use the face-to-face time to clarify issues that are considered difficult or to address more difficult topics that require cognitive operations such as analysis, synthesis and evaluation of certain information.

4.4. Methodological guideline

Prepare on the online platform the material you would like the learners to go through before having the face-to-face meeting for this course. Don't forget also to motivate the learners to engage in these individual tasks prior to your meeting with them. It wouldn't hurt to prepare a reward system in points, credits that count or represent a percentage of the final grade.

Also, don't forget to attach additional materials and warn learners that they are not compulsory, but only for those interested.

Suggested course materials for the topic of the assignment:

1. Akçayır, G., & Akçayır, M. (2018). The flipped classroom: A review of its advantages and challenges. *Computers & Education*, 126, 334-345. https://www.sciencedirect.com/science/article/pii/S0360131518302045?casa_token=njMZVNBIFh8AAAAA:fvUqgUAm_28BWKnW1pp_0DbIrnCb5DA5OrUo-a40DE-0DZN1h6ScWoYcp9rqAiPPodJ6kAAAt
2. <https://www.youtube.com/watch?v=BCIxikOq73Q>
3. https://www.youtube.com/watch?v=10lrShX_v2Q
4. <https://omerad.msu.edu/teaching/teaching-skills-strategies/27->



[teaching/162-what-why-and-how-to-implement-a-flipped-classroom-model](#)

Application



Based on the four pillars of this teaching method, which you can find in the following link (https://flippedlearning.org/wp-content/uploads/2016/07/FLIP_handout_FNL_Web.pdf), design a learning unit using this method.

The activity will be carried out in pairs of two.

Make a poster with the essential elements in all stages of the teaching process (design, implementation and evaluation).

F FLEXIBLE ENVIRONMENT

L LEARNING CULTURE

I INTENTIONAL CONTENT

P PROFESSIONAL EDUCATOR



LU 5. Personalized learning

5.1. Introduction



In this learning unit, concepts such as: inclusive learning environment, differentiation of teaching-learning prices as well as personalized learning. A distinction will be made between key concepts and related concepts.

5.2. Learning unit objectives

By following the learning unit, the learners will be able to:



- to explain the principles of inclusive education;
- to develop simple educational plan to personalize the educational approach;
- to analyse curricular elements that can be subject to personalisation.

5.3. Theoretical framework



Personalized learning is a pedagogical approach that uses technology to tailor learning experiences to the individual needs, interests, and abilities of each student. The goal is to create a more individualized and engaging learning experience that helps students progress at their own pace and build upon their strengths.

In a personalized learning environment, students have greater control over the pace and direction of their learning, with the teacher serving as a facilitator and coach. Technology is used to support this process, for example through:

- Adaptive learning systems - software that adjusts the difficulty of the material based on a student's performance;
- Learning analytics - the use of data and technology to track student progress and provide feedback to teachers and students;
- Digital content and resources - providing students with access to a wide range of multimedia resources, including videos, simulations, and interactive activities.

In addition to these technology tools, personalized learning also emphasizes the importance of student choice and agency. For example, students might be given the opportunity to select their own projects, or to choose which topics they want to study in more depth. This approach has been shown to be particularly effective for students who are more motivated and engaged when they have a sense of ownership over their own learning.



Overall, personalized learning is a promising approach that has the potential to transform education by providing students with a more individualized and engaging learning experience. By using technology to support this process, teachers are able to provide a more customized and effective learning experience that meets the needs of each student.

5.4. Methodological guideline



For teachers: laptop/computer, internet connection

Additional resources for students:

1. <https://www.understood.org/en/articles/personalized-learning-what-you-need-to-know>
2. <https://www.youtube.com/watch?v=6oLNLCO0vfl>
3. <https://www.structural-learning.com/post/personalised-learning-a-teachers-guide>

FINAL ASSESSMENT

The final product of this module will consist of a profile. It will contain the following elements:

1. A concept map highlighting the links between the pedagogical approaches presented in this model;
2. A gamification strategy for a subject you teach;
3. A model of using the flipped classroom in one of your courses;
4. An example of personalised learning.

Each piece scores equally in the final grade.



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MODULE 2: INTRODUCTION TO LEARNING MANAGEMENT SYSTEMS

**UNIVERSITAT POLITÈCNICA DE
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Introduction

LMS is an abbreviation for Learning Management System. A learning management system is software that helps you create, manage, organize, and deliver online training materials to your audience. You can find its key features in the abbreviation:

Learning. The primary purpose of an LMS is to provide and simplify learning in your organization.

Management. With this software, you can organize and manage your online courses, participants, and results.

System. System is a set of things working together as parts of a mechanism or a network. In this case, it's another (fancy) word for software to make it sound more professional and expensive.



Module aims

By the end of the unit, the students could be capable to develop their capacity to create, organize and implement learning activities using LMS tools

Moreover, could be capable to analyse and compare LMS systems.



Learning outcomes

By the end of the unit, successful learners should be able to:

Identify the basic tools in an LMS and explain how one might use them to communicate with, assess and provide feedback to students



Resources and working means

To develop this learning unit we will work:

- Activities to problem based learning;
- Computer resources, net connection
- bibliography at the chapter end.



Module structure

This learning module has been organized in 5 LU, applying reading contents: 2 hours (0,2 ECTS), task and activities: 3 hours (0,3 ECTS). The total time necessary will be 25 hours.



LU 1. LMS tools assessment

Content

- 1.1. Introduction
- 1.2. Learning unit objectives
- 1.3. Assessment



1.1. Introduction

In this learning unit, the tools that are usually included under this heading are described. Each of them will be detailed and described so that their application in the learning units can be evaluated.



1.2. Learning unit objectives

By the end of the unit, successful learners should be able to:

- Analyse the learning tools used under assessment unit.
- Incorporate and organize the learning tools used under assessment unit.
- Create the knowledge with some activities under this learning assessment unit.



1.3. Assessment

Learning, including eLearning, is an interactive process that's based on a feedback loop between the instructor and the learner. Teaching alone is not enough – as an instructor you have to assess your students' progress and adjust your delivery accordingly, not only in the course of a school year, but even during a single lesson session.

Some tools under this epigraph:

Blog.- Allows students to document their learning experiences chronologically, share it with the instructor and classmates and provide feedback to one another.

ePortfolio.- Allows students to create a personalized web space with all their best work.

Journal.- Allows students to document their learning and share it with the instructors only.



Quiz.- Allows instructors to assess student learning by creating various types of questions (e.g., multiple choice, true/false, short answer).

Self and peer assessment.- Allows instructors to use student self-assessment and peer assessment.

Wiki.- Allows students to create and edit content pages as a group (6).

Group Work.- Learners are placed in groups to handle different tests. In this type of online assessment, new assessment strategies are employed.

Surveys.- These are used by instructors to collect data and feedback regarding learner attitudes, perception, and other information that can improve the online learning experience.

Applications



Student could fulfil some activities in each LMS assessment tool. Search one LMS system and complete these activities using this LMS tool.

Reading contents: 2 hours (0,2 ECTS), task and activities: 3 hours (0,3 ECTS)



LU 2. LMS tools communication

Content

- 2.1. Introduction
- 2.2. Learning unit objectives
- 2.3. LMS Communication epigraph



2.1. Introduction

In this learning unit, the tools that are usually included under this heading are described. Each of them will be detailed and described so that their application in the learning units can be evaluated.

2.2. Learning unit objectives



By the end of the unit, successful learners should be able to:

- Analyse the learning tools used under communication unit.
- Incorporate and organize the learning tools used under communication unit.
- Create the knowledge with some activities under this learning communication unit.



2.3. LMS Communication epigraph

The eLearning could be defined as "learning + remote communication" itself but even beyond that, good communication tools are essential to coordinate remotely connected people, set group and individual goals, and keep everyone up to date. Effective communication is often not just about reaching your audience, but also reaching only your audience, meaning to target your message.

Some tools under this epigraph:

Chat.- Allows students to synchronously talk to each other using text in a virtual chat room.

Discussion Forum.- Allows students to asynchronously comment using text or audio in a forum-type environment.

Email / Internal email.- Allows students to send emails while they are navigating the course content in LMS.

News.- Allows instructor to send course announcements.



RSS.- Allows students to subscribe to course updates. They will be notified via email when changes are made to content pages.

Announces.- Allows students to know to course updates.

Gamification.- Some communication platforms, including Slack, support third-party plugins to add even more functionality. Introducing gamification into a communication platform allows for student recognition and stronger affiliations within the community.

Remote apps.- This apps enables universities and colleges to deliver a high-quality learning experience to remote students. E.g., BigBlueButton (opensource), zoom, teams (paid).

Videonotes.- This app enables the capacity for uploading videos.

Applications



Students could fulfil some activities in each LMS communication tool.

Search one LMS system and complete these activities using this LMS tool.

Reading contents: 2 hours (0,2 ECTS), task and activities: 3 hours (0,3 ECTS).



LU 3. LMS tools management / organizing

Content

- 3.1. Introduction
- 3.2. Learning unit objectives
- 3.3. LMS Management epigraph



3.1. Introduction

In this learning unit, the tools that are usually included under this heading are described. Each of them will be detailed and described so that their application in the learning units can be evaluated.



3.2. Learning unit objectives

By the end of the unit, successful learners should be able to:

- Analyse the learning tools used under management unit.
- Incorporate and organize the learning tools used under management unit.
- Create the knowledge with some activities under this learning management unit.



3.3. LMS Management epigraph

This section describes the tools that are usually included in the management section of the possible courses that can be integrated into the system.

Some tools under this epigraph:

Calendar.- Display all the important events (e.g., assignment due dates) in a calendar format.

Checklist.- Allows instructors to create checklists for students to proceed with their learning.

Competencies.- Allows instructors to create competencies for a course or program and monitor student achievement.

FAQ.- Allows instructors to create pages in a “frequently asked question” format.

Glossary.- Allows instructors to organize content in a glossary format.

Lesson/Module.- Allows instructors to organize content in sections, learning modules or units.

Rubrics.- Allows instructors to create rubrics.

SCORM.- Allows instructors to upload SCORM content/objects



Student management.- This app manages the student participant list.

Applications



Students could fulfil some activities in each LMS management tool.

Search one LMS system and complete these activities using this LMS tool.

(Reading contents: 2 hours (0,2 ECTS), task and activities: 3 hours (0,3 ECTS))



LU 4. LMS data collection / reporting

Content

- 4.1. Introduction
- 4.2. Learning unit objectives
- 4.3. LMS collection/reporting epigraph



4.1. Introduction

In this learning unit, the tools that are usually included under this heading are described. Each of them will be detailed and described so that their application in the learning units can be evaluated.



4.2. Learning unit objectives

By the end of the unit, successful learners should be able to:

- Analyse the learning tools used under collection unit.
- Incorporate and organize the learning tools used under collection unit.
- Create the knowledge with some activities under this learning collection unit.



4.3. LMS collection/reporting epigraph

In the software you have both the option of ready-to-use templates and full customization of your data.

Some tools under this epigraph:

Survey / Feedback.- Allows instructors to survey students and collect information/feedback.

Assignments / Dropbox.- Allows instructors to assess student learning and provide feedback to their assignments.

Grade book.- Allows students to see their grades

Student test.- This app activates the possibilities to make student test.

Applications



Students could fulfil some activities in each LMS collection tool.

Search one LMS system and complete these activities using this LMS tool.

Reading contents: 2 hours (0,2 ECTS), task and activities: 3 hours (0,3 ECTS).



LU 5. LMS selection and evaluation

Content

- 5.1. Introduction
- 5.2. Learning unit objectives
- 5.3. LMS selection criteria



5.1. Introduction

Choosing the right LMS system requires the clearest possible configuration of the system requirements. Not only the requirements themselves must be identified, but also all the people who will be involved. This implies that there must be clear criteria that allow an evaluation and selection to be made as precisely as possible. The requirements for an LMS are always customer-specific and vary depending on the industry, company size, and scenarios.



5.2. Learning unit objectives

By the end of the unit, successful learners should be able to:

- Analyze the learning requirements and the LMS candidates.
- Evaluate the LMS candidates, applying some tools incorporated on the chapter.
- Develop, incorporate and implement the LMS solution in the learning circuit.



5.3. LMS selection criteria

According to some authors references (1), it presents very interesting tools to evaluate and develop the LMS application. Furthermore, the student can evaluate each implemented part, according to the activity to be developed in the training session. The most important criteria to be used could be:

a.- Responsive design

The design used in the LMS software should offer a responsive user interface so that you can offer mobile learning. This interface should be used in PC support, and compatible with Android/IOS systems. Pay attention to what features the app provides and what roles it is suitable for.

b.- Hosting Model

The design used must specify where the system is located and who takes care of the background tasks such as backups, updates, and system availability.

c.- Privacy Data protection



Does the LMS comply with all directives? Is there any company privacy policy that you need to consider? Is the deletion of a user account including all data with one click possible? Can you anonymize the data as needed? Is it possible to implement roles and permissions management so that user data is protected from unauthorized access?

d.- Updates

Updates must be made regularly to ensure continuous development and troubleshooting. These updates are often required for system security.

e.- Customizations

Depending on the complexity of the learning processes and the range of functions you want to use, it will be difficult to find a system that meets all your standard requirements. The maximum functionality provided by the program should be analyzed, in order to decide the best LMS.

f.- Interfaces

Common interfaces such as SMTP, SCORM, LDAP are the basis and should be fulfilled by every LMS. Further interfaces or a REST API also offer the possibility to connect other systems and to outsource functions here or to combine them with one another. It's essential to have the possibility to connect with other systems and import or export information. Or have the possibility to upgrade information between teaching years.

g.- Reporting.

The quick and easy detection of completed training is one of the main reasons for the acquisition of an LMS. For this reason, reports for the supervisor, which graphically show how the learning level of his employees is currently up to date, are now also standard. The essential thing here is that you as a customer yourself can select the columns and filters of reports to show exactly what information is needed.

h.- Automatic Booking

In addition to the course preparation, the booking process is an important workflow in the system, which must be checked for usability and efficiency criteria. The multiple choice of participants in the booking process should be mandatory. The system should also be able to map such processes automatically.

i.- Certificates

The certificate must be able to be adapted to the design as well as the text. All popular user data in the company must be insertable as a placeholder. Background images, logos, and other graphics can be added easily and quickly.

j.- Social Learning



The learning platform also has to offer opportunities to reach the learners and create a togetherness. Be it through video conferencing, forums, or chats - the participant must also be able to establish personal contact with the trainer or colleague in order to exchange views, ask questions, or simply socialize.

We have listed the fundamental factors that emerge when determining whether an LMS would be an advantage in any given educational environment (2). The majority of Learning Management Systems have the same general features (3):

- general course organisation (including administration and record-keeping of student marks and absences, as well as general planning for the course)
- content (e.g., lectures, learning objects)
- self-study (including instructions, readings, practical exercises)
- assignments
- testing
- communication (teacher-to-student, student-to-teacher, student-to-student, group-to-teacher, teacher-to-group, etc.).

To evaluate the LMS and find criteria for its subsequent selection, the rubric of Longsight, Inc. The rubric could be found in the annex I. The items to be evaluated is described as follow:

Design and layout, Migration of existing courses, Content authoring, Content organization, Course export, Archives, Communication, File exchange, E-portfolio, Discussion tools, Testing and assessment tools, Course evaluations, Gradebook and student tracking, Calendar and selective release, Collaboration, Learning analytics, Integration with Student Information System, Integration with Campus Authentication, Integration with campus portal, Support, Textbook publisher support, Training materials, Online help resources, Speed of system, Server requirements, Scalability, Browser setup and support.

Applications



The students must search for information on different types of LMS software to apply the selection and evaluation rubric, found in annex I.

LMS software sites:

- 1- ATutor
- 2- Odoo-based Learning Management System
- 3- Forma LMS
- 4- Moodle
- 5- Opigno



6-OpenOLAT

7- Ilias

8- Sakai

9- ELMS

10- Chamilo

11- Open edX

12- Dekeos

13- Claroline

14- Manhali

15.- Blackboard,

16.- Desire2Learn,

17.- Canvas

Select, evaluate and compare LMS systems (Reading contents: 2 hours (0,2 ECTS),
task and activities: 3 hours (0,3 ECTS).



FINAL ASSESSMENT

The student could create a complete matter using the 80% of tools included in the LMS selected. Activities: 3 hours (0,3 ECTS)

References:

- (1) Patrick Walther, *“Top 10 Criteria For Learning Management Systems”*, 2018, <https://elearningindustry.com/criteria-for-learning-management-systems-top-10>
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- (4) Longsight, Inc. <http://longsight.com/>
- (5) <https://medevel.com/14-learning-management-systems-lms/>
- (6) [Unit 2 | Introduction to Learning Management Systems \(LMS\) – Teaching Online: Basic Skills for TAs \(pressbooks.pub\)](#)



ANNEX I

LMS Evaluation Tool

VENDOR: _____

EVALUATOR: _____

INSTRUCTIONS: Use the following evaluation to review each learning management system. Evaluate the set of criteria by scoring each item: 0 (Feature Not Present), 5 (Fair), 8 (Good), or 10 (Excellent) based on the information and demonstration provided by the vendor.

EVALUATION RUBRIC	FAIR = 5 Points	GOOD = 8 Points	EXCELLENT = 10 Points	POINTS
Design and layout	Functional interface with decent layout but somewhat complex and counterintuitive. Aesthetics are bland or distracting.	Good functional interface that can be navigated with minimal training. Good look and feel.	Simple, intuitive interface with minimal clicks to access materials, little or no training needed to get started, and the look and feel is inviting.	
Migration of existing courses	Some migration tools exist but the tools and documentation are either inadequate or difficult to use.	Good tools are provided and well documented, but the migrated material will need additional formatting.	Excellent migration tools with great documentation. All migrated course materials are ready to use.	
Content authoring	Provides a basic means for uploading and storing content in a hierarchical manner to support teaching and learning.	Allows basic content to be uploaded or created within an authoring system that is part of the LMS.	Provides a suite of tools for authoring media-rich content, importing content, drag-and-drop interfaces, as well as uploading rich content types such as podcasts, video clips, etc. Allows metadata creation for easier/better management.	
Content organization	LMS provides a basic repository for course content.	LMS provides a repository for content and basic tools for content organization.	LMS provides a framework for diverse storage and use strategies, from public, private and shared workspaces, to subscription-based content (e.g., podcasts and feeds) to archival content.	



EVALUATION RUBRIC	FAIR = 5 Points	GOOD = 8 Points	EXCELLENT = 10 Points	POINTS
Course export	Permits course content to be exported and reimported into the LMS itself but may have limited ability to export to another LMS.	Allows course structure and content to be exported but in formats that constrain how the exported content may be imported elsewhere.	Exports course structure and content, as well as selected sub-elements of a course, using an industry-standard such as IMS Content Packaging so that courses can be imported into another LMS.	
Archives	Some archival tools but much of the process is manual. Archived courses are not available to be viewed by the instructor.	Good archival tools that support backup of completed courses with student submissions and discussions intact. The LMS administrator must set up instructor access to the completed course.	Powerful archive tools that support automatic backup of completed courses with student submissions and discussions intact. Instructors have full access and control of completed courses.	
Communication	LMS provides secure access to the email addresses that comprise the class roster, but individuals may not be selectable for private email.	Both asynchronous (email) and synchronous communication tools are present.	LMS provides a high level of flexibility for the use of email (asynchronous by roster, individual or group) as well as instant messaging, chat and threaded discussions.	
File exchange	LMS provides secure drop-box functionality so that students can exchange materials with instructors.	LMS provides drop-box and ability for students and faculty to upload resources to a central course repository.	LMS provides secure drop-boxes and shared folders for file exchange among students as well as instructors and allows for bulk downloads of attached files.	
E-portfolio	Basic tools allow students and instructors to gather student work products for assessment and presentation.	Tools allow students and instructors to create ad-hoc or structured presentations of resources.	A full-featured e-portfolio tool is integrated into the LMS and makes possible the gathering, review and presentation of work products to support any portfolio strategy (resume, learning, tenure, etc). Reporting tools allow for individual, departmental or institutional assessments.	

EVALUATION RUBRIC	FAIR = 5 Points	GOOD = 8 Points	EXCELLENT = 10 Points	POINTS
Discussion tools	Adequate speed and functionality with the ability to attach files	Quick and functional with user profiles or pictures, file attachments and html interface.	Extremely fast and highly functional with user profiles and pictures, files attachments and easy html interface.	
Testing and assessment tools	A simple test generator with the ability to add multiple choice, true/false, short answer and essay questions.	More than a simple test generator, this system provides tools for creating assessments with images or other attached files.	More than a simple test generator, this system provides tools for creating assessments with multimedia, learning games, and other interactive tools such as polls. Tests can provide immediate feedback with tips for remediation.	
Course evaluations	Basic survey tools for capturing student reflections on course, instructor	Anonymous evaluations that can be gathered by the faculty including question pools and templates.	Hierarchical and flexible system for anonymous evaluations at course, department and institutional level for either summative or formative purposes. Includes item pools, templating, announcements, reminders, and tools to easily target different audiences.	
Gradebook and student tracking	Moderately functional grade book that is relatively easy to use. Minimal tools for student tracking.	Functional grade book that is easy to use. Grades can be exported to a spreadsheet. Student tracking tools give the instructor some information about student progress.	Highly functional grade book that is easy to use. Grades can be exported to a spreadsheet or student information system. Student tracking tools give the instructor information about what pages the student has viewed and what tasks have been completed. The student can be automatically emailed when their participation is substandard.	
Calendar and selective release	Basic calendar. Selective release is possible but may be cumbersome to set up.	Basic calendar with pop-up announcements. Release of course content and assessments can be scheduled for student access with moderate effort.	Collaborative calendar with pop-up announcements. Release of course content and assessments can be easily scheduled for student access.	

EVALUATION RUBRIC	FAIR = 5 Points	GOOD = 8 Points	EXCELLENT = 10 Points	POINTS
Collaboration	Allows shared access to files among users and some tools for asynchronous collaboration.	Provides access to shared files and some tools for asynchronous and synchronous collaboration and communication. Limited group functionality.	Provides a campus-wide framework that supports collaborative work such as wiki with version tracking, threaded discussion, instant messaging and chat, whiteboard, web conferencing (audio and video). Enables subgroups to be defined within courses for collaboration. Provides non-course sites to support special project work among small groups.	
Learning analytics	Grades and basic statistics are gathered for each learner, and basic usage reports generated.	Grades, basic and fine-grained statistics are gathered for each learner, by course, by department and across the institution. Forensic reports are available for resolving controversies.	Provides in-depth data gathering and reporting on learning outcomes based on configurable rubrics, and allows for longitudinal analysis of cohorts as well as individuals, including eportfolios.	
Integration with Student Information System	Integration is possible but will require a high level of product customization.	Tools for integration are available but some tasks will need to be completed manually or in a batch process.	Seamless integration with automatic updating of student and faculty lists and all rosters. Students can be automatically emailed course access information. Student and faculty profiles with pictures and syllabi can be shared between the LMS and the SIS.	
Integration with Campus Authentication	Ability to batch load users from a campus central identity system.	Ability to batch load users but also to integrate a campus single sign-on system such as CAS.	A real-time connection with a campus central identity system (LDAP, AD, Shibboleth) that avoids the need for batch processes. Integration with campus single sign-on.	
Integration with campus portal	LMS is accessible through the campus portal but only by linking that requires a separate authentication by the user.	LMS is linked with the portal via single sign-on, but the only level of integration possible is the iframe.	LMS and portal share single sign-on and select tools can be integrated with the portal via industry-standard integrations (JSR-168 or WSRP).	



EVALUATION RUBRIC	FAIR = 5 Points	GOOD = 8 Points	EXCELLENT = 10 Points	POINTS
Support	Email support only.	Email support and limited phone support.	24/7 phone and email support with tracking system to follow the progress of issue resolution.	
Textbook publisher support	Some textbook materials but difficult to find, request or install.	Several supported texts with good materials that can be installed with moderate efforts.	Many supported texts, excellent well-organized materials, easily installed and based on industry or community standards (e.g., Common Cartridge)	
Training materials	Fair printed materials, minimal online training or classroom training sessions available.	Good printed materials, some online training or classroom training sessions available.	Excellent printed materials and many opportunities for online and classroom training sessions.	
Online help resources	A users' manual is accessible online.	Help files are accessible at each step of a process, and system documentation is accessible online.	Contextually-appropriate help files are accessible from all pages and provide assistance for students, faculty and system administrators as appropriate. Pop-ups or rollovers provide "just-in-time" information for specific actions.	
Speed of system	Course material access times are adequate on high speed connections but frustrating for dial-up users.	Access times are very good for students on high speed connections and adequate for dial-up users.	The fastest system available with support for streaming media and/or offline companion materials to better serve dial-up users.	
Server requirements	LMS only operates on one operating system and requires special configurations of hardware or supporting software.	LMS is available on multiple platforms but does not offer compatibility with an implementer's choice of application server or database.	Server software operates on a wide variety of operating systems (Windows, Linux/Unix, Mac) using commodity hardware and industry-standard web servers.	
Scalability	LMS has no problem meeting demands of a small institution on a single server.	LMS supports clustering and the ability for multiple servers to act in unison, but there are few installations supporting over a thousand concurrent users.	LMS clusters well and has been known to support installations well over ten thousand concurrent users.	



EVALUATION RUBRIC	FAIR = 5 Points	GOOD = 8 Points	EXCELLENT = 10 Points	POINTS
Browser setup and support	Supports the most popular browsers with end user set up and installation of necessary components. May have a "preferred" browser for proper operation.	Supports most browsers with minimal effort from the user.	Supports all browsers and platforms with no special setup requirements for the user. Is able to render the LMS experience in most browsers with consistency.	
TOTAL POINTS				

This grid was adapted from several sources on e-learning systems evaluations including [McGill University's work on LMS selection](#).

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ANNEX II

Learning Management System (LMS) Evaluation Tool

Evaluator Name:				
Evaluator College:				
What LMS (Learning Management System) are you using now and why?				
Instructions: Use the following evaluation criteria to review each LMS. Based on your evaluation experience, rank each LMS with 1, 2 or 3; with 1 being the highest, and 3 being the lowest.				
Evaluation Criteria	Canvas	Bb Ultra	Bright space	Notes
<p>Migration of existing courses</p> <ul style="list-style-type: none"> - Exports course structure and content using an industry-standard such IMS Content Packaging so that course can be imported into another LMS. - Ability to copy/archive, import/export files and assessments from on-going courses within LMS. 				
<p>Design and Layout</p> <ul style="list-style-type: none"> - User experience (UX) and usability - Allows for Customization and Personalization - Responsive design (Device agnostic & Mobile friendly) - Possibility allows working completely offline and then upload when there is a connection - Use a template to lock specific settings or content items (e.g. use a particular font throughout course) 				
<p>Content organization</p> <ul style="list-style-type: none"> - LMS provides a repository for content and basic tools for content organization. - LMS has ability to create modules or units - LMS provides the ability to sequence students through content - LMS provides a record of learning that could be used across multiple disciplines/functions - LMS capable of using content from public, private and shared workspaces including subscription-based content (e.g., podcasts and feeds) to archival content. 				
<p>File Management & Exchange</p> <ul style="list-style-type: none"> - LMS provides a drop-box functionality so that students can exchange materials with instructor and vice versa. - LMS provides secure drop-boxes and shared folders for file exchange among students. - Allows for bulk (zipped) downloads or uploads files. - Allows for drag and drop all files (eg., audio, video etc.) - Potentially allow for secure transmission of large files (like Filex.com) - Compatible with all major Word processors including Google Docs 				



Evaluation Criteria	Canvas	Bb Ultra	Bright space	Notes
<p>Content authoring</p> <ul style="list-style-type: none"> - Provides a suite of tools for authoring media-rich content (e.g., Camtasia, Adobe, Articulate) - Imports content (Scorm files capability, etc) - Drag-and drop interfaces - Embedding rich content types such as podcasts, video clips that does not require third party software to run. - Use template updates to all associated courses through course syncing. 				
<p>Communication</p> <ul style="list-style-type: none"> - Both asynchronous (email) and synchronous communication tools are present - Has a high level of flexibility for the use of email (asynchronous by roster, individual or group) - Has the ability for instant messaging, voice messaging, video chat, video announcement and threaded discussion. - Announcements and emails forwarded to TAMU email. 				
<p>Calendar and Adaptive/Selective release</p> <ul style="list-style-type: none"> - Has calendar function that provides a single location to update due dates for all tasks, checkpoints, and assessments. - Ease of use of Selective/Adaptive release for all course tools including discussion boards - Pop-up announcements & 'Nudging' (gentle automated reminders) - Ease of navigation by students to access calendar tasks. 				
<p>Collaboration (social learning tools)</p> <ul style="list-style-type: none"> - Allows shared access to files among users. - Provides a campus wide-framework that supports collaborative work such as wiki with version tracking, threaded discussion, instant messaging and chat, whiteboard, web conferencing (audio/video). - Enables sub-groups to be defined within courses for collaboration. - Provides ability to create organizations to support special project work among small groups. - Integration with Google Docs or other file sharing tools. 				



Evaluation Criteria	Canvas	Bb Ultra	Bright space	Notes
<p>Group and Learning Community Features</p> <ul style="list-style-type: none"> - Ease of accessing and operating group work space - Peer and 360 evaluations - Analytics and Reports (attendance, retention center) - Discussion Forums (scalability, composite view of group participation) - Web-Based Video Conferencing Integration or Options (including recording) - Group Grading/Instructor of Record (IOR) scores in one column 				
<p>Gradebook and tracking</p> <ul style="list-style-type: none"> - Highly functional grade book that is easy to use. - Grades can be exported to a spreadsheet or student information system (e.g. Howdy). - Communication capabilities when assignments are posted and when discussion questions responses have been completed. - Clear and simple tracking tools available for all user activity, including instructional users (audit log, student participation log, time on task etc) - Students are automatically emailed when their participation is substandard - Ability to delete columns in the grade center (not just hiding the column). 				
<p>Testing and assessment tools</p> <ul style="list-style-type: none"> - Simple assessment tool to add different types of questions (eg. multiple choice, short answer, essay questions, equation, word cloud, matching etc). - Adaptive testing, ex: Multipart questions and branching - Calculation capabilities beyond +*/./ (e.g engineering equations) - Ability to include pictures or diagrams with questions. - Provides tools for creating assessments with multimedia, learning games and other interactive tools such as polls and surveys. - Provides tools to share the results of polls and surveys with the class. - Ease of use and user friendliness of the system to provide contextual comments on written papers (e.g. pdf annotator) - Robust rubric integration - Tests can provide immediate feedback with tips for remediation. - Integration with Qualtrics & its scoring functionality & other survey software 				
<p>Course evaluations</p> <ul style="list-style-type: none"> - Hierarchical and flexible system for anonymous evaluations at course, department and institutional level for either summative or formative purposes. Includes item pools, templating, announcements, reminders, and tools to easily target different audiences. - Potentially has ability to tie into PICA course evaluation 				

Evaluation Criteria	Canvas	Bb Ultra	Bright space	Notes
<p>E-Portfolio</p> <ul style="list-style-type: none"> - Tools to allow students and instructors to create ad-hoc or structured presentations, gather and present student work products - Assessment tools for e-portfolio. - A full featured e-portfolio tool is integrated into the LMS and makes possible the gathering, review and presentation of work products to support any portfolio strategy (resume, learning, tenure, etc). - Reporting tools allow for individual, departmental or institutional assessments. - Ability to share ePortfolio outside of the LMS - Learner Profiles (competencies, certifications, badges) 				
<p>Archives</p> <ul style="list-style-type: none"> - Good archival tools that support backup of completed courses with student submissions and discussions intact. - Provide instructor access to completed and archived course. - Potentially provides for retrieval of student learning history (including any learner profile and learning path components). 				
<p>Training materials</p> <ul style="list-style-type: none"> - Quality of printed materials - Opportunities for webinars, online and classroom training sessions. 				
<p>Textbook publisher support</p> <ul style="list-style-type: none"> - Supports variety of texts and publishers - well-organized materials - easily installed and based on industry or community standards. (e.g., Common Cartridge) 				
<p>Online help resources</p> <ul style="list-style-type: none"> - Contextually-appropriate help files are accessible from all pages and provide assistance for students, faculty and system administrators as appropriate. - Pop-ups or rollovers provide “just-in-time” information for specific actions. - Has an online users manual. - A 24/7 live interactive helpdesk 				
<p>Final Overall Ranking</p>				



MODULE 3: THE PROCESS OF E-LEARNING IMPLEMENTATION

POLYTECHNIC INSTITUTE OF PORTO

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Introduction

E-learning, also known as online learning or digital learning, can be described as the use of technology to deliver educational content and training programs remotely. The implementation of e-learning has become increasingly popular in recent years, as it provides learners with greater flexibility and access to education.

The process of implementing e-learning can vary depending on the specific needs of an organization or educational institution (Clark & Mayer, 2011). However, the implementation of e-learning typically involves a multi-step process that includes needs assessment, technology selection, content development, implementation, delivery, and evaluation. This process supports those who design e-learning services and content.

The effectiveness of e-learning programs can be measured through assessments, surveys, and focus groups to gather feedback from the learners and measure the impact of the program.

This paper systematizes structured, robust and solid guidelines for a sustainable approach to the effective design and implementation of e-learning, and the presentation of a module on e-learning implementation is the core of this chapter. Focusing on the implementation of e-learning, this module is intended to deconstruct into five learning units the activities that are needed to develop an e-learning course, from identifying the organisational requirements, presenting instructional design methodologies, explaining pedagogical techniques and demonstrating the use of digital tools to enhance learning experiences.

For this purpose, e-learning is understood as a way of learning in which technology plays a vital role in supporting the interaction between learning partners (students, teachers and academic staff) in order to improve, or at least favour, the cognitive and social processes of learning (Basak, Wotto, & Bélanger, 2018).

One of the primary benefits of e-learning is that it enables learners to access content from anywhere, at any time. This can be particularly beneficial for individuals with hectic schedules or that live in remote areas where access to traditional classroom education is limited.

Methodologies to implement e-learning

There are several methodologies that can be used to implement e-learning, depending on the specific needs and goals of the organization or educational institution. Here are some of the most commonly used methodologies:

1. ADDIE: The ADDIE (Analysis, Design, Development, Implementation, Evaluation) model is a systematic approach to instructional design that is widely used in e-learning. It involves conducting a needs analysis, designing instructional materials, developing content, implementing the program, and evaluating its effectiveness (Allen, 2006).

2. Agile: The agile methodology is a flexible, iterative approach to software development that is also used in e-learning. It involves breaking the development process into small,



manageable chunks, and testing and evaluating the program at each stage (Battou, Baz, & Mammass, 2017).

3. SAM: The SAM (Successive Approximation Model) is another iterative approach to instructional design that is well-suited to e-learning. It involves developing a prototype, testing and evaluating it, and refining the program based on feedback from users (Wolverton & Guidry Hollier, 2022).

4. Rapid Prototyping: The rapid prototyping methodology involves developing a basic prototype of the e-learning program and then testing and refining it based on feedback from users. This approach is well-suited to organizations that need to quickly develop and deploy e-learning programs (Boulet, 2009).

5. Kirkpatrick Model: The Kirkpatrick model is a popular framework for evaluating the effectiveness of e-learning programs. It involves four levels of evaluation: reaction (how learners respond to the program), learning (whether learners have acquired new knowledge or skills), behavior (whether learners apply what they have learned), and results (the impact of the program on the organization or educational institution) (Smidt, Balandin, Sigafos, & Reed, 2009).

The implementation of e-learning typically involves a multi-step process that includes needs assessment, technology selection, content development, implementation, delivery, and evaluation. This process supports those who design e-learning services and content.

Regarding needs assessment, the first step in implementing e-learning is to conduct a needs assessment to identify the goals, objectives, and requirements of the e-learning program. This involves identifying the target audience, the content that needs to be covered, and the desired outcomes.

On technology selection, once the needs assessment is completed, the next step is to select the appropriate technology for delivering the e-learning program. This may involve selecting a learning management system (LMS), authoring tools, and other software.

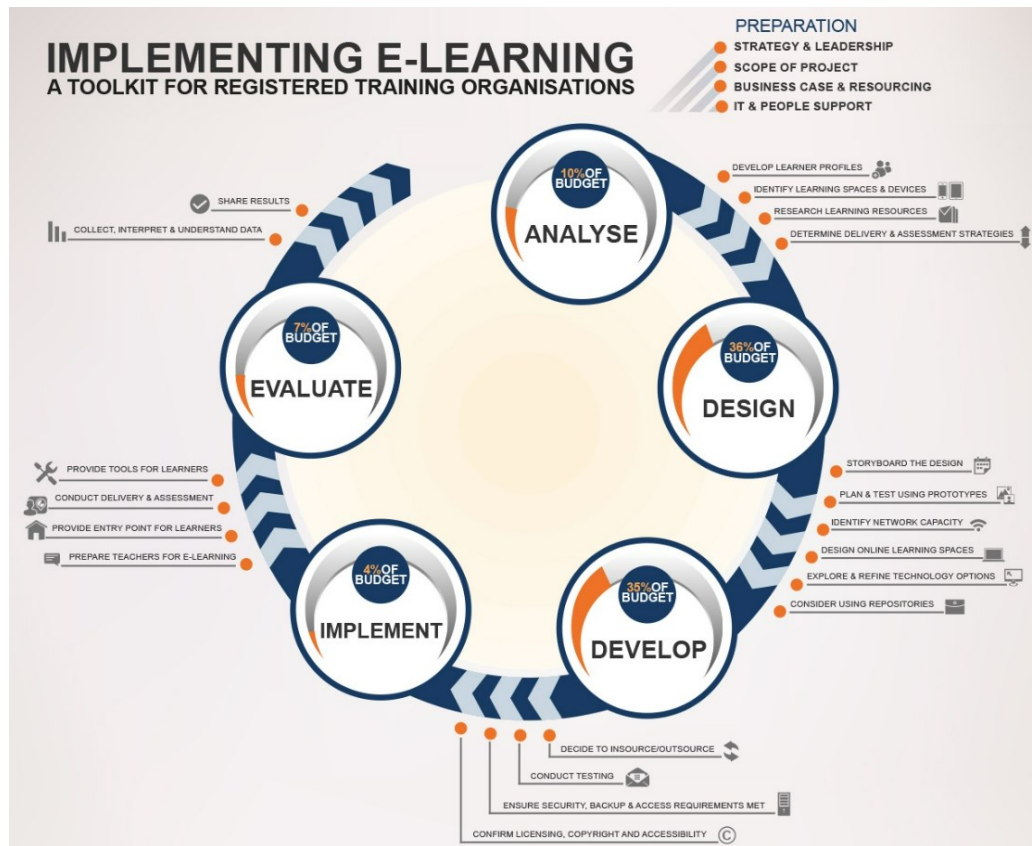
The next step is to develop e-learning content. This may involve designing instructional materials, creating interactive multimedia, and developing assessments.

The implementation step occurs after the content is developed, when the e-learning program is ready to be implemented. This involves setting up the LMS, uploading the content, and configuring the system to meet the needs of the users.

On the delivery step, once the e-learning program is implemented, it is ready to be delivered to the learners. This may involve providing access to the content through the LMS, scheduling online classes, or providing access to self-paced modules.

The final step in the process is to evaluate the effectiveness of the e-learning program. This may involve conducting assessments, surveys, and focus groups to gather feedback from the learners and measure the impact of the program.

In DigiTools project, for the development of the training curriculum plan and the development of learning activities (instructional events) we used ADDIE methodology. According to Kurt (2017), to create an effective learning experience, the learning model ADDIE is one of the most used instructional design models, which is reflected in the next figure.



Source: Bates, A.W. (2019)

The *Analyse* phase helps identify learning goals and objectives. It also helps gather information about what your audience already knows and what they still need to learn. During this stage is when you'll conduct an in-depth training needs assessment to help you identify the gaps.

The *Design* phase helps us decide specific learning objectives, structure of the content, mental processes needed by trainees, knowledge or skills participants need to obtain, best tools to use, videos or graphics to create, the length of time for each lesson. Just to name a few of the essentials.

In the *Development* phase, the course is created, taking into account the prototype/storyboard. Each element of the course should be developed according to the design phase.

The *Implementation* phase is where the actual learning takes place.

The last phase in the ADDIE Model is *Evaluation*. After the eLearning course is designed, developed, and implemented, you want to make sure it's doing its job. This phase is about gathering important information to see if the course needs to be revised and improved.

Most often in the world of eLearning, this means exporting your file and uploading the course to an LMS (Learning Management System). During the export process, make sure you work with your client to know the exact settings they prefer for tracking.

There have been many books written about the ADDIE model (see for instance, Morrison, 2010; Dick and Carey, 2005).



Module aims



By the end of the module on the process of e-learning implementation, the learners will have basic knowledge and skills to configure the four key areas of an e-learning course (management support and policy, design and planning of the course, content creation, and support to e-learning activities) and the 17 actions that need to be developed to design, create, put in action and evaluate an e-learning course in any subject-specific teaching context.



Learning outcomes

By following the activities proposed in learning units, the learner will be able to:

- To define the requirements from organisational context related to the support of the management team and the definition of a policy framework to shape e-learning initiatives.
- To summarise the activities that are needed to develop an e-learning course, which include the analysis of the learning needs, learning objectives and course sequences, instructional methods and evaluation strategies.
- To explain aspects related to the preparation and delivering of e-learning content, including the use of adequate and creative pedagogical techniques, using media and digital tools to enhance learning experiences.
- To identify all technological features (asynchronous and synchronous tools) and services (teacher and student training on e-learning tools, repository on educational resources, etc.) that are needed to support e-learning activities.

Resources and working means



Pedagogical methods used in the module will include project-based learning, flipped classroom and students' readings.

Computer resources needed to go through the material and solve the tests imply an internet connected device, namely a laptop, desktop computer or a tablet.

Information sources and bibliography include the *Guide for best practices: subject-specific teaching in digital education* and the *Analytic Program Model*, both documents created within DigiTools project. For further references, we recommend to see also Ketmanto, Pratami, Hasibuan, & Jacob (2019), Dijkstra & Goeman (2020) and Redecker (2017).



Module structure

This learning module has been organized in five Learning Units (LU), applying reading contents: 2 hours (0,2 ECTS), task and activities: 3 hours (0,3 ECTS). The total time necessary will be 25 hours.



LU 1. The design of an e-learning course

Content

- 1.1. Introduction
- 1.2. Learning unit objectives
- 1.3. Learning unit content
- 1.4. Applications



1.1. Introduction

An e-learning programme requires thinking about principles for action that consider existing models and create new strategies that enhance the process. This LU will focus on the requirements from a macro and organisational context related to the support of the management team and the definition of a policy framework to shape e-learning initiatives. Aspects related to the awareness of the participants involved and to the specifics of the thematic area will be also considered. The type of knowledge and learning that need being transferred and generated, and the technology and infrastructure are both approached in this LU.



1.2. Learning unit objectives

By the end of this LU, successful learners should be able to:

- To explain the need and the role of an e-learning model to work as a reference that frames the design of an e-learning course within the broader context of a Higher Education Institution [HEI].
- To identify the roles and needs of the several individuals that will take part in the e-learning course, including students, academic staff, technical staff and librarians, among others.
- To confer the technological features needed to implement the e-learning course, both in terms of digital infrastructure and digital skills from the participants.
- To be aware of the need to adapt/align the type of knowledge and learning that have been transferred and generated to the needs and expectations of learners, academic and technical staff and the organisation expectations and conditions.



1.3. Learning unit content

- The role of an e-learning model as a reference to the design of an e-learning course.
- Identifying the roles and needs of e-learning participants (students, academic staff, librarians and technical staff).



- Basic of the digital infrastructure and digital skills needed by the e-learning course participants.
- How to meet the expectations of learners and academic staff in an e-learning course.

1.4. Applications



Experience discussion.

Create a checklist of aspects to consider on the design of an e-learning course.



LU 2. To plan an e-learning course

Content

- 2.1. Introduction
- 2.2. Learning unit objectives
- 2.3. Learning unit content
- 2.4. Applications



2.1. Introduction

This learning unit focuses on all the activities related to the analysis of the learning needs, learning objectives and course sequences. This step is essential to ensure the effectiveness of the e-learning course. Understanding student needs, identifying appropriate objectives, learning activities and their sequence, as well as adapting available technical solutions, all are crucial aspects to create an effective and engaging course.



2.2. Learning unit objectives

By the end of this LU, successful learners should be able to:

Understand and classify students learning needs.

- Define the concept of e-learning objective.
- Be aware of Bloom's revised taxonomy and use it to write measurable objectives.
- Define and apply different kinds of e-learning methods according to the learning objectives.



2.3. Learning unit content

2.3.1. – Identifying the target audience and users' learning needs

2.3.2. – Defining learning objectives and Bloom's taxonomy on knowledge

2.3.3. – Categories of teaching and learning methods



2.4. Applications

Quiz on learning objectives and methods of teaching and learning.



LU 3. To create an e-learning course

Content

- 3.1. Introduction
- 3.2. Learning unit objectives
- 3.3. Learning unit content
- 3.4. Applications



3.1. Introduction

This learning unit embraces aspects related to the preparation and delivery of e-learning content, including using adequate and creative pedagogical techniques and using media and digital tools to enhance learning experiences.



3.2. Learning unit objectives

By the end of this LU, successful learners should be able to:

- Distinguish different types of learning content (e.g. facts, concepts, principles, attitudes, etc).
- Apply the most effective instructional techniques for content development.
- Use storytelling to deliver content in an e-learning course.



3.3. Learning unit content

3.3.1. – Learning content types

3.3.2. – Instructional techniques

3.3.3. – Storytelling as an effective way to deliver content



3.4. Applications

Quiz on learning content types and instructional techniques.



LU 4. To implement an e-learning course

Content

- 4.1. Introduction
- 4.2. Learning unit objectives
- 4.3. Learning unit content
- 4.4. Applications



4.1. Introduction

This learning unit focuses on improving students' participation within the e-learning course and on the evaluation procedures. Communicating regularly with learners while nurturing their motivation and participatory roles in the learning process is a critical factor for the success of e-learning. On the other hand, assessment methods should be linked to the expected learning outcomes.



4.2. Learning unit objectives

By the end of this LU, successful learners should be able to:

- Choose the more appropriate activities to promote students' involvement and active communication with all the participants within the e-learning course.
- Fit evaluation methods with course content, learning objectives and students' profiles.



4.3. Learning unit content

4.3.1 – Communication methods and technologies to support e-learners

4.3.2 – Evaluation methods



4.4. Applications

Design a communication plan to promote students participation within an e-learning course.

Quiz on evaluation methods.



LU 5. To evaluate and improve an e-learning course

Content

- 5.1. Introduction
- 5.2. Learning unit objectives
- 5.3. Learning unit content
- 5.4. Applications

5.1. Introduction



The evaluation process takes place throughout the e-learning implementation process. It determines the effectiveness of added value and e-learning course efficiency. The improvement step allows the evaluation and review, and validate the expertise needed by the individuals and the organization involved in the e-learning course to determine whether the chosen options have generated the desired outcome.

5.2. Learning unit objectives



By the end of this LU, successful learners should be able to:

- To identify methodologies and criteria to evaluate an e-learning course.
- To identify the dimensions of the evaluation of an e-learning course.
- To present the results from the evaluation of an e-learning course.

5.3. Learning unit content



5.3.1 – Dimensions for the evaluation of an e-learning course

5.3.2 – Methodologies and criteria to evaluate an e-learning course

5.3.3. – Presenting the evaluation of an e-learning course

5.4. Applications



Create a checklist to evaluate an e-learning course.

FINAL ASSESSMENT



The students could create a guide to implement an e-learning course related with a specific subject in which they have knowledge and targeted within their own institution.

Conclusions

An e-learning model is necessary to ensure that e-learning courses are aligned with the institution's overall mission and vision, and that they meet the needs of diverse learners and stakeholders. The model also helps to ensure that e-learning courses are consistent in terms of quality, design, and delivery, and that they are supported by appropriate infrastructure, policies, and resources. When designing the model, there is the need to involve all stakeholders in the development and implementation of the e-learning model, including managers, academic staff, and learners. It is also important to attend the need for ongoing evaluation and refinement of the model to ensure that it remains relevant and effective in the rapidly changing landscape of e-learning (e-Learning Pedagogical Support Unit, 2019).

Understanding the importance of knowing student needs, identifying appropriate learning objectives, and selecting appropriate learning activities and their sequence in the design of effective e-learning courses are key aspects of a module on the implementation of an e-learning course. It is quite important to align learning objectives with student needs and interests, and provide practical guidance for identifying appropriate learning objectives and selecting appropriate learning activities (Clark & Mayer, 2011).

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MODULE 4: INTRODUCTION TO DIGITAL CONTENT CREATION: AUTHORING AND COPYRIGHT

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Introduction



Module aims

To introduce a training curriculum in the field of digital education and digital content creation, focusing on the issues of authoring, copyright, and open access.



Learning outcomes

By following the activities proposed in learning units, the learner will be able to:

1. Identify and use appropriate license during content production
2. Demonstrate reusability of open education resources keeping in mind the copyright issues
3. Retrieve relevant open education resources from publicly available repositories
4. Explain the open access movement, open educational resources
5. Define the role of libraries and librarians in digital education



Resources and working means

Pedagogical methods:

- Inquiry-based learning
- Flipped classroom

Computer resources:

- internet connected device (preferably tablet, laptop or desktop computer),
- internet bandwidth of at least 2 Mbit/s

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Module structure

Module consists of 6 learning units (LU), as follows:

- LU1: Digital content authoring
- LU2: Copyright
- LU3: Content authenticity
- LU4: Open educational resources (OER)
- LU5: Re-usable content
- LU6: Final assessment



LU 1. Digital content authoring

Content

- 1.1. Introduction
- 1.2. Learning unit objectives
- 1.3. Introduction to Digital Content Authoring
- 1.4. Activities
 - 1.4.1. Examples/case studies of Content Authoring Tools use (CAT)
 - 1.4.2. Content authoring tools (CAT) - previous user experience



1.1. Introduction

Introduction to the basic concepts of digital content creation and authoring. Students will be provided with examples/case studies of Content Authoring Tools (CAT) use and will give an account of their possible previous experience with that type of tools.

CAT are software solutions used to build, among other types of content, educational or learning materials (which in turn can be interactive). They allow teachers or content creators to develop, design and create course materials, including, but not limited to interactive lessons, quizzes, videos, audio lectures, images and so on. If CAT produced content is adhering to industry standards, it can be used in a variety of contexts: on a Learning Management System (LMS) online course, on a Content Management System (CMS) / public website, on a video-conferencing system or in a physical classroom, run from a local computer or a mobile device.

When it comes to interactive CAT produced content, if it is to be used inside an LMS course, teachers want to get the results and logs of the student activities and actions in the LMS logs, creating possibilities for grading, progress, and activity reports, as well as learning analytics. For example, if that content is an interactive assessment tool, like a quiz or a lesson with assessment, the results of the student activity (points/grades or answers or both) should be visible in the LMS course gradebook. Those logs can also provide record of access control to the content – who made access to it, how many times they did it, from what location (thus enabling record keeping of access to copyrighted materials given only to the teacher and students in the managed learning environment).

In this module, open-source H5P content authoring framework (<https://www.h5p.org>) will be used as an example Content Authoring Tool software, because of its price (it is free), standards compliance and sustainability (being HTML5 rich content and open-source), accessibility standards compliance (goal for all tools/produced content to be WCAG 2.1 complaint ([– 66 –](https://help.h5p.com/hc/en-</p></div><div data-bbox=)



[us/articles/7505649072797-Content-types-recommendations](https://www.digitools.eu/articles/7505649072797-Content-types-recommendations))), ease of use for authors, inherent reusability features and over 60 interactive types available.



1.2. Learning unit objectives

Students will be able to describe basic digital content authoring concepts and recognize a scenario/context in which different digital content authoring tools can be used.



1.3. Introduction to Digital Content Authoring

Means: Lecture and short videos (presentation and videos will be provided)

Digital content authoring in an educational context is a process of creation, development, and design of multimedia content for learning purposes. Content can be in a variety of file formats, depending on the form and platform of delivery, as well as intended use.

The usual types of digital content are text, images, audio and video, but in the educational context they need to be interactive (if possible), which can be achieved by turning them into interactive e-books or lesson activities, image slideshows or flashcards, automated dictation activities or narrated text resources, interactive videos with integrated assessment and automated playback scenarios, quizzes, games and simulations or combination of all of these (which then serve to enrich educational process while adding some sort of analytics and/or student progress tracking and recording).

Content authoring tools (CAT) desirable features and capabilities can be summed up as (according to <https://www.mpslimited.com/blog/solve-elearning-challenges-with-the-right-content-authoring-tool/>):

- content creation, including adding and editing of images, video, audio, text together with interactive actions
- content management or library of objects, organizing media and other resources and making them searchable
- micro-learning content creation capability
- industry standard compliance for the content packages (SCORM, xAPI...)
- content reuse, especially enhanced when combined with the remix/reuse license publishing
- customization of content / interactive elements for personalized experience (by using HTML, CSS and XML)
- easily added interactive dimension to the content, making the learning more engaging and interesting
- multichannel publishing / functioning of produced content on different platforms, like websites, LMS, emails, etc.



- fully responsive content, accessible on mobile / smaller screens and devices
- produced content compliant with accessibility standards, ensuring learners with disabilities equal access to the learning and education
- tracking of learner progress, which helps teachers to determine effectiveness of the content, as well as the whole course
- both authoring user interface and learner interface should be intuitive and easy to use
- scalability, or quantity of interactive content learning elements in less time
- learning analytics, interoperability, and two-way communication between authoring tool and LMS (if content is provided within the LMS).

CAT can be either a commercial or open-source product, the most prominent solutions being Articulate Storyline 360 (commercial) and H5P (open-source). The choice on whether to use commercial or open-source is usually to the price, sustainability, accessibility of content, ease-of-use / learning curve for authors, reusability, and types of content needed, not necessarily in that order.

Digital educational content is generally delivered using different Learning Management Systems (LMS), where it is organized into online courses and modules. Among other things, when it comes to digital content, LMS enables gradebook capability integration / two-way communication, recording results of student interactions with the content that resulted in points or grades that can be later either compared to their other attempts or used for a final grade. Also, LMS have some sort of learner progress tracking and logging, which in turn can be provided by the interactive content and written to activity logs for learning analytics purposes. LMS by default provide access control / authentication and authorization features for all users (teachers and students) while simultaneously keeping record of all access to copyrighted materials (which makes it easier to provide learning materials online, but to a specific audience, according to the given license).

On the other hand, if the interactive content is provided on an open website powered by a Content Management System (like WordPress or Drupal), that content can be used/viewed/interacted with, but no record / tracking information for specific user will be saved, mainly because interactive content on those websites does not have a way to store results for a specific user on a long-term basis (the visitor of the website will see the results of a i.e. quiz activity, but when they reload that page or visit it several days later, the results will be reset, and they will have to repeat the activity). Still, some teachers / educators use CMS hosted interactive content aware that the tracking of learner progress and results will not be recorded, because they do not need or want that type of information.

The use of CAT in education helps teachers / content creators to produce quality standard compliant and accessible interactive content as an open educational resource (OER). OER will be further explained later in this LU4. CAT can provide meta-information within the content package, including license/rights of use under which the content is provided, authors' names and contact information, content types, target audience age or education level, subject, language, and other descriptive information. This helps users who want to adopt, modify or (re)use OER content created by third parties (teachers or institutions) in their decision making and selection process.



Digital content authoring is mostly done through specialized software packages or frameworks that enable creation and editing of content, packaging and delivery of the content in compliance with the e-learning content standards (like SCORM - Shareable Content Object Reference Model (<https://adlnet.gov/past-projects/scorm>), and xAPI – eXperience API (<https://xapi.com/overview/>)), content re-use and modification (license permitting) and possible integration of student interaction with the content into logging, grading and learning analytics tools (if the content is delivered through a LMS).

Industry standards compliance, accessibility, and sustainability of produced interactive content can be easily achieved when said content is produced using CAT that feature those capabilities. When it comes to industry standard compliance, it can be described as: interactive content will work on a variety of widely used (software or hardware) platforms without any significant modifications to it while retaining learner experience on the same level. The main reason being that standard compliant devices and software solutions used to deliver such a well-structured and designed content package will have little to no effect on the actual content and interactive elements inside. The accessibility of all educational content, and especially digital interactive content, is of utmost importance in ensuring learners with disabilities equal access to learning and education. Interactive content should be tested for compliance with accessibility standards, like WCAG 2.1 (<https://www.w3.org/TR/WCAG21/>), regardless of the authoring tool used, and most of CAT solutions have capabilities to provide accessibility features to the content produced by default.

One of the most widely used open-source CAT is H5P (<https://h5p.org>), a free content authoring framework based on JavaScript distributed under MIT license. Main features and strengths of H5P are: open-source solution, free to use, HTML5 compatible, responsive and accessible. H5P stands for HTML5 package (<https://html.spec.whatwg.org/>), and it supports creation of over 60 interactive content types. H5P does not require a program to be installed on teacher / content author computer or a device for authoring the content, but instead it uses an online content editor (either on their free website or inside an LMS / CMS that authors will use to deliver produced content).

There is also a desktop tool for H5P authoring called Lumi Desktop (<https://app.lumi.education/>) available for Windows, MacOS and Linux OS, but most of the H5P content is being created and modified using online authoring solution. H5P supports three types of integration of content: a direct link or embed from H5P.com (which is a commercial package hosting company), H5P via Learning Tools Interoperability (LTI) (<https://ed.link/community/what-is-the-meaning-of-lti-integration/>), also from H5P.com (supporting various commercial and open-source LMS solutions like Canvas, Brightspace, Blackboard and Moodle) and finally, H5P plugins (CMS Drupal and WordPress and LMS Moodle). H5P plugins provide integration of H5P authoring tools and content for free. Since Moodle version 3.9, H5P has been provided as a core plugin, meaning it is automatically available upon install of Moodle LMS.

There are over 60 H5P interactive content types (<https://h5p.org/content-types-and-applications>), but the most widely used are (more information on specific content types and examples can be found on URLs provided):



- Dialog Cards (<https://h5p.org/dialog-cards>)
- Timeline (<https://h5p.org/timeline>)
- Fill in the Blanks (<https://h5p.org/fill-in-the-blanks>)
- Drag and Drop (<https://h5p.org/drag-and-drop>)
- Quiz (Question Set) (<https://h5p.org/question-set>)
- Arithmetic Quiz (<https://h5p.org/arithmetic-quiz>)
- Find Multiple Hotspots (<https://h5p.org/find-multiple-hotspots>)
- Image Pairing (<https://h5p.org/image-pairing>)
- Interactive Video (<https://h5p.org/interactive-video>)
- Column (<https://h5p.org/column>)
- Mark the Words (<https://h5p.org/mark-the-words>)
- Memory Game (<https://h5p.org/memory-game>)

When it comes to accessibility standard compliance, H5P content types are largely aligned with the WAI-ARIA (Accessible Rich Internet Applications Suite, 2022 World Wide Web Consortium, <https://www.w3.org/WAI/standards-guidelines/aria/>) standard, enabling keyboard navigation and subtitles and descriptions in videos. The goal for the accessible H5P content types is WCAG 2.1 AA support, so the content types have been tested against these criteria (<https://help.h5p.com/hc/en-us/articles/7505649072797-Content-types-recommendations>), but it is worth mentioning that part of the accessibility compliance for a specific H5P interactive content also lies on content authors (the tool does not specifically check whether all the accessibility features have been actively used while creating specific package). It also support eXperience API (xAPI), which enables H5P content types to communicate with the publishing platform about what the user does and achieves.



1.4. Activities:

1.4.1 Examples/case studies of Content Authoring Tools use (CAT)

Investigation on CAT, with special focus on H5P content authoring framework (<https://www.h5p.org>) and its interactive content types. Possible topics:

- H5P Authoring Process: Explain the steps involved in creating interactive content using H5P, including how to select a content type, add content, and customize the design.
- H5P Best Practices: Investigate best practices for creating effective and engaging interactive content using H5P, including tips for creating accessible content and incorporating multimedia elements.
- H5P Community: Research the H5P community and how it supports collaboration and sharing of interactive content among educators and learners.
- H5P Case Studies: Look at examples of how H5P has been used in real-world educational contexts, including both successes and challenges.
- H5P vs. Other CATs: Compare and contrast H5P with other content



authoring tools, examining similarities, differences, and which tool may be best suited for certain types of content or learners.

1.4.2. Content authoring tools (CAT) - previous user experience

Assessment - Short reaction paper (2 pages maximum) on previously used content authoring tools as an author (if any) or a student / end-user. If students have authored content with CAT, a short scenario / experience on the use of that content could be provided (development steps, context, licensing, end-user experience). Topics that can be covered include, but are not limited to:

- Overview of the content authoring tool used and its features
- Comparison with other content authoring tools
- Personal experience as an author or end-user
- Ease of use and intuitive interface
- Effectiveness in meeting learning objectives
- Flexibility in accommodating different teaching styles and preferences
- Integration with other educational tools and platforms
- Challenges encountered during usage
- Improvements that could be made to the content authoring tool



LU 2. Copyright and licenses

Content

- 2.1. Introduction
- 2.2. Learning unit objectives
- 2.3. Introduction to copyright
- 2.4. Creative Commons
- 2.5. Appropriate usage of licenses



2.1. Introduction

Presentation of concepts of copyright and licensing with special focus on Creative Commons licensing framework. Students will be taught to identify and use appropriate license during digital content authoring.



2.2. Learning unit objectives

Identify and use appropriate license during content production.



2.3. Introduction to copyright

Means: Lecture

Lecture on introduction to copyright and licenses.

Topics:

2.3.1. Introduction: What is Copyright?

Throughout history humans have produced various creative work that need some kind of protection of the ownership. Copyright is the protection of intellectual property in these creative works. What does copyright bring to the owner is the exclusive right to perform or copy the work they own. Everyone else needs to pay for performing, broadcasting or copying this creative works. Therefore, national and worldwide copyright policies, regulations and laws were developed. So what does copyright give to their owner or owners. Seckert (2016) in her explanation of the copyright states that it gives them an exclusive right to:

- Copy the work
- Issue copies to the public (essentially to publish the work)
- Rent or lend the work to the public
- Perform, show or play the work in public
- Communicate the work to the public (which means to put it on the internet or broadcast it)



- Make an adaptation of the work or do any of the above in relation to an adaptation.

One should note that there are works whose copyright has expired or that belong to the public domain i.e. is not protected by the copyright. Still, one should keep in mind that even with this type of works that can be used in your work or education the attribution of the authorship should be respected.

2.3.2. The Purpose of Copyright

The purpose of the copyright is to protect the intellectual property of the author or the owner of the work. Although, the copyright is in its nature very restrictive as it protects the author or the owner of the work from unauthorized usage of their work, understanding the different types of copyright and usage of creative work in the educational environments helps us in navigating the field of intellectual property protection.

One of more opened approaches to the copyright is the Creative Commons (CC) approach which regulates the protection of intellectual property but gives more flexibility in using the work under CC licenses mainly in the education and non-profit environment or non-commercial activities.

The other main issue that we should be aware of, especially in the digital environment, is the existence of the “orphan work” or the work where the author or the copyright owner are unknown. It is still protected but the holder of the copyright cannot be located. These works are often parts of the information and heritage institutions such as: libraries, archives, museums etc. There is an “orphan work” database on the EUIPO page (<https://euiipo.europa.eu/ohimportal/en/web/observatory/orphan-works-db>) where one can search for these type of works.

2.3.3. Avoiding the copyright infringement

When discussing the copyright laws one should be aware that in different countries there is a different approach to copyright and we can observe very strict copyright laws or a bit liberal. The educational environment is usually not having clear regulations, so teachers are sometimes left alone in their decisions about usage of certain creative works. Usually there is a policy of common sense and fair use which is more regulated and guided in the USA than in the rest of the world. For the European Union, there is a European union intellectual property office with its section of copyright for the teachers. This is a good resource that one can be use when in doubt.

Seckert (2016) focuses more on the UK laws but gives a broad overview of the ways that copying works can be undertaken without infringing copyright laws. These include copying:

- Very small amounts of work (copyright protects substantial part of a work although no definition of what “substantial” might be is provided in the UK law and it does not relate simply to quantity)
- Where copyright has expired; copyright protection is limited by duration to a set number of years thus copying of a work which is out of copyright and in the



“public domain” is permitted

- Under a statutory exception; for instance, copying in accordance with “fair dealing” in the UK for the purposes of quotation, criticism and review
- Under a collective license, which gives permission from a broad range of copyright holders to carry out activities restricted by default under law – for example the CLA offers licenses for the education sector to permit multiple copying of published works within limits
- Under some other form of license issued by the rights holder, such as a license agreement for an electronic resource or direct permission obtained for use of a specific piece of content
- An “orphan work” using the UK’s Orphan Work Licensing Scheme or EU Directive on orphan works

For further information on teachers questions on copyright look EUIPO Observatory (<https://euipo.europa.eu/ohimportal/en/web/observatory/faq-teachers-pl>). The Observatory provides answers to the teachers’ questions in relation to their national law.

2.3.4. Issues and examples of copyright breach in e-learning

Recent events have forced teachers to use digital environment and learning management systems in their teaching. Teachers wanted to offer their student learning materials from books, journals, magazines or even different types of audio-visual media. Especially in the sense of further exploring certain topics or further reading activities that teachers give to their students. As Seckert (2016) well identifies: “In a digital environment it is the logical next step not just to suggest what student should read, but provide them with a digital copy of the text. In the case of distant learning, the teacher may feel some of the resources will be difficult to obtain for students who may not have easy access to an academic library.” One of the solutions is to have a good collaboration with the institution’s library that will enable materials from the reading lists accessible to the students through the library and not LMS that will protect the copyright. Furthermore, this will enable the library to negotiate better deals with third-party providers or publishers to make digital materials available to their students and teachers.

The second case that Seckert (2016) identifies is the digitization of archival materials that are harder to access and obtain. Teacher should be aware that scanning or digitizing such materials and sharing the files in PDF format in digital environment is the violation of the copyright. Furthermore, Seckert identifies that “Only in the USA, where “fair use” covers educational copying, an institution might undertake this practice, but specific guidelines govern what is permitted.” On the other hand, taking in the account the UK law, she further explains: „It is widely accepted that the copying of images into digital document (such as PowerPoint slide deck) for presentation to a room for students is now defensible in the UK under the illustration for instruction exception, as long as the teaching is for non-commercial purposes.” The only unclear issue is if this is also acceptable if the students are online and the presentation and even its recording are uploaded to the Learning management system.

The second question that usually arises in the higher education environment is the question of ownership of the materials created by the teacher. On the one side



teachers are sometimes unaware of their own publishing contracts. This means that when publishing articles or books they sign the contracts giving their ownership rights to the publisher. Many teachers and researchers are unaware of the copyright restrictions and the fact that these contracts usually prohibit making their research freely available to the public or even depositing it in the institutional repository. The third question that teachers have and pose is the ownership of their own teaching and learning content. Who owns their lecture or screen recordings, their presentations (usually in PowerPoint) and other types of learning content they develop. Is this the ownership of the institution or the teacher? What happens if the teacher changes the institution? Who then owns developed content? The approach is not clear as under the most employment laws the owner would be the institution, but lecture and its recording is considered a performance and thus this could fall under the performance rights therefor right cannot be automatically assigned to the employing institution. The complexity of this issue is in the non-commercial organizations, usually solved by the “unwritten agreement that respects academic and intellectual freedom” (Seckert, 2016).

The examples and issues raised only show the necessity for teachers and student education in copyright literacy. There is a growing need to create courses on educating teachers on proper usage of the copyright to enable their informed approach to the vast digital environment, ethical usage of copyright protected materials and last but not least to protect themselves from copyright infringement.



2.4. Creative Commons

Creative commons (CC) is a non-profit organization and network that promotes the open culture vs. the restrictive permission culture. It was founded in 2001 by Lawrence Lessig, Eric Eldred and Hal Abelson. In 2002 they published their copyright licenses that enable easier negotiations of specific rights between the owner and the user. Until the publishing of the CC licenses the copyright was under the restrictive “all rights reserved” permission. So this new and more open type of licenses enabled easier negotiation practices between the owner and the user. It enables authors of creative works to communicate their rights in an “easy-to-understand one-page explanation of rights, with associated visual symbols” (Wikipedia - [https://en.wikipedia.org/wiki/Creative Commons](https://en.wikipedia.org/wiki/Creative_Commons)). They keep copyright but explain which rights they keep and which they wave for the benefit of new knowledge creation or sharing of the ideas. The CC goal is to promote the open culture and sharing of the creative work in the digital environment. The consider sharing to be “contextual, inclusive, just, equitable, reciprocal, and sustainable (<https://creativecommons.org/>)”.

2.4.1. Creative Commons in the context of sharing and openness

Being part of the open culture movement promotes culture of sharing works thus needing less restrictive intellectual property rights. David Wiley on his blog (<https://opencontent.org>) further explains the background of the open culture through 5R Framework and the philosophy of sharing:



1. **Retain** - make, own, and control a copy of the resource (e.g., download and keep your own copy)
2. **Revise** - edit, adapt, and modify your copy of the resource (e.g., translate into another language)
3. **Remix** - combine your original or revised copy of the resource with other existing material to create something new (e.g., make a mashup)
4. **Reuse** - use your original, revised, or remixed copy of the resource publicly (e.g., on a website, in a presentation, in a class)
5. **Redistribute** - share copies of your original, revised, or remixed copy of the resource with others (e.g., post a copy online or give one to a friend)

The CC defines creations as a free cultural work and most of the licenses have almost no restrictions. Still, there is a set of licenses that are limiting use of the work and content is not considered a free cultural work. More on the CC license in the next chapter.

2.4.2. The Creative Commons Licenses

There are six available licenses in Creative Commons to choose from. These are:

- *Attribution* (CC BY),
- *Attribution-NoDerivs* (CC BY-ND),
- *Attribution-NonCommercial* (CC BY-NC),
- *Attribution-ShareAlike* (CC BY-SA),
- *Attribution-NonCommercial-NoDerivs* (CC BY-NC-ND),
- *Attribution-NonCommercial-ShareAlike* (CC BY-NC-SA).

Additionally, there is a license Public domain which can be freely used and does not require attribution. All these license categories or contracts are based on the combination of the elements that describe their allowed or potential usage. So the types of attribution are a combination of three basic categories: ShareAlike, NoDerivatives, NonCommercial Use. The combinations create six categories that are based on the level of their free usage where CC-BY is with the least constraints while the CC BY-NC-ND license has the most constraints. So, what these licenses mean and how do we interpret them is best seen in the picture below:



Foter 2015 (<https://foter.com/blog/how-to-attribute-creative-commons-photos/>)

The difference between these licenses is in the level of openness and ability to share the work under CC license. It goes from mostly free to copy with the need to attribute work Attribution (BY) License to the least open or free license which states there are no derivatives to be made, the usage must be non-commercial with the obligatory attribution.

The CC defines creations as a free cultural work and materials licensed by the CC BY and BY-SA are a free cultural work as is anything in the world's wide public domain marked either with CC0 or the Public Domain Mark. The other CC licenses are only limiting use and work under these licenses is not considered free cultural work.

2.4.3. How to Use Creative Commons Licenses

Every license allows us to copy the work, distribute it, display it publicly as well as make public performance such as webcasting and to shift the works into another format as a copy. Furthermore, CC license applies worldwide, lasts for the duration of the work's copyright, is non revocable and is not exclusive.

Once you choose the license it should be clearly marked on your work. Foter (2015) give examples of the licenses and what they stand for in the following picture.

CREATIVE COMMONS LICENSES		COPY & PUBLISH	ATTRIBUTION REQUIRED	COMMERCIAL USE	MODIFY & ADAPT	CHANGE LICENSE
	PUBLIC DOMAIN	✓	✗	✓	✓	✓
	CC BY	✓	✓	✓	✓	✓
	CC BY-SA	✓	✓	✓	✓	✗
	CC BY-ND	✓	✓	✓	✗	✓
	CC BY-NC	✓	✓	✗	✓	✓
	CC BY-NC-SA	✓	✓	✗	✓	✗
	CC BY-NC-ND	✓	✓	✗	✗	✓

You can redistribute (copy, publish, display, communicate, etc.)

You have to attribute the original work

You can use the work commercially

You can modify and adapt the original work

You can choose license type for your adaptations of the work.

Foter 2015 (<https://foter.com/blog/how-to-attribute-creative-commons-photos/>)

2.4.4. Creative Commons content retrieval and tools

There is a variety of tools that can help you with CC licenses and its implementation. One of them is the online tool that help automatically generate attributions. The Open Attribution Builder available (<http://www.openwa.org/attrib-builder/>) released under Open Attribution Builder is licensed under [CC BY 4.0](#). Managed by [WA SBCTC](#).

The other useful tool will help you search for the CC content and enable easier usage or remixing and sharing the content that is under the CC license. It is the Creative Commons repository which can be found on <https://search.creativecommons.org/>



2.4.5. Creative Commons learning activities

2.4.5.1. Investigation and discussion activities

Investigate the different types of licenses, with special focus on Creative Commons licensing framework:

- Identify the different types of licenses available and explain their purpose.
- Explore the history and development of Creative Commons licensing framework.
- Explain the different types of Creative Commons licenses and their features (Attribution, Share-Alike, Non-Commercial, No Derivatives, and Public Domain).



- Discuss the advantages and disadvantages of using Creative Commons licenses in comparison to traditional copyright.
- Investigate how different organizations, such as schools, non-profits, and for-profit companies, are using Creative Commons licenses.
- Find examples of Creative Commons-licensed content online, such as images, videos, and music.
- Evaluate the impact of Creative Commons licensing on the media industry and the sharing of information.
- Discuss how Creative Commons licensing has impacted the education sector and how it can be used in the classroom.
- Create a presentation or report on your findings, highlighting the importance of Creative Commons licensing and its benefits in various industries.



2.4.5.2. Appropriate usage of licenses activities

To create a hands-on task and real-life experience in students involved in the course the following activities could be undertaken.

Students are given examples of content and are choosing the appropriate license according to context and they need to explain their reasoning for choosing a specific CC license for each content type:

- An original photograph taken by the student that they want to share on their personal blog.
- A research paper that the student wants to share on their personal website.
- A video tutorial on a software application that the student wants to share on their YouTube channel.
- An original artwork that the student wants to use for a school project.
- A presentation that the student wants to share with classmates and/or teachers.
- A music track created by the students that they want to share on Soundcloud.
- An e-book that the student wants to publish on a digital platform.
- An educational video series that the student wants to create and share on a school or university website.
- A webcomic series that the student wants to publish on a personal blog or social media.
- An online course that the student wants to create and share on a learning management system.



2.4.5.3. Copyright the Card Game

Copyright literacy can be taught as a card game in on site and online training. This is a group work that can encourage discussion and deeper understanding of the



copyright. The targeted audience could be teachers but it is also opened for students and future library professionals.

The explanation can be found on the website Copyright the Card Game:
<https://copyrightliteracy.org/resources/copyright-the-card-game/copyright-the-card-game-online/>



LU 3. Content authenticity

Content

- 3.1. Introduction
- 3.2. Learning unit objectives
- 3.3. Preventing plagiarism and properly citing resources
- 3.4. Tools for managing references and checking for plagiarism
- 3.5. Citing resources - exercise



3.1. Introduction

Introduction to the process of content authenticity and plagiarism checking. Available tools, policies, and frameworks for plagiarism checking. Plagiarism prevention and education.



3.2. Learning unit objectives

Demonstrate usage of citing styles in the creation of educational materials.
Ability to select an appropriate authenticity tool.



3.3. Preventing plagiarism and properly citing resources

Plagiarizing means taking someone else's work and passing it off as your own. This can be the entire work, a paragraph, a sentence, etc. Basically, any part of a paper is taken from someone else and presented as one's own work without crediting the original or the author. Plagiarism is a major problem in education, and although it is usually considered intentional, it can also occur by accident. Therefore, it is important that students be trained in plagiarism prevention and use tools that can help them prevent these types of acts.

When citing resources in your work you should follow two rules. One is in-text citation and the other is the reference entry. The difference in the citing styles is only in the way these are organized. In all the styles, in-text and reference entry should be written.

How to cite a book according to APA and MLA citation frameworks:

The APA format regulates that these should be written as follows:

The reference entry

Last name, Initials. (Year). Book title (Editor/translator initials, Last name, Ed. or Trans.) (Edition). Publisher.



The in-text citation

(Last name, Year, p. page number)

The MLA format regulates that these should be written as follows:

The reference entry

Last name, First name. Book title. Publisher, Year.

The in-text citation

If the name of the author appears in the sentence that use only (page number) or if it is not named than (Last name, page number)

One should keep in mind that there are different types of resources such as journals, books, videos etc. Both styles have an extensive approach to regulating how each of these should be written. For further information: <https://apastyle.apa.org/> and https://owl.purdue.edu/owl/research_and_citation/mla_style/mla_formatting_and_style_guide/index.html

3.4. Tools for managing references and checking for plagiarism

Most higher education institutions have a plagiarism checking tool such as **Plagscan** (<https://www.plagscan.com/en/>). These are at first meant to help students in identifying parts of their work that might be considered plagiarism to avoid possible inconveniences. The advantage of this program is that it compares documents in their own database to find duplicated text. So, the more documents it has the more precise detection is. The main goal of checking your document through Plagscan plagiarism detection software is to check and improve your work before finally submitting it for publication or approval. There is no limit in checking the document so it can go through multiple checks thus enabling the improvement of your work. This can also be considered as a learning tool, as it teaches students how to properly write academic papers from the perspective of avoiding plagiarism.

To prevent plagiarism from happening we need educated students and teachers. One of the activities that should be taught is the proper citing of the resources. Still, sometimes managing references and carefully checking them could be a bothersome task so students and teachers could use some of the management referencing software as Mendeley (<https://www.mendeley.com/>) and Zotero (<https://www.zotero.org/>). These enable the management of the references during the research and identification of the references cited in the work but also the easier or automatic generation of bibliographic references according to different citing styles.

One should be aware that there is no good or bad referencing styles. Usually, these styles are in the guidelines for your work editing or submission and should be



carefully implemented.



3.5. Citing resources – exercise

Students are given an article, a picture, a book, and a video.

- They should exhibit their knowledge of the proper citing resource by applying one of the citing styles.
- Using Microsoft Word and tool “manage sources” students need to create a bibliography according to MLA and APA citation styles
- Student should build a Zotero or Mendeley library on the topic of their own choice



LU 4. Open educational resources (OER)

Content

- 4.1. Introduction
- 4.2. Learning unit objectives
- 4.3. Introduction to OER
- 4.4. OER repositories
- 4.5. Activities
 - 4.5.1. Self-assessment



4.1. Introduction

Students will be informed on types of open education resources, OER Commons, open education practices, and the scope of open pedagogy.



4.2. Learning unit objectives

Demonstrate usage of open educational resources. Use different types of repositories and retrieve materials.



4.3. Introduction to OER

Means: Lecture - Introduction to basic concepts OER Commons, Open textbook

Open educational resources (OER) are openly licensed, freely available educational materials that can be modified and redistributed by users. They can include any type of educational resource, from syllabi to full courses. It is also important to distinguish what is NOT an OER, and this table from Abbey Elder book "The OER starter kit", incidentally available as an OER under CC Attribution 4.0 International License clearly shows that:

Material Type	Openly Licensed	Freely Available	Modifiable
Open educational resources	Yes	Yes	Yes
Free online resources under all rights reserved copyright	No	Yes	No
Materials available through the University Library	No	Yes	No
Open access articles and monographs	Yes	Yes	Maybe



[The OER Starter Kit](#) by Abbey Elder is available under a [Creative Commons Attribution 4.0 International License](#).

These materials can include textbooks, videos, assessments, lesson plans, and any other educational content. OER is an important aspect of education, as it allows for the sharing of knowledge and resources across the world, making education more accessible and affordable. The main benefit of OER is that it allows educators to customize and adapt educational resources to suit the needs of their classes and their students. Delivering educational material as OER under a CC license makes it easier to translate and localize, too.

There are several types of OER available, including open textbooks, open courses, open access journals, and open data. Open textbooks (<https://www.tonybates.ca/2015/06/10/writing-an-online-open-textbook-is-it-worth-it/>) are an excellent example of OER. They are full-length textbooks that are available for free and can be downloaded, edited, and distributed without any copyright restrictions. Open courses are a set of learning resources that can be accessed by anyone with an internet connection. Open access journals are academic journals that are freely available to read and publish in and can also be viewed as an OER (<https://guides.vpcc.edu/OER/journals>). Open data is also a form of OER (<https://education.okfn.org/handbooks/open-data-as-open-educational-resources/index.html>), which includes datasets that can be used and reused by anyone for research purposes.

OER Commons (<https://www.oercommons.org/>) is a free online platform that provides access to a vast collection of OER. It is a public digital library that contains a wide range of educational resources, including videos, images, assessments, and lesson plans. OER Commons is a powerful tool for educators, as it allows them to easily search for, evaluate, and access OER that can be used in their teaching. It also provides a platform for educators to create and share their own OER. OER can be filtered by subject, educational level or educational standard.

Creative Commons (CC) licenses are an integral part of Open Educational Resources (OER) because they provide a legal framework for sharing and reusing educational content. OER are teaching, learning, and research resources that are freely available and openly licensed for use by anyone. Creative Commons (CC) licenses are covered in learning unit 2 of this chapter. CC licenses provide a way for creators to allow others to use, distribute, and edit their work while still retaining some control over how it is used. There are several types of CC licenses, each with different levels of restrictions.

Overall, the use of Creative Commons (CC) licenses in the OER community has facilitated the growth and development of a vast and diverse collection of educational resources that are freely available to educators and students worldwide. The combination of OER and CC licenses has enabled more equitable access to education and increased opportunities for collaboration, innovation, and creativity in teaching and learning.

OER adoption is a term that describes a process of successfully including open materials produced by other creators or institutions into your teaching practice. A very valuable and helpful resource / checklist on responsible OER adoption



(<https://harford.libguides.com/c.php?g=321511&p=7229977>) tells of five necessary steps:

1. Review the materials (Do provided materials meet standards?)
2. Modify the OER if necessary (Formatting and license consideration, hosting.)
3. Attribution of OER (Under which CC license was it published?)
4. Curriculum approval (If needed.)
5. Delivery of OER to students (Notice how this is the last of five steps, being the most important?)

When it comes to OER adoption, the evaluation of the found content is important. Number of university libraries around the world have developed their own evaluation forms or rubrics for individual OER, like open textbooks (<https://opentextbc.ca/adoptopentextbook/wp-content/uploads/sites/143/2019/09/BC-Open-Textbooks-Review-Rubric-7.docx>) or even whole OER repositories (OER repository rubric: <https://bcoel.ca/resources/oer-finding-tools/>) that can help teachers, librarians or other stakeholders to find and evaluate the quality content they want to include in their own teaching.

OER creation can be seen as a different process than the creation of educational materials. The author of OER provides free and open learning materials for a global community, and those materials will be shared in editable form so others can change them and modify to their needs and needs of their learners. Also, good OER is maintained and updated (especially with new findings, resources and possible errors included in the original OER). (*Text on OER creation adapted from [Not Just Another Textbook](#) by [Lauri Aesoph](#), which is licensed under a [CC BY 4.0 International License](#).)*



4.4. OER repositories

In simplest terms, OER repositories are websites used to organize and publish OER. They help teachers and organizations that want to publish or adopt OER. They usually have search tools and organization of OER into different collections (either by OER type or topic or both). Most frequently used ones are:

- Open Textbook Library (<https://open.umn.edu/opentextbooks>)
- OER Commons (<https://www.oercommons.org/>)
- MIT OpenCourseWare (<https://ocw.mit.edu/courses/find-by-department/>)
- BC Campus OpenEd (<https://open.bccampus.ca/>)
- Merlot Open Textbooks Collection (<https://www.merlot.org/merlot/categories.htm>)
- Galileo Open Learning Materials (<https://oer.galileo.usg.edu/>)

Some of the OER-related websites are used as federated search tools, searching across multiple sources, like OASIS (<https://oasis.geneseo.edu/>), others are subject-



specific repositories like Chem Collective (<https://chemcollective.org/home>) used for teaching chemistry, Open Geography Education (<https://www.opengeography.org/>) for teaching on the subject of geography, or Engineering Technology Simulations (<https://engineertech.org/>) used for OER for teaching engineering and physics, and so on.



4.5. Activity

4.5.1. Self-assessment on OER

Short quiz activity on OER and repositories, topics covered / possible questions:

- Definition and purpose of Open Educational Resources (OER)
- Different types of OER
- Advantages and disadvantages of using OER in education
- Examples of OER repositories
- Navigating and searching OER repositories
- Evaluating the quality and relevance of OER
- Best practices for using OER and repositories
- Understanding Creative Commons licensing and attribution requirements
- Adapting and remixing OER
- Contributing to OER repositories



LU 5. Reusable content

Content

- 5.1. Introduction
- 5.2. Learning unit objectives
- 5.3. Reusable content
- 5.4. Re-using content in the LMS
- 5.5. Publicly available resources



5.1. Introduction

In the educational context, the use of reusable and open content, also known as reusable learning objects (RLOs), has become increasingly popular due to the numerous benefits it provides. The main purpose of reusable content is to create and share high-quality educational resources that can be adapted and modified for use in different contexts. RLOs can save educators a significant amount of time and effort in creating new materials, while also providing learners with access to a wide range of educational resources that can be used to support their learning goals.

To facilitate the use of reusable content, it is important to ensure that the resources are properly documented and organized. This is where metadata is used, which refers to information about the content, such as its author, date of creation, and subject area, among other data that can be packaged with the educational content. By adhering to standard metadata formats, such as IEEE Standard for Learning Object Metadata - IEEE LOM (<https://standards.ieee.org/ieee/1484.12.1/7699/>) or Dublin Core Metadata Element Set (also known as "the Dublin Core") (<https://www.dublincore.org>), educators can ensure that their resources are easily discoverable and can be integrated into learning management systems (LMS) or other online platforms where they can be used, modified and published (license permitting).

One important aspect of reusable content is its compatibility with various standards, such as SCORM or xAPI, which allow for the seamless integration of learning resources into different LMSs or online environments. This is particularly important when it comes to collaborative projects or when sharing resources across different educational institutions. The use of standards ensures that the resources are compatible and can be accessed and used by a wide range of users (both teachers/content creators and learners/students).

When it comes to the online activities related to reusable content, there are numerous possibilities, both within and outside of LMSs. In addition to using reusable content within traditional courses and assignments, educators can also leverage open educational resources (OER) and Creative Commons licenses to share their resources with a wider audience. Collaboration among educators, learners, and subject matter



experts can also play a key role in the creation and sharing of reusable content, as it allows for the pooling of resources and expertise to create high-quality educational resources.



5.2. Learning unit objectives

Demonstrate proper usage of re-usable content and publicly available resources. Ability to select and re-use RLO (reusable learning objects) either in original form or with additional improvements/adjustments.



5.3. Re-usable content

For the purpose of this learning unit, we will describe reusability features of one of the most popular Learning Management Systems – Moodle LMS.

Moodle provides a wide range of activities and resources for teachers to create interactive and engaging courses. It also provides teachers with the ability to reuse content from different courses and activities on the local system, as well as from other Moodle servers, which can save time and effort for instructors. The LMS offers several features to facilitate content reuse, including activity cloning and copying inside the course as well as export/import options for the whole course (all activities and resources) or individual activities and resources from/to other courses/servers. With this feature, teachers can quickly duplicate activities and resources from one course to another, saving time and maintaining consistency across courses.

Another feature of Moodle that supports content reuse is the question bank export and import. The question database in Moodle allows instructors to create a bank of questions that can be used in quizzes and other activities. Those banks are organized into categories, and there is an option to export just one question, one category or the whole question bank for the course in variety of formats, by default to Aiken, GIFT, Moodle XML or XHTML formats (https://docs.moodle.org/401/en/Export_questions), and there are plugins available for other export formats. With the export and import feature, teachers can easily move questions from one course to another or share them with other Moodle users. This can be especially useful for instructors who teach similar courses or topics, either on the same institution or several different ones (that also use Moodle).

Finally, the H5P content authoring framework is integrated into Moodle and allows instructors to create a wide range of interactive content types, such as interactive videos, quizzes, and presentations. H5P content is stored in the content database which beside storing feature also enables import and export feature, which allows instructors to share interactive activities across different Moodle sites (currently only H5P content is supported in the content database, but in the future, variety of different formats will be available). These H5P content types can be exported and imported into different Moodle courses, allowing instructors to reuse interactive content across different courses and activities. This can be especially beneficial for instructors who want to create engaging and interactive courses that incorporate a variety of multimedia elements.



5.4. Re-using content in the LMS

Students develop content in LMS and share it with others. Re-using from one



course to another. Example: development of quiz and sharing questions from one course to another and reuse of H5P content.



Examples of activities:

- **Create a quiz in Moodle:** In this activity, students will create a quiz using the Moodle Quiz activity. They can add questions to the quiz, such as multiple choice, true/false, or short answer questions. Once the quiz is created, they can export the quiz and share it with other students or teachers who can import it into their own Moodle courses.
- **Share questions between courses:** In this activity, students will use the Moodle Question Bank to create a bank of questions that can be shared between courses. They can add questions to the bank, categorize them, and then export the bank. Other students or teachers can then import the bank into their own Moodle courses and use the questions in quizzes or other activities.
- **Develop an H5P activity:** In this activity, students will use the H5P content authoring tool to create an interactive activity, such as a Drag and Drop or a Fill in the Blank activity. Once the activity is created, they can export it as an H5P file and share it with other students or teachers who can import it into their own Moodle courses.
- **Reuse content from one course to another:** In this activity, students will clone an activity or resource from one Moodle course and import it into another Moodle course. For example, they could clone an assignment or a lesson and then modify it for use in a different course. This activity will help students see how content can be reused and repurposed in different educational contexts.



5.5. Publicly available resources

Publicly available resources, such as public domain (PD) photos, images, artwork, videos, and text-based resources, can be an asset for educators in the digital age. These resources can be used to supplement existing educational materials, create new materials, or enhance learning experience for students.

In addition to being free and easily accessible, PD resources can also offer a range of diverse perspectives and topics that might not be available through traditional textbooks or educational materials. This allows educators to create a more comprehensive and engaging learning experience that meets the needs and interests of a wider range of learners.

Many public domain resources are licensed under Creative Commons or similar open licensing frameworks, which allow for reuse and adaptation of the original material. However, it is still important to properly attribute the original source and adhere to any licensing restrictions to avoid issues with copyright infringement.

Overall, the use of publicly available resources in the educational context can be



a valuable tool for educators trying to create engaging learning experience for their students, while also promoting open access and the sharing of knowledge.

OER repositories are created at institutions and by organizations to host, organize, and make searchable courseware and individual learning objects for future (re)use. One of the OER repository list curated by librarians can be found here: <https://nsufl.libguides.com/c.php?g=948473&p=6839321>

A list of publicly available resources online by content type:

Public Domain Photos/Images/Artwork:

- Pexels (<https://www.pexels.com/public-domain-images/>)
- Pixabay (<https://pixabay.com/>)
- Wikimedia Commons
(https://commons.wikimedia.org/wiki/Main_Page)

Public Domain Videos:

- Videezy (<https://www.videezy.com/>)
- Coverr (<https://coverr.co/>)
- Mazwai (<https://mazwai.com/>)

Public Domain Text-Based Resources:

- Project Gutenberg (<https://www.gutenberg.org/>)
- Internet Archive (<https://archive.org/>)
- Bartleby (<https://www.bartleby.com/>)
- WikiSource (https://wikisource.org/wiki/Main_Page)

FINAL ASSESSMENT (LU6)

Project work (workload 180 minutes): Using publicly available repositories of OER, find and re-use digital content and apply a CC license (if applicable). Explain a process in a short paper (up to 1000 words).



MODULE 5: SMART TOOLS FOR DIGITAL CONTENT CREATION

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Introduction

Digitools refers to digital tools, applications, and software that can be used in education to enhance teaching and learning. These tools can help educators engage students, make content more accessible, and facilitate collaborative learning. Some examples of digitools include learning management systems, multimedia authoring tools, digital assessment tools, and virtual and augmented reality applications.

Digital competencies in teaching refer to the skills and knowledge that educators need to effectively integrate digital tools into their teaching practice. This includes not only technical skills but also pedagogical skills, such as knowing how to design effective digital learning activities and assessments. Some common digital competencies include digital literacy, digital content creation, digital communication, and digital citizenship.

In today's rapidly evolving digital landscape, digital competencies in teaching are becoming increasingly important for educators at all levels. Developing these competencies can help educators improve their teaching practice, enhance student learning, and prepare students for the digital world they will encounter beyond the classroom. Many educational institutions offer professional development opportunities to help educators develop and enhance their digital competencies.

The module contains basic information about different, easy-to-use tools that can be applied in the course content development. The module offers a short description of the software, pointing out the advantages in enhancing the teaching and learning process. The applications are designed to provide support for the development of didactic content.

Module aims



The “Smart tools for digital content creation” module aims to provide basic information so that the learners can develop skills to select, use and integrate tools for course content, adapted to own didactic requirements.

Learning outcomes



By following the activities proposed in the learning units, the learner will be able:

1. to explain the selection of a specified software for content creation
2. to develop simple educational resources ready for implementation using the specified software
3. to predict advantages and disadvantages of the new resource implementation in real educational environment



Resources and working means



The following software are necessary:

1. Kahoot <https://kahoot.com/home/mobile-app/>
2. Doodly <https://www.doodly.com/>
3. Google Jamboard <https://jamboard.google.com/>
4. SLIDO <https://www.slido.com/>
5. Padlet <https://padlet.com/>
6. Coggle <https://coggle.it/>
7. Miro <https://miro.com/>



Module structure

LU 1. Kahoot – web tool for teaching and assessment

LU 2. Doodly – Super Engaging Tool

LU 3. Google Jamboard

LU 4. SLIDO – engage audience through live polls, quizzes, and Q&A sessions

LU 5. How to use Padlet in teaching-learning activities

LU 6. Coggle – a visual mind-mapping tool in online teaching activities

LU 7. Miro – whiteboard and more for remote classes, distance learning and working groups



LU 1. KAHOOT – web tool for teaching and assesment



1.1. Introduction

Kahoot is a popular game-based learning platform that many teachers use in their classrooms. Some refferences about Kahoot:

1. Kahoot! website: <https://kahoot.com/> This is the official website of Kahoot! It provides information about the app's features, pricing, and how to get started.
2. "5 Ways to Use Kahoot! in the Classroom" by Michael Karlin, EdTech Magazine, March 14, 2017. <https://www.edtechmagazine.com/k12/article/2017/03/5-ways-use-kahoot-classroom> This article provides teachers with ideas for using Kahoot! in the classroom. It includes examples of how to use Kahoot! for formative assessment, review games, and differentiation.
3. "How Kahoot! Can Make Learning Fun for Students and Teachers" by Pat Hadler, EdSurge, October 4, 2017. <https://www.edsurge.com/news/2017-10-04-how-kahoot-can-make-learning-fun-for-students-and-teachers> This article discusses the benefits of using Kahoot! in the classroom, such as engagement and motivation. It also provides examples of how to use Kahoot! for review, assessment, and classroom management.
4. "How to Use Kahoot! for Remote Learning" by Laura Ascione, eSchool News, March 30, 2020. <https://www.eschoolnews.com/2020/03/30/how-to-use-kahoot-for-remote-learning/> This article explains how Kahoot! can be used for remote learning. It provides tips for creating effective Kahoot! games, managing Kahoot! games remotely, and using Kahoot! for social-emotional learning.
5. "Why Kahoot! Is a Teacher's Best Friend" by Tom Vander Ark, Getting Smart, August 14, 2018. <https://www.gettingsmart.com/2018/08/why-kahoot-is-a-teachers-best-friend/> This article explains why Kahoot! is a great tool for teachers. It discusses the benefits of gamification in the classroom, the ease of use of Kahoot!, and the ability to use Kahoot! for formative assessment and differentiation.

An interactive educational tool called Kahoot can be used to engage students and improve the learning process in a range of classroom settings. It can be utilized successfully in the following instructional scenarios:

- Icebreakers: To start a course or introduce a new subject, use Kahoot as an icebreaker exercise. It's a fantastic method to engage learners and pique their interest in the subject.
- Preparation for Class: Give students Kahoot challenges or tests to finish before class. They can use this to help them get ready for forthcoming conversations or events. As part of your homework or individual study, give your students Kahoot problems to solve. They can revisit the content outside of class thanks to this.



- **Group Assignments and Competitions:** As part of group projects or team-building activities, have students make their own Kahoot quizzes to promote cooperation and competitiveness.
- **Within-Class Exercises:** An interesting idea would be to use Kahoot surveys or quizzes to gauge student comprehension and maintain student interest throughout class discussions or lectures.
- **Formative Assessment:** Use Kahoot to get instantaneous student feedback so you may modify your lesson plans and clear up any misunderstandings.
- **Review and Evaluation:** Before an exam or quiz, use Kahoot as an entertaining and engaging approach to go over the subject. The teacher can make quizzes to evaluate students' comprehension and knowledge of the material.



1.2. Learning unit objectives

By following the learning unit, the learners will be able to:

1. Explain the selection of Kahoot software as web tool for teaching and assessment
2. Develop simple educational resources ready for implementation using the Kahoot software
3. Predict advantages and disadvantages of the new resource implementation in real educational environment



1.3. How to Create a Kahoot!

Overall, teachers seem to appreciate the gamification and engagement that Kahoot brings to the classroom, as well as its usefulness for formative assessment and differentiation.

Here's a brief guide on how to use Kahoot:

1. **Create an account:** Go to the Kahoot website (<https://kahoot.com/>) and click on "Sign up" to create an account.
2. **Create a Kahoot:** Once you have created an account, you can create a Kahoot by clicking on "Create" and filling out the necessary information such as quiz or survey title and questions.
3. **Customize your Kahoot:** Kahoot allows you to customize your Kahoot by adding images, videos, and music. You can also set up your Kahoot's privacy settings and decide whether or not to allow players to see the questions and answers.
4. **Launch your Kahoot:** Once you have created your Kahoot, you can launch it by clicking on "Play." This will generate a unique game PIN that you can share with your players.
5. **Invite players:** Players can join your Kahoot by entering the game PIN on the Kahoot website or app. They can then answer the questions on their devices in



real-time.

6. Analyze results: As players respond to your Kahoot, you can monitor the results in real-time. Kahoot also provides analytics to help you understand the data collected during your game.

7. Use other features: Kahoot offers other features such as surveys, Jumble, and Team Mode. You can use these features to engage your players and gather valuable insights.

8. End the game: Once your game has ended, you can access the results and analytics. You can also share the game report with your players to show them how they did.

Kahoot is a fun and interactive tool that can be used in various settings such as classrooms, meetings, and events. It's easy to use and can help you engage your audience and collect valuable feedback.



Application

Develop one test as formative evaluation educational resource.



LU 2. Doodly – Super Engaging tool

2.1. Introduction



Doodly is a software program designed for creating whiteboard animations and explainer videos.

It provides users with a library of pre-designed images and animations tools to create engaging videos quickly and easily. With Doodly, users can create hand-drawn and whiteboard-style videos, and customize elements such as characters, backgrounds, props, and text. Doodly is commonly used by businesses, online marketers, to create promotional videos but educators to create educational content also use it.

The integration of whiteboard animation production tools and explainer movies in didactic activities by teachers has grown increasingly crucial in today's academic scene. These multimedia tools have various advantages and provide a dynamic and interesting manner to present educational content. To begin with, whiteboard animations and explainer movies adapt to a variety of learning styles. Students have various approaches to learning, and visual and auditory learners, especially, are helped by this blend of visual content, verbal explanations, and interactive animations.

Such multisensory didactic strategy improves comprehension and memory. Furthermore, these instruments clarify complicated concepts. Teachers can utilize graphics and explicit descriptions to break down complex ideas into simpler, more consumable sections. The resulting visual clarity is highly helpful in topics like physics, math, and technology.

2.2. Learning unit objectives



By following the learning unit, the learners will be able to:

1. Explain the selection of Doodly software as web tool for teaching and assessment
2. Develop simple educational resources ready for implementation using the Doodly software
3. Predict advantages and disadvantages of the new resource implementation in real educational environment



2.3. How to use Doodly

Explainer films and whiteboard animations increase participation. The animated narration method grabs and holds students' attention, lowering the risk of disruptions or disinterest. Such an active engagement encourages active learning as well as involvement. Furthermore, these platforms encourage self-paced



learning. Students can watch videos whenever they choose, pausing and replaying as needed. This adaptability supports different learning paces and empowers students to take charge of their education. Additionally, in the age of blended learning, these resources cross geographical barriers, making knowledge more accessible to more individuals. Academics can publish their work on internet-based platforms, enabling students to access it from anywhere, at any time.

In educational environment, Doodly can improve the class activity in several ways, including:

Enhancing Visual Learning: Doodly's whiteboard animation style is a great way to convey information visually, making it easier for students to understand and retain concepts. By using Doodly, there can be created engaging and interactive videos that help students to visualize complex topics and ideas. Doodly animations can help students better understand complex concepts by providing visual aids that can simplify the learning process. Visual aids can help students retain information better and make the learning process more engaging and enjoyable. Visual learning can be enhanced in several ways: In summary, visual learning can be enhanced through the use of graphics, color coding, animation, videos, virtual reality, and interactive learning materials. These techniques can help learners understand complex concepts, retain information, and stay engaged throughout the learning.

Keeping Students Engaged: With Doodly, teachers and/or students can create fun and interactive videos that can help to keep the students engaged and interested in the lesson. The use of animations and illustrations can make the lessons more exciting and enjoyable, which can help to motivate students to participate and learn.

Attention Span: Doodly animations can help students stay focused and engaged throughout the learning process. The dynamic and interactive nature of Doodly animations can help students maintain their attention and retain information better.

Interactive Learning: Doodly animations can be interactive, allowing students to actively engage with the learning material. Interactive learning can help students retain information better by allowing them to apply the concepts they have learned in a practical and engaging way.

Improving Retention: Studies have shown that visual aids can help to improve learning and retention. By using Doodly to create visual aids, the students have a help to remember important concepts and information, which can improve their performance in exams and tests. Studies have shown that the use of visuals can improve memory retention. Doodly animations can help students remember key information, concepts, and ideas by presenting them in visual and engaging ways.

Creating Personalized Learning: Doodly provides the content developer with the ability to customize the videos with their own images, text, and voiceovers. This allows to create personalized learning experiences for the students that are tailored to their individual needs and learning styles.

Accessibility: Doodly animations can be used to make learning more accessible to students with different learning styles. For example, students who learn better through visual aids can benefit from the use of Doodly animations.



2.4. How to create a Doodly presentation

A Doodly presentation is a simple and straightforward process that allows you to create engaging whiteboard animations quickly and easily following several steps: signing up for an account, selecting a video style, customizing your video, adding text and voiceovers, previewing your video, and exporting it:

Sign up for a Doodly account: First, you need to sign up for a Doodly account at their official website. You can choose from various plans and subscription options that best suits your teaching needs.

Choose a template: Start by selecting a template from the Doodly library or creating a new project from scratch.

Add Scenes: Add scenes to your presentation by selecting them from the Doodly library. Scenes are pre-designed whiteboard backgrounds that you can use as a starting point for your presentation. Choose a video style: Once you have logged in to your account, select the video style that best suits your needs. Doodly offers a wide range of video styles, including whiteboard, blackboard, and glass board animations.

Add Props and Characters: Doodly offers a wide variety of props and characters that you can use to add visual interest to your presentation. Simply drag and drop them onto the scene.

Add Text: Add text to your presentation by selecting the text tool and typing your message. You can choose from a variety of fonts and colors to customize your text.

Add Music or Voiceover: Doodly allows you to add music or voiceover to your presentation. You can choose from a library of pre-recorded tracks or upload your own. Next, you can customize your video by selecting the characters, props, backgrounds, and other visual elements that you want to include in your video. Doodly offers a vast library of images and animations that you can use to create your video.

Customize Hand Animation: Doodly offers different hand styles that you can customize to match the tone and style of your presentation.

Preview and Export: Once you have finished customizing your video, preview it to ensure that everything is working correctly. If you are satisfied, you can then export your video in various formats, including MP4 and MOV, and share it with your audience.

2.5. Information resources for Doodly use

Being a popular whiteboard animation software used to create engaging explainer videos, tutorials, and presentations, Doodly is presented by many users. Information you can use to learn more about using Doodly are gathered in the following **resources**:

Doodly's official website: Doodly's website offers a range of tutorials, guides, and FAQs to help users get started with the software.

Doodly's YouTube channel: Doodly's YouTube channel offers video tutorials on how to use the software and create different types of videos using it.



Udemy courses: Udemy offers a range of courses on how to use Doodly, from beginner to advanced levels. Some popular courses include "Doodly Animation Masterclass" and "Doodly: Mastering Whiteboard Animation in 2021".

Skillshare courses: Skillshare offers a range of courses on Doodly, from beginner to advanced levels. Some popular courses include "Doodly Animation: Tips, Tricks, and Techniques for Whiteboard Videos" and "Doodly Essentials: Complete Beginner's Guide to Doodly".

Online forums and communities: There are various online forums and communities, such as Doodly's official Facebook group and Reddit, where users can ask questions, share tips and tricks, and learn from each other's experiences using Doodly.

2.6. Bibliography

https://www.doodly.com/special-one-time-price-fb.php?gc_id=15895651594&h_ad_id=575217148451&gclid=Cj0KCQjA3-yQBhD3ARIsAHuHT66kgLLpfOP76IfAId7uWejYDYOEEfiAjAHK5z0k96XYatxEI_sfCBcaAifyEALw_wcB

Application



Develop an educational resource adapted for your own teaching activity using Doodly software



LU 3. Google Jamboard

3.1. Introduction



The learning unit is dedicated to presentation of an easy-to use tool for developing collaborative educational activities.

Interactive whiteboard software platforms have become essential instruments in the field of education. Educational institutions strive to accommodate a wide range of learning styles, facilitate comprehension of intricate subjects, foster active participation, facilitate individualized progress, and extend the accessibility of educational opportunities. Through the utilization of multimedia, educators possess the ability to proficiently communicate knowledge, ignite inquisitiveness, and cultivate a lasting passion for acquiring knowledge inside their students.

Google Jamboard is a powerful tool that can be used for brainstorming, collaboration, and visual presentations. It's easy to use and offers a range of features that can help you create engaging and interactive content.

Some references about Google Jamboard:

1. Google Jamboard website: https://jamboard.google.com/intl/en_us/ This is the official website of Google Jamboard. It provides information about the app's features, pricing, and how to get started.
2. "5 Ways to Use Google Jamboard in the Classroom" by Ashley Lipman, EdTech Magazine, October 17, 2019. <https://www.edtechmagazine.com/k12/article/2019/10/5-ways-use-google-jamboard-classroom> This article provides teachers with ideas for using Google Jamboard in the classroom. It includes examples of how to use Jamboard for brainstorming, note-taking, and group projects.
3. "How Google Jamboard Can Help with Remote Learning" by Bethany Petty, EdTech Magazine, September 17, 2020. <https://www.edtechmagazine.com/k12/article/2020/09/how-google-jamboard-can-help-remote-learning> This article discusses how Google Jamboard can be used for remote learning. It provides examples of how to use Jamboard to create interactive lessons and engage students in virtual classrooms.
4. "Why Teachers Love Google Jamboard (and You Will, Too!)" by Matt Miller, Ditch That Textbook, November 15, 2018. <https://ditchthattextbook.com/why-teachers-love-google-jamboard-and-you-will-too/> This article provides an overview of Google Jamboard and explains why teachers love using it in the classroom. It includes examples of how to use Jamboard for interactive games, collaborative writing, and more.
5. "Google Jamboard: An Essential Tool for Virtual Collaboration and Learning" by Laura Ascione, eSchool News, September 16, 2020. <https://www.eschoolnews.com/2020/09/16/google-jamboard-an-essential-tool-for-virtual-collaboration-and-learning/> This article discusses how Google



Jamboard can be used for virtual collaboration and learning. It includes examples of how to use Jamboard to create interactive lessons, engage students, and promote teamwork.

3.2. Learning unit objectives



By following the learning unit, the learners will be able to:

1. Explain the selection of Google Jamboard as web tool for collaborative activities
2. Develop simple educational resources ready for implementation using the Google Jamboard tool
3. Predict advantages and disadvantages of the new resource implementation in real educational environment



3.3. How to use Google Jamboard

1. Access Google Jamboard: Go to the Google Jamboard website (<https://jamboard.google.com/>) and sign in with your Google account. You can also access Jamboard from the Google Apps menu.
2. Create a new Jam: Once you have accessed Jamboard, you can create a new jam by clicking on the "+" button. This will create a blank canvas that you can use to create your digital whiteboard.
3. Customize your Jam: You can customize your Jam by adding background colors, images, and sticky notes. You can also change the pen and brush settings to create different effects.
4. Collaborate with others: Jamboard allows you to collaborate with others in real-time. You can invite others to join your Jam and work together to create ideas and share feedback.
5. Add content: You can add content to your Jam by uploading images and documents, adding text, or using the web search feature to find and add information.
6. Use tools: Jamboard offers a range of tools that you can use to create and annotate your content. These include pens, highlighters, erasers, and shape tools.
7. Save and share your Jam: Once you have finished working on your Jam, you can save it to your Google Drive or share it with others. You can also export your Jam as a PDF or image file.
8. Use templates: Jamboard offers a range of templates that you can use to get started quickly. These include brainstorming templates, project planning templates, and education templates.



Group Activity 1

In this activity you will create a Jamboard file as a group.

- 1 Create a new jam file**
Within your group, appoint one Jamboard owner for your study group.
- 2 Add collaborators**
Have the owner create a new Jamboard file from the Jamboard, Jamboard Android or iOS Tablet App or from the web at jamboard.google.com.
Add the other group members of the study group as collaborators.
Have everyone open the file, so all group members can collaborate on the same file.

Group Activity 2

In this activity you will start to navigate and use the drawing options on Jamboard.

- 1 Within your group's Jamboard file, create a frame for each member of the team**
Tap the frame bar at the top of the jam file to see thumbnails of your pages.
Tap the green '+' to add frames
- 2 Explore the drawing tools:**
Explore the different pen and erase tools available on the drawing menu.
Identify how to change the pen color.
Create sample text with each of the pen and marker options.
- 3 Change the background of your Jamboard frame**
Tap the 'Frame' bar to see thumbnails of your pages.
Tap the striped box in the lower right.
Tap a background pattern to select it for the current page. Tap 'Apply to all' to set the backgrounds of all pages in the current jam.



Group discussion

Discuss what classroom uses for the different pens and markers might be

3.4. Resources

You may follow the links to learn more about Google Jamboard facilities

<https://www.youtube.com/watch?v=ZM0UVdmQJEI>

https://edu.google.com/teacher-center/products/jamboard/?modal_active=none

Application



Develop an educational resource adapted for your own teaching activity using Google Jamboard



LU 4. SLIDO - engage audience through live polls, quizzes, and Q&A sessions

4.1. Introduction



Slido is a popular audience interaction tool that allows presenters to engage their audience through live polls, quizzes, and Q&A sessions. The effective use of digital platforms for conducting live polls, quizzes, and Q&A sessions holds significant importance for educators within the contemporary educational milieu. These innovative instruments serve to enhance active involvement, foster engagement, and promote successful learning. The use of live polls and quizzes provides educators with the opportunity to promptly evaluate students' comprehension. Immediate feedback is offered, allowing educators to adjust their teaching -learning methods and swiftly resolve any misunderstandings. This formative evaluation facilitates the customization of training based on individual students' requirements, so augmenting the overall learning experience. Question and answer (Q&A) sessions foster a learning atmosphere that is characterized by openness and inclusivity. The educational setting fosters an environment that motivates students to engage in questioning and pursue clarification, so cultivating critical thinking skills and fostering active involvement.

These sessions facilitate the development of a communal atmosphere and allow students to establish connections with their classmates and instructor, in both face-to-face and online learning environments. Furthermore, these platforms utilize technological advancements to enhance the enjoyment and relevance of the learning experience. Professional educators leverage the digital literacy and social media proficiency of the digital native generation, so enhancing their motivation and excitement towards the educational process.

From reviews and feedback provided by educators who have used Slido, it appears that the tool is generally well-liked and appreciated for its ease of use, flexibility, and ability to increase student participation and engagement in the classroom. Teachers have reported that Slido is particularly useful for conducting live polls, quizzes, and Q&A sessions during virtual classes or remote learning situations.

Some references about SLIDO:

1. Slido website: <https://www.sli.do/> This is the official website of Slido. It provides information about the tool's features, pricing, and testimonials from users.

2. "Slido: The Interactive Tool for Your Next Meeting or Event" by Nishtha Shukla, Hubspot, August 20, 2020. <https://blog.hubspot.com/marketing/slido-review> This is a review of Slido from a marketing perspective. The author discusses how Slido can be used to engage audiences and collect feedback during events and meetings.

3. "Slido: The Ultimate Guide for Teachers" by EduTecher, April 23, 2021.



<https://www.edutecher.net/blog/2021/4/23/slido-the-ultimate-guide-for-teacher>

s This guide provides teachers with step-by-step instructions on how to use Slido in the classroom. It includes examples of how Slido can be used to conduct live polls, quizzes, and Q&A sessions.

4. "Slido: How to Use It for Virtual Events" by Nadine Galle, Eventbrite, September 30, 2020. <https://www.eventbrite.com/blog/how-to-use-slido-for-virtual-events-ds00/> This article provides tips and best practices for using Slido in virtual events. It includes advice on how to use Slido to engage remote audiences and create interactive sessions.

5. "Using Slido for Audience Interaction: A Review" by Michelle Pacansky-Brock, Online Learning Insights, May 23, 2019. <https://onlinelearninginsights.wordpress.com/2019/05/23/using-slido-for-audience-interaction-a-review/> This is a review of Slido from an educational perspective. The author discusses how Slido can be used to increase student engagement and participation in the classroom.



4.2. Learning unit objectives

By following the learning unit, the learners will be able to:

1. explain SLIDO engage their audience
2. develop for conducting live polls, quizzes, and Q&A sessions
3. predict advantages and disadvantages of the new resource implementation in real educational environment

4.3. How to use SLIDO



1. Create an account: Go to the Slido website (<https://www.slido.com/>) and click on "Sign up" to create an account.
2. Create an event: Once you have created an account, you can create an event by clicking on "Create event" and filling out the necessary information such as event name, date, and time.
3. Customize your event: Slido allows you to customize your event by adding a logo, changing the theme color, and setting up your event's privacy settings.
4. Create your first poll: You can create your first poll by clicking on "Add poll" and entering your question and answer options. You can choose to make the poll anonymous or require participants to identify themselves.
5. Share your event with participants: Once you have created your event and poll, you can share the event link or code with your participants. They can then access the event and participate in the poll using their mobile devices.
6. Analyze results: As participants respond to your poll, you can monitor the results in real-time. Slido also provides analytics to help you understand the data collected during your event.



7. Use other features: Slido offers other features such as Q&A, quizzes, and brainstorming sessions. You can use these features to engage your participants and gather valuable insights.

8. End the event: Once your event has ended, you can close the polls and access the event's final report, which includes all the data collected during the event.

Application



Develop a digital resource in your teaching domain using SLIDO.



LU 5. How to use Padlet in teaching-learning activities

5.1. Introduction



A virtual bulletin board is an online platform that allows users to post, organize, and share digital content such as images, text, links, and multimedia files in a visual and interactive format similar to a traditional bulletin board. It is a digital equivalent of the physical bulletin board you might find in schools, offices, or public spaces. Virtual bulletin boards can be used for a variety of purposes, such as brainstorming, sharing ideas, collaborating on projects, organizing information, and presenting content. They are often used in education for group projects, discussions, and remote learning, as well as in businesses for team collaboration, planning, and communication.

Virtual bulletin boards, such as **Padlet**, can be accessed from anywhere with an internet connection, making them a convenient and accessible tool for virtual teamwork, remote learning, and digital content creation. They are also easily customizable, allowing users to create a unique and personalized experience for their audience.

Padlet is a collaborative app that allows students to co-create projects, materials, and assignments for various subjects. Padlet is an instrument for teachers to create classes, discuss, and add images. Padlet was conceived in 2008 as a cloud-based software-as-a-service, but has reached, in the pandemic period, over 3.25 million estimated daily visitors on its sites.

Padlet allows students to create individual or team projects with images, text, links, audio and video files posted as notes on a virtual wall. All in one place, arranged in pre-set formats or easily customised from scratch, creative and colourful, attractive to them. Padlet, even in its free version, offers many functionalities.

5.2. Learning unit objectives



By following the learning unit, the learners will be able to:

1. explain the selection of Padlet software as web tool for teaching and assessment
2. develop simple educational resources ready for implementation using Padlet
3. predict advantages and disadvantages of the new resource implementation in real educational environment

5.3. How to use Padlet as a teacher



Padlet, as virtual bulletin board, offers educational benefits for students and teachers. It is a versatile and effective tool for promoting active learning, collaboration, and creativity in the classroom. It offers a dynamic and engaging way for students to learn and communicate, and they can enhance the effectiveness of online and hybrid learning environments. Among benefits of using Padlet in educational environment there are mentioned:

Collaboration and Communication: Padlet allows students and teachers to collaborate and communicate in real time, making it a great tool for group work, brainstorming, and sharing ideas.

Engagement: Padlet is a visually appealing platform that allows users to add multimedia content, such as images, videos, and audio, to their posts. This can make learning more engaging and interactive for students.

Accessibility: Padlet is a web-based platform that can be accessed from anywhere with an internet connection, making it a great tool for distance learning or remote collaboration

Organization: Padlet allows users to organize their posts using categories and tags, making it easy to navigate and find relevant information.

Assessment: Padlet can be used as an assessment tool, allowing teachers to track students' progress, provide feedback, and evaluate their understanding of concepts.

Flexibility: Padlet is a versatile tool that can be used for a variety of educational purposes, such as class discussions, brainstorming sessions, project presentations, and more.

Creativity: Padlet allows students and teachers to express their ideas and creativity in a flexible and dynamic way, making learning more enjoyable and fun.

5.4. How to Create a Padlet



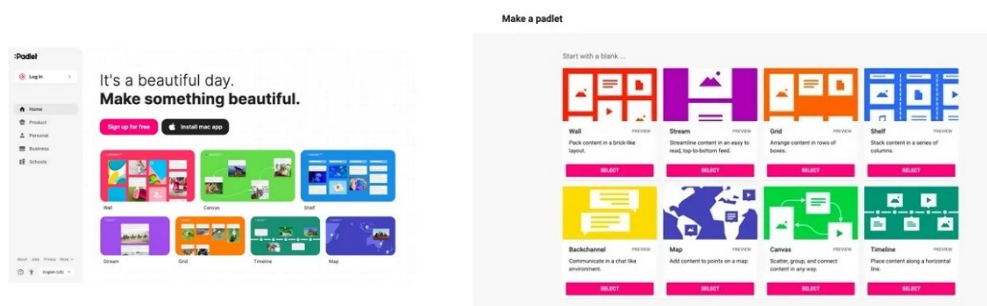
Padlet is a web-based tool that allows users to create digital bulletin boards or "walls" for collaboration, sharing, and communication. With Padlet, users can create a wall and add text, images, videos, audio files, and links to other websites or resources. Padlet is available as a web-based service, as well as a mobile app for iOS and Android devices, therefore the boards can be used in a variety of settings, such as education, business, or personal use. For example, teachers can use Padlet to create interactive lesson plans or to gather feedback from students, while businesses can use it for brainstorming sessions. Padlet allows for real-time collaboration, meaning that multiple users can contribute to a board at the same time. Additionally, Padlet offers a range of customization options, such as choosing a background image or color, and controlling who has access to the board.

Padlet is an online tool that allows you to create digital content like virtual bulletin boards, collaborative documents, and presentations. Here are the steps to create digital content using Padlet:

1. *Sign up* for a Padlet account or log in to your existing account



2. Click on the "Create New Padlet" button on your dashboard
3. *Select a template* or start with a blank canvas
4. *Customize* your Padlet by choosing a background, adding a title, and selecting a layout
5. *Add content* to your Padlet by clicking on the "+" button and selecting the type of content you want to add. You can add text, images, videos, audio, links, and files
6. *Arrange* your content by dragging and dropping them around the Padlet
7. *Set privacy and sharing settings* by clicking on the "Share" button. You can make your Padlet public, private, or password-protected. You can also invite collaborators to edit your Padlet
8. *Save* your Padlet and share it with your audience by sharing the link or embedding it on With Padlet, you can create digital content for various purposes, such as brainstorming, teaching, collaborating, and presenting. It's a versatile tool that can help you create engaging and interactive content for your audience.



Example of screens when entering in Padlet application

5.6. Resources

https://www.youtube.com/watch?v=KmJY4j_F8Xc

<https://www.youtube.com/watch?v=OPkq5q8nRbM>

<https://teachers.tech/how-to-use-padlet/>



Application

Develop a Padlet to use in debating the pros and cons of an ethics topic specific to your field.



LU 6. Coggle -a visual mind -mapping tool in online teaching activities

6.1. Introduction



Coggle is online software for creating and sharing mind maps and flowcharts. (<https://coggle.it/>).

With the Coggle whiteboard you can make wonderful concept maps. The user can make them alone or with other partners. It makes it easier to organise information, build relationships between concepts, make it easier to remember. It is especially useful for those with a visual learning style.

Coggle is a collaborative mind-mapping tool that many teachers use in their classrooms.

Some references about Coggle:

1. Coggle website: <https://coggle.it/> This is the official website of Coggle. It provides information about the app's features, pricing, and how to get started.
2. "How to Use Mind Maps in the Classroom" by Dr. Nikki Martinez, Edutopia, September 8, 2015. <https://www.edutopia.org/blog/how-use-mind-maps-classroom-nikki-martinez> This article provides teachers with ideas for using mind maps in the classroom, including using Coggle for brainstorming and organizing ideas.
3. "Mind Mapping: Scientific Research and Studies" by Christina Wodtke, Mind Mapping Software Blog, December 20, 2010. <https://mindmappingsoftwareblog.com/mind-mapping-scientific-research-and-studies/> This article discusses the research behind mind mapping and its effectiveness in helping students learn. It includes a study that found that students who used mind maps had higher retention rates than those who used traditional note-taking methods.
4. "Five Free Mind Mapping Tools for Teachers and Students" by Richard Byrne, Free Technology for Teachers, August 25, 2015. <https://www.freetech4teachers.com/2015/08/five-free-mind-mapping-tools-for.html> This article provides a list of five free mind mapping tools for teachers and students, including Coggle. It includes information about each tool's features and how to get started.
5. "21st Century Mind Mapping: Coggle" by Tom Barrett, EdTechTeacher, October 28, 2014. <https://edtechteacher.org/21st-century-mind-mapping-coggle/> This article provides a review of Coggle and its features. It includes examples of how



Coggle can be used in the classroom and how it can help students organize their ideas and make connections between different concepts.

6.2. Learning unit objectives



By following the learning unit, the learners will be able to:

1. to explain the selection of Coggle software as web tool for teaching and assessment
2. to develop simple educational resources ready for implementation using the Coggle software
3. to predict advantages and disadvantages of the new resource implementation in real educational environment

6.3. How to use Coggle



1. Access Coggle: Go to the Coggle website (<https://coggle.it/>) and sign up for a free account. Once you're signed up, you can log in and start using Coggle.
2. Create a new mind map: To create a new mind map, click on the "+" button on the homepage or click on "New Document" in the top left corner. You can also choose from a range of templates to get started quickly.
3. Add nodes: To add nodes to your mind map, click on the "+" button in the center of the screen and type in your text. You can also drag and drop nodes to rearrange them.
4. Customize your mind map: Coggle allows you to customize your mind map by changing the node colors, fonts, and icons. You can also add images and hyperlinks to your nodes.
5. Collaborate with others: Coggle allows you to collaborate with others in real-time. You can invite others to join your mind map and work together to create ideas and share feedback.
6. Use keyboard shortcuts: Coggle offers a range of keyboard shortcuts that you can use to navigate and edit your mind map quickly.
7. Export your mind map: Once you have finished working on your mind map, you can export it as a PDF, image file, or text file. You can also share your mind map with others by generating a share link or embedding it on a website.
8. Use integrations: Coggle integrates with other tools such as Google Drive and Dropbox. You can use these integrations to import and export files and collaborate with others.

6.4. Resources

<https://coggle.it/#features>

<https://www.youtube.com/watch?v=99VswRkMyW4>

<https://www.youtube.com/watch?v=5b3K74cE6q0>



Application

Develop an educational resource adapted for your own teaching activity using Coggle software.



LU 7. Miro – whiteboard and more for remote classes, distance learning and working groups

7.1. Introduction



Miro is a collaborative online whiteboard platform that allows users to create, collaborate, and share visual ideas and information in real-time. It provides a digital workspace where individuals and teams can work together remotely, regardless of their location.

Miro's interface is highly customizable, with a variety of templates, widgets, and tools that enable users to create and organize their ideas in a way that suits their needs. Users can add text, images, videos, sticky notes, diagrams, and other elements to their boards, as well as draw and sketch their own ideas using digital pens and makers.

Miro's real-time collaboration features allow multiple users to work on the same board simultaneously, making it a powerful tool for remote teamwork, brainstorming, and problem-solving. Users can also add comments, tags, and labels to boards, making it easy to organize and find information.

Miro is used by individuals and teams across a wide range of industries, including design, marketing, education, and software development, to name a few. It is a versatile platform that can be used for a variety of purposes, including project management, ideation, prototyping, and presentations.

7.2. Learning unit objectives



By following the learning unit, the learners will be able to:

1. Explain the selection of Miro as web tool for collaborative activities
2. Develop simple educational resources ready for implementation using the Miro tool
3. Predict advantages and disadvantages of the new resource implementation in real educational environment

7.3. How to use Miro



Miro can be used in a variety of ways to enhance learning by providing a collaborative and interactive platform for students to engage with content, collaborate with peers, and visualize complex concepts. Here are some examples:

Brainstorming and Mind Mapping: Miro's intuitive interface and flexible canvas make it a great tool for brainstorming and mind mapping. Students can collaborate



in real-time to generate ideas, organize information, and visualize complex concepts.

Project Management: Miro can be used to manage group projects and assignments. Students can create visual project plans, track progress, and communicate with their team members.

Design Thinking: Miro can be used to facilitate design thinking activities, such as user persona development, empathy mapping, and prototyping. Students can use Miro's templates and tools to create interactive visual representations of their design ideas.

Group Presentations: Miro can be used as a platform for group presentations. Students can create interactive presentations with multimedia elements, and use Miro's real-time collaboration features to engage with their audience.

Visual Collaboration: Miro can be used to facilitate visual collaboration among students. Students can use Miro's tools to draw, sketch, and annotate ideas in real-time, making it a great tool for group problem-solving and decision-making.

Overall, Miro can enhance learning by providing a collaborative and interactive platform for students to engage with content, collaborate with peers, and visualize complex concepts.

7.4. How to create an educational resource using Miro



Creating an educational resource using Miro is a straightforward process and follows several steps presented below:

Determine the objective of the educational resource: Before starting to create a resource, it's important to identify the objective of the resource. This helps to structure the resource and choose the right tools and elements in Miro.

Create a new board in Miro: Log in to personal Miro account and create a new board. Choose a template that suits the objective of the educational resource or create a new template from scratch.

Choose the appropriate tools and elements: Miro provides a variety of tools and elements that can be used for educational resource development. Some of these tools include sticky notes, shapes, arrows, connectors, and text boxes. The appropriate tools and elements have to be chosen based on the objective of your resource.

Organize the information: Once the tools and elements are added to the board, the information must be organized in a logical manner. The use of color codes, labels, and tags make the information easy to understand and navigate.

Collaborate and share: Miro is a collaborative platform, so invite other users to collaborate on the educational resource. The resource can also be shared with other users, either by sharing a link or by embedding the resource in a website or LMS.



Iterate and improve: Once the educational resource is complete, it is recommended to ask for feedback from users and iterate on the resource to improve its quality and effectiveness.

Some examples of educational resources that can be created using Miro include mind maps, concept maps, diagrams, lesson plans, and interactive presentations.



Creating a conceptual map (also known as a mind map) using Miro is a simple process by following the steps presented below:

Create a new board in Miro: Log in to your own Miro account and create a new board. Choose a blank template to start the conceptual map from scratch.

Add the central idea: Use the text box tool to add the central idea of the conceptual map to the center of the board. This could be a topic, concept, or question that is to be explored.

Add subtopics: Use the sticky note tool to add subtopics related to the central idea. Place the subtopics around the central idea and connect them with lines or arrows.

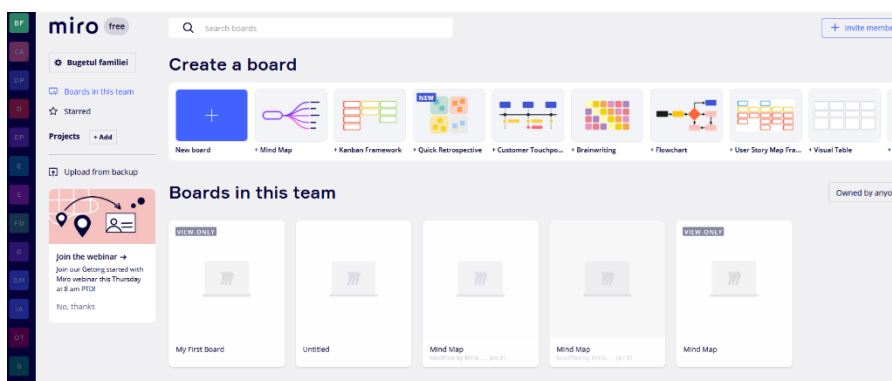
Add further details: Use the text box tool to add further details to each subtopic. Images, icons, and other visual elements can be added to make the conceptual map more engaging.

Organize and format: Once all the elements added to the conceptual map, it is necessary to organize and format them to make the map easy to read and understand. Use different colors, shapes, and fonts to differentiate between the different elements.

Collaborate and share: Miro is a collaborative platform, so other users are invited to collaborate on the conceptual map. The map can also be shared with other users, either by sharing a link or by embedding the map in a website or LMS.

Iterate and improve: Once the conceptual map is complete, it is suggested to ask for feedback from users and iterate on the map to improve its quality and effectiveness.

Miro also provides a variety of pre-built templates for creating conceptual maps, which can be very useful.



Sample of screen in Miro



7.5. Information resources for the use of Miro



In order to extend the learning about the use of Miro in educational resource development, some of **information resources** are below:

Miro Education Hub: Miro offers an Education Hub that provides a range of resources, including case studies, webinars, and tutorials. You can access these resources for free by signing up for an Education account on Miro.

Miro Academy: Miro Academy is a free online learning platform that provides a range of courses on using Miro for different purposes, including education. The courses are self-paced and cover a range of topics, from basic to advanced.

Miro Community: The Miro Community is a user-led platform where users can share tips, tricks, and best practices on using Miro. You can browse the community for educational resources, ask questions, and share your own experiences.

Miro Templates: Miro provides a variety of pre-built templates for different use cases, including education. You can access these templates for free and use them as a starting point for your own projects.

YouTube tutorials: A variety of YouTube tutorials can help you learn how to use Miro in education. Some channels that offer tutorials on using Miro for education include EduFlip, The EdTech Show, and Richard Byrne.

Social media: Miro has a strong presence on social media, particularly on Twitter and LinkedIn. You can follow Miro's accounts for updates on new features, tips, and best practices for using Miro in education.

Professional Development: Consider attending a professional development course or conference that includes training on using Miro in education. Check with your school or district to see if they offer any opportunities for professional development in this area.

By leveraging these resources, you can learn how to use Miro effectively in education and take advantage of its features to enhance student learning and collaboration.

7.6. Resources

You may follow the links to learn more about Miro facilities:

<https://help.miro.com/hc/en-us/categories/360001415214-Getting-Started>

www.youtube.com/watch?v=WJG2LUmyv2E&feature=youtu.be

<https://help.miro.com/hc/en-us/articles/360017730533-What-is-Miro->

Application



Develop an educational resource adapted for your own teaching activity using



Miro.

FINAL ASSESSMENT

Develop a digitalized resource for an educational activity focusing on sustainable development.

As you know, sustainable development is a critical issue that affects our planet and its inhabitants. It is important to know that by incorporating this topic into our teaching, we can help our students become responsible global citizens and contribute to building a better world. This would not only benefit our own students, but also contribute to the wider goal of promoting sustainable development and education for all.



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