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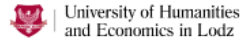
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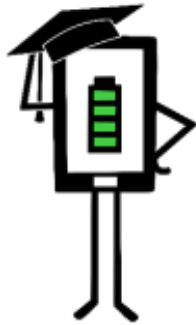
Contemporary Teaching
and Learning Techniques
for Distance Education

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INTRODUCTION

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After each of the following sections there are the sources and information about the authors.

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PART 1 - DISTANCE EDUCATION - INTRODUCTORY CONTENTS

INTRODUCTION

In the first part of this publication we answer the following questions:

- ✓ what is education?
- ✓ what is distance education?

In this part we also:

- ✓ try to define its advantages and disadvantages,
- ✓ present its basic divisions,
- ✓ present strategies for its implementation with special attention to recipients with learning difficulties and specific problems.

The COVID-19 pandemic has produced major changes in education. Concepts like "digital education", "distance education", "remote learning" have become more and more known and used. Digital applications have become an important engine of everyday life and business. Due to the restrictions imposed by the pandemic around the world, most people have started using the computer for a variety of purposes: internet banking, e-commerce, e-medicine and new opportunities in education and professional training.

The skills that students acquire in school must allow them to be practically anchored in the real world. Worldwide education systems are facing the fast development of the knowledge-based society, where information-handling skills and abilities are absolutely necessary to survive. Economic and industrial competition deepens the contradiction between the possibilities of assimilation available to the student and the requirements of everyday life, or the current structure of the school.

On the global level, many countries have the digitization of education as their main goal. The pandemic of the last two years has forced the digitization of several education systems, with distant education being the fast solution adopted by many states.

In general, we call distance education when the teacher and students are separated by physical distance and technology (audio, video, computer networks, printed matter), sometimes combined with face-to-face communication, being used for instruction (Istrate, 2000).

Distance education or e-learning is based on multimedia resources, allowing the student to learn from their own computer. In e-learning format, text, sound, graphics and video content are now brought together in a single "multimedia" document. Multimedia means a set of:

- ✓ content,
- ✓ images,
- ✓ sound,
- ✓ graphics,
- ✓ interactivity,
- ✓ sensory communication.

E-learning- multiple formats, multiple forms, multiple messages - examples

Quality multimedia results from a balanced combination of all these elements. However, the planning and writing of such a course is different from a traditional course. The publication of a structured course according to the traditional model is not desirable, because the teacher is not present to give instructions and the formulation of questions and answers will be delayed.

An e-learning course involves the use of multimedia tools and the Internet, cooperation and remote information exchange between teachers and students (Savu et al. 2010). Then, the courses are developed on platforms that try to replicate what teachers do in the classroom, in face-to-face lessons. We can consider e-learning a kind of virtual "alter ego" of the class.

E-learning platforms are software-controlled learning infrastructures that try to replicate what teachers do in the classroom, in face-to-face lessons. They are connected to the Internet and are accessed via a web browser (Savu et al. 2010).

ELEMENTS OF A GOOD E-LEARNING COURSE

A course designed for an e-learning platform must meet a number of requirements:

- ✓ to be logically structured, including a test at the end;
- ✓ to be written in a clear, simple and to the point language;
- ✓ lessons must be set in a linear fashion;
- ✓ key concepts must be highlighted (possibly a detailed index);

✓ the lessons must follow an intuitive, predictable didactic path, so that the student always knows where he is and where he is going during the lesson;
✓ the objectives and content of the course must always be visible.

The realization and organization of e-learning courses involve other methods and means of education, different from those used in the traditional classroom. The structure of the courses is different. At present, there are three ways of structuring:

➤ *The sequential structure* is a typical, linear structure that reproduces the idea of a book. The course consists, in fact, of a series of pages, which can be ran through one after the other virtually. Depending on the order established by the teacher, the student can access the contents in turns, without being allowed to "jump" from one lesson to another or change the order of the concepts presentention.

However, specialists do not recommend this structure for an entire course, because it becomes too monotonous and disinterests the student along the way.

➤ *The reticular structure* gives the student the freedom to read the teaching units in the order he wants. It is one of the most commonly used structures nowadays, having the advantage of providing statistical information about the type of lessons, such as the most accessed, the order of the chosen lessons, the time in which they were studied, the achievement of objectives.
➤ *The hierarchical structure* involved an order of the themes, not being allowed to access a theme without having previously studied the previous themes or certain themes.

The virtual classroom is different from the traditional one not only by the fact that the interactions between the teacher and the students take place at a distance, but also by the fact that it requires more examples, adaptations of the contents by synthesizing the information. To ensure understanding of the concepts, it is recommended to use images, videos, animations, diagrams. In order to deepen the lessons, it is good to indicate several sites from where the student can extract additional clarifying information. It should be noted, however, that cluttered information can distract the student, not to mention the visual effort of the person reading a page on the computer screen compared to reading a printed page.

It is recommended that for a three-month distance learning course, two face-to-face meetings be planned to ensure socialization in work groups or direct contact with the teacher.

The way in which an e-learning lesson is designed depends very much on the level of difficulty of the concepts and the familiarity with the technology. Savu et al. (2010) estimate that a two-day classroom course can fit in about 100 screens. Thus, a student who logs in on average twice a week reading 20-30 screens a week, but who must also participate in the chat or forum, plus the assessment test at the end of each teaching unit, will take about two weeks to complete the same teaching path from face-to-face teaching.

The essential elements of a course are learning.

The success of an e-learning course depends not only on how it is structured and presented, but also on a multitude of other variables. Here are the most important features that an online course should have.

Sensory communication **and** *interactivity*. The use of audio and video media makes the course more attractive, and the interactivity keeps the focus and interest focused. To be interactive, both the course and the platform must provide (Savu et al. 2010):

- ✓ mutual feedback teacher-students;

- ✓ inventiveness - the teaching material used during the courses must stimulate the creativity;

- ✓ communication between all actors participating in the educational process;

- ✓ adaptation to the students' learning rhythm. The platform can show the student what he has already covered and what units still need to be completed;

- ✓ productivity - the platform must contain all the resources that the student needs to complete the course (virtual library with books in electronic format, video library, links to other resource sites);

- ✓ recognition - The platform must be intuitive and accessible to all students, regardless of whether or not they have a learning disability. The student must always know where he is, where he can get to and how he can get out of the program.

Exercises and checks can be a challenge for a teacher due to the uncertainty in the correctness presented by the students. In order to be valid and to maintain a high level of certainty regarding the performance of the assessments by the students themselves, without the help of third parties, several types of checks were accepted:

- ✓ **Tests with control questions**. In the case of these tests, the student can choose an answer from a wide range of possible answers; for other questions there may be several correct answers;

- ✓ **Tests with complex answers**. Typically, this type of test includes open-ended questions, to which the student must work out the answer, with a predetermined number of characters;

- ✓ **Tests containing questions with answer time.** The student has a predetermined time to give an answer. At the end of the time, the system automatically switches the student to the next question. In this situation, the student can not change the answer.

The classroom library, in the case of e-learning platforms, is a digital one, all the materials introduced being in electronic format. The teacher chooses from the multitude of available materials the articles, the publications that he considers useful for the in-depth understanding of the topics in the teaching unit. During the lessons, the library can be enriched with new materials offered even by the students, with the consent of the teacher.

The frequently asked questions section is absolutely necessary in e-learning training, being designed by the teacher to avoid ambiguity from students. In this section, the teacher has to answer the questions in a structured way, at the same time recommending to the other students to consult the "Frequently Asked Questions" section.

ADVANTAGES AND DISADVANTAGES OF E-LEARNING.

Advantages of e-learning courses (Savu et al. 2010):

- ✓ breaking the barriers of time and space;
- ✓ cost reduction (organizing and teaching online courses requires lower costs compared to traditional education);
- ✓ the reaction capacity of the users is amplified;
- ✓ globalization of information and knowledge;
- ✓ personalization of learning (the student can learn at what time he wants, in what order it seems more accessible, using attractive resources for him);

Disadvantages of e-learning courses:

- ✓ dependence on internet connection;
- ✓ the difficulty of adapting to the new method of preparation;
- ✓ risk of isolation (especially if the student does not participate in discussions on chats or forums);
- ✓ difficulty keeping up with the class;
- ✓ possible demotivation / disinterest after a longer period.

Online learning largely reproduces traditional learning, the biggest difference being that a classroom is no longer real, physical, but virtual, with the teacher and students being able to communicate through technology. The educational environment comes to life as students become familiar with technology, and face-to-face friendships begin to expand in the online environment.

TYPES OF DISTANCE EDUCATION

Synchronous education involves, according to specialized studies, the simultaneous participation of all students and teachers. The interaction between the teacher and the students is done in real time, using audio and video means (for example, video conferencing, chat, smartphone use) (Savu et al. 2010; Huang et al. 2020)

Asynchronous education does not require the simultaneous participation of teachers and students, even if it is also a form of distance education. Students and teachers do not have to be together in the same space at the same time. In this situation, students can choose their own study time and can gather bibliographic resources from educational forums, platforms, e-mail, other forums.

THE EDUCATIONAL POTENTIAL OF TECHNOLOGY

In this place we look at the potential use of for students with special educational needs.

More than two decades ago, Roberta Wiener (1990) stated that "*the potential for the use of computers in special education knows no bounds. Computer-assisted instruction can help students with language disorders, those who have difficulty writing with a pencil, allow students with visual impairments to decipher a written text, those with hearing impairment to communicate with their peers from mainstream education, and offers students with physical disabilities the opportunity to control the learning environment*". These statements are still valid today, even though computer use has evolved significantly over time.

The technology has been introduced in education as an attempt to improve the quality of teaching, to support the curriculum and to promote new learning experiences. In this way, it becomes possible to meet the special learning needs of different groups of students, including those with disabilities. Although the specific applications of digital education are extremely diverse and varied, they can be grouped into the following main categories:

- ✓ compensatory use;
- ✓ didactic use;
- ✓ communication use.

USE OF COMPENSATORY TECHNOLOGY

The use of assistive technology allows students with special needs to take an active part in the process of interaction and communication. For example, if a person has a physical disability, they can be helped to write, and in the case of a visual impairment, to read. From this point of view, assistive technology improves students' ability to control their environment, make choices about their experiences, provide support in problem-solving activities, and provide access to information, thus improving communication with others. Technology can recover or replace, to some extent, the deficiency itself.

USING TECHNOLOGY IN THE CLASSROOM

Digital tools are used today in the teaching process and have led to the emergence of a new dimension of education. Digital applications provide access to a variety of teaching and assessment strategies for students with special educational needs. Digital tools, as pedagogical tools, are suitable for the implementation of the concept of inclusive education.

They are useful to strengthen personal development, to meet the unique needs of a child, at an appropriate rythm. As a result, digital tools are becoming a very valuable resource for inclusion.

USE OF TECHNOLOGY IN COMMUNICATION

Technology can mediate communication with people with disabilities (often referred to as alternative and augmentative communication). Assistive devices and software for children with communication difficulties are specific. The computer is a resource that facilitates and makes possible communication, allowing a person with communication disorders to manifest their skills, to initiate communication, to express certain requests, to exemplify certain needs, etc. In addition, if teacher resources are insufficient, distance learning methods can help provide services for geographically dispersed students and teachers.

Means (1994) argues that the application of digital tools must be determined by the teacher himself, taking into account the type of learning he wants to promote. Depending on how they are used in the teaching process, digital applications can be used to train or explore, can be used as a working tool or to communicate.

There are many assistive technology devices available to help students communicate. These include electronic reading panels, speech synthesizers, and speech recognition software. Many of the symbol communication systems used by some students with special needs are implemented in software programs to allow students to write and send e-mails. Media uses networks that allow groups of students to communicate and collaborate. Notices, e-mails, or chat rooms are common examples of how these networks can be used. Like other types of technology learning, these applications of network technology have many facets. They can have an "equalizing effect", especially because participants can choose what to

reveal about themselves. Deficiency or special need is not a defining characteristic of the participant here, nor is it necessarily an obstacle to participation. Networking is also promoted as a means of facilitating participation in the "mass" virtual world inhabited by people with and without disabilities. A good example is e-Buddies (www.ebuddies.org), aimed at making friends by e-mail. This project is designed to support people with special needs in making friends online. Here, the "equalizing effect" is related to the consideration of a specific target group of people in order to facilitate their participation. This participation can be encouraged through specialized adaptations - for example: the use of symbols in an e-mail (Banes & Walter, 2002).

There is a relatively small amount of research on how networking could help students with special educational needs. Bauer & Ulrich (2002) reported the use of laptops to support social integration for students with special educational needs, but warned that the teacher should manage their use. Abbott (2002) reports on the management difficulties of the technology used in communication. For example, the immoderate and uncensored nature of online chat rooms can turn them into an unsuitable environment for educational purposes. However, the equalizing effect it provides for some of the students with special educational needs clearly gives these technologies the character of valuable educational resources. Abbott (2002) recommends careful planning before initiating such communication projects. Projects must involve people who know each other (for example, colleagues from other schools) and the use of software filters in the school network. Means (1994) recalls that communication tools and devices do not have an educational value in themselves, but "their instructive value is given by the educational activity in which they are used, an activity that must be planned by the teacher."

USING TECHNOLOGY FOR TRAINING

Many software programs for students with and without special educational needs have been developed lately. These programs were aroused a particular interest to teachers because they provided a way to address what Woodward & Rieth (1997) called "one of the biggest logistical and pedagogical dilemmas": how to customize teaching to meet specific needs of students who face difficulties in learning?

Most of the first digital educational programs were based on a behavioral theory of learning. Usually, students worked individually on a computer on tasks that focused on practical aspects or on consolidating previously taught skills. Many programs were delivered via computer (software), but in terms of design and content they were no different from conventional materials. In other words, the environment (using a computer, as opposed to a notebook) was different, but the content (focused on core competencies) and purpose (exercise and practice) were the same as in the conventional teaching process.

The impracticability of working alone in front of a computer, the change in optics in teaching and learning activities, as well as technological advances have led to the

development of more sophisticated and complex training programs, as well as the emergence of group approaches to the idea of supported learning through technology. Researchers have begun to exploit the potential of digital tools by incorporating pedagogical principles into software design - for example: implementing and using feedback. Woodward & Rieth (1997) reported mixed results for the use of computer programs that generate feedback to students with special educational needs. They concluded that, on their own, in isolation, a software program is insufficient for teaching in classes of students with special educational needs.

Florian & Hegarthy (2004) argue that an important aspect of using programs for students with special educational needs is the extent to which they include or exclude student participation in group activities. A balance must be struck between the benefit of self-employment and the isolation that some learners feel when such an approach prevents them from participating in group activities. Consideration should be given to whether or not the program facilitates such participation.

USING TECHNOLOGY FOR EXPLORATION

Over time, as technology has become more powerful and accessible and exploratory learning environments have been developed. Although they have not replaced software, they are somewhat developed in contrast to them. While software programs focus on teaching elements, exploratory learning environments allow students to interact with the teaching material, thus gaining more control over the learning activity. These interactive environments represent an increasingly popular contemporary use of technology in education. They focus on exploration and interaction, not on practicing and consolidating skills and knowledge. They are based on a constructivist approach to learning, and not a behavioral one. The idea behind the concept is to promote authentic learning, with an emphasis on supporting learners to gain knowledge collaboratively (Reed & McNergney 2000). Exploratory learning environments include simulations and virtual representations, as well as programs - also called "content-free" programs - that allow teachers and students to create their own content and encourage user creativity; examples - graphic editors, text editors, etc.

Such approaches to the use of technology are promoted as tools that allow teachers and students to collaboratively build a knowledge base (Reed & McNergney 2000). For example, the programs mentioned above allow teachers and students to organize personalized "cause-and-effect" activities. Using a digital camera, you can record a trip or other experience for a later review. Technology allows the use of real-world examples to "learn by doing."

Some students with special needs have severe learning difficulties and as a result have fewer opportunities to explore and control their environment. For these students, exploration environments, such as simulations and virtual realities, can provide learning opportunities that would not otherwise be available. Students are presented with a genuine and challenging task and they themselves control the activity. Using exploration media often provides the

ability to customize materials with sounds and images that are familiar to the learner. When these options are available, it is important to consider the assumptions used in developing such an environment, as well as the student's involvement in making these materials and how this involvement is achieved.

The Internet provides another example of how technology can be used for exploration. The possibilities for doing so are endless, and information can be sent and explored in a variety of environments (text, images or sounds).

USING TECHNOLOGY AS A WORKING TOOL IN LEARNING

The third type of learning using technology is about the skills (and for some students with special educational needs, adaptations) involved in using technology tools, such as word processing programs, spreadsheets, and laptops. That is, tools that can also be found in non-educational settings, such as at home or at work. Acquiring technical skills is not only a precondition for other types of learning through technology, but it becomes essential for life beyond school. The use of laptops provides a good example of how a new technology can affect class attendance. Bauer & Ulrich (2002) found that the use of laptops helped students with special needs become more organized. In their study of the use of laptops in sixth grade, students with special needs reported a low level of anxiety about the uncertainties caused by the activities in which they were involved or the possibility of losing documents. This has been attributed to the portability feature of the technology. Bauer & Ulrich (2002) suggest that these laptops also provide social support, because students can share programs with each other and send various information to friends. For some students with special educational needs, the skills needed to be acquired are not only related to the technical aspects of learning to use hardware and software, but also to the use of adaptations that are made precisely to allow the student to use technology. A number of assistive devices are available to overcome learning barriers caused by physical and sensory impairments. Such assistive or access devices range from simple switches and touch screens to specialized keyboards and voice-activated software. But they are not a panacea: in order to operate successfully, you need to acquire specific skills.

THE USE OF TECHNOLOGY FOR THE PURPOSE OF DIDACTIC EVALUATION

Woodward & Rieth (1997) argue that technology can be used to organize a qualitative evaluation, reducing the time required to manage the evaluation process.

There are programs that offer curriculum-based assessment. They are a means of systematic and cost-effective evaluation, as they replace the procedures normally performed by teachers, which require intensive effort.

Recent versions of computer-assisted assessment systems incorporate expert systems that provide teachers with intervention suggestions for specific behavioral or learning disabilities. This is especially important as teachers often need support in generating new

strategies when what they have tried does not work. In another comment, Woodward & Rieth (1997) praised the application of expert assessment systems as one of the most advanced efforts to apply state-of-the-art technologies for special education issues.

USING TECHNOLOGY AS A MANAGEMENT TOOL

In addition to assessing learning difficulties, teachers with special educational needs must develop personalized intervention plans (PIPs) designed to address the learning difficulties that have been identified.

As a result of the growing number of requests from teachers, a number of software programs have been designed to help them manage their day-to-day responsibilities. The range of learning disabilities targeted by the umbrella term special educational requirements is wide and no teacher will have complete information about all the potential individual difficulties that may arise. This partly explains the use of expert software development systems used in special needs diagnosis. An expert system could be designed to hold more information than a teacher could store individually, and therefore the teacher could use the system to help generate teaching solutions geared to the student's individual learning problems.

For the same reason, the Internet is an increasingly popular management tool for professionals working in the field of special education. Male & Gotthoffer (1999) developed a workbook for teachers, a guide to special education resources available on the Internet. More recently, researchers in various fields have begun to use the Internet to publish information. Dee et al. (2002) developed a web-based guidance curriculum to support the transition of students with learning difficulties from school to adulthood. This project provides guidance for practitioners working in a range of post-school settings. Web-based materials have the advantage of hyperlinks that allow users to navigate within the site by clicking on different hyperlinks. In this way, the user can make his own connections between components. However, as Dee et al. (2002), there is not much information on how teachers and other training staff use web-based materials.

The importance of technology in the education of children with special needs is a consequence of the many innovations that have led to the improvement and expansion of ways in which technology can support children with learning difficulties. Children without disabilities need very few changes to a standard computer configuration, which can be purchased at any electronics store. Even very young children can access their favorite software without too much help from adults. But the same is not true for many children with disabilities, for whom changes are not only desirable, but sometimes essential.

THE EDUCATIONAL EFFECTIVENESS OF DIGITAL TOOLS

As a learning aid for students with special needs, the effectiveness and usefulness of digital tools also depend on the ability of the teacher to design and implement the applications.

According to research by the UK Agency for Communications and Educational Technology (ACET 2003), the use of digital communication tools in schools to support students with special needs enables learners to communicate, participate in lessons and learn more effectively. The key results of this research are described as follows:

GENERAL FINDINGS:

- ✓ technology allows a greater autonomy of the student;
- ✓ technology facilitates the unlocking of the hidden potential of people with communication difficulties;
- ✓ technology allows students to demonstrate the fulfillment of work tasks in special ways, for which there would be no equivalent in traditional methods;
- ✓ digital communication tools allow work tasks to be tailored to suit individual skills.

EFFECTS OF USING TECHNOLOGY FOR STUDENTS:

- ✓ computers can improve the degree of independent access to education (Moore & Taylor, 2000; Waddell, 2000);
- ✓ students with special needs are given the opportunity to complete tasks at their own pace (Waddell, 2000);
- ✓ visually impaired students who use the Internet can easily access information with their peers (Waddell, 2000);
- ✓ students with profound and multiple learning difficulties may communicate more easily (Detheridge, 1997);
- ✓ students who use assistive voice communication technologies gain trust and social credibility at school and in their communities (Buckler & Peterson, 2012);
- ✓ Increasing students' familiarity with the digital field motivates them to use the Internet at home for both training and entertainment purposes (Waddell, 2000).

EFFECTS OF USING TECHNOLOGY FOR TEACHERS:

- ✓ reduces the isolation of teachers working in special education by allowing them to communicate electronically with colleagues (Abbott & Cribb, 2001; Lewis & Ogilvie, 2002);
- ✓ supports the analysis and self-analysis of professional practice through online communication (Perceval-Price, 2002);
- ✓ improves staff skills and contributes to a better understanding of the access technology used by students (Waddell, 2000);

- through collaboration with colleagues, improves the professional and efficient development of the use of information and communication technology with students (Detheridge, 1997; Lewis & Ogilvie, 2002);
- materials in electronic format (for example, online resources downloaded from the Internet) are easier to adapt to accessible resources, such as extended format printing or Braille (Waddell, 2000).

EFFECTS OF USING TECHNOLOGY FOR PARENTS OR CAREGIVERS:

- the use of support for voice communication encourages parents and caregivers to have higher expectations about the sociability and level of active participation of children (Buckler & Peterson, 2012).

In conclusion, it should be emphasized that there is considerable potential in the use of digital tools in education, along with many challenges and even dangers. New technologies can provide the means to explore new forms of learning that overturn traditional hierarchies of education systems and to develop real alternatives to classical, rigid, passive approaches to the education of people with special needs. However, these technologies can also become barriers to education if they are applied without a commitment to the principles of equality, participation and responsibility.

CHARACTERISTICS AND PEDAGOGICAL REQUIREMENTS OF AN EDUCATIONAL SOFTWARE

Characteristics and pedagogical requirements of an educational software adapted to students with special learning needs

The language used in the lessons must be close to that used in the textbooks used in the classroom, being in accordance with the requirements of the school curriculum for each subject and level of education. The new terms, introduced in the lessons, are explained along the way in the context of the lesson and, when necessary, their explanation is repeated in other lessons, using the hyperlink. It is recommended to avoid using multidisciplinary terms that go beyond students' vocabulary. The level of language must be compatible with the age and level of the students, but also take into account the enrichment of their personal vocabulary. Messages of any kind should be simple, unambiguous and easy to follow.

The text should be easy to read and write in plain, intelligible language. The language used is the one accepted and used in school, adapted to the level of the students. It is recomended that the text be short, coherent, exemplary definitions and expressions. In addition, the text can be written in a small space in size, but enough to express the message to the student. The texts must be easy to read and the message clear and coherent.

Vocabulary should be tailored to the needs of children / students. It is advisable to use vocabulary adapted to the age and level of the students. The terms are carefully chosen because they must be useful, meaningful, and widely used. Texts are presented in text boxes that offer much more space than a classic textbook, so long sentences or explanations made exclusively by text are avoided. The texts must be carefully checked grammatically. The aim is a synthetic expression, but at the same time comprehensive and coherent. The text is in all cases accompanied by other multimedia objects (images, video, audio, etc.) that helps to explain the notions.

Tasks presented both as text and sound. Given the specifics of students with learning difficulties, the work tasks that help to complete the proposed activities are presented both as text and sound. The teacher has the opportunity to choose how the student receives them. This presentation in two forms offers the possibility to use each moment in different contexts by repeating the same sequence accompanied by text or sound (or both at the same time). Particular care will be taken when choosing voices, which should be warm, protective, the tone used should not be too loud, the pace of the voice should be slower than that of regular communication so that the student can understand the meanings of the actions they ask to be made. The audio file can be listened to as many times as needed before moving on to the actual task.

The lesson should raise the student's level of interest. The lesson contributes to achieving a correct dynamics of the training by maintaining the balance between educational and captivating attractiveness, by correlating the multimedia sequences to the difficulty of the approached topic, to the symbolic or abstract content, to the curriculum, to the teaching rhythm, to the available effort, attention, fatigue, stress. the subject.

The lesson must actively involve the student. The content of a lesson can combine several learning resources: presentations, simulations, interactive experiments, interactive diagrams, exercises, tests or educational games. All the lessons learned involve the direct activity of the students, and the interactivity consists mostly in gradual feedback provided to the user throughout the lesson.

The lesson should stimulate cooperation between students. The interactive lessons are based on the constructivist paradigm (the student participates in the construction of his own knowledge, the teacher assists, helps, advises and rewards him), creating the premises for a focus on the student. Integration in the virtual learning space allows participation in actions and activities that describe or simulate real situations of communication and interpersonal cooperation, actively supporting social integration.

The lesson should facilitate multisensory stimulation in the presentation of information. The student is able to extract, retain and integrate a much more relevant amount of information, when it is presented to him in the form of an observation, an experiment, a dialogue, a predictable situation. For this reason, the lesson should be structured as a collection of information to be extracted rather than received, using a variety of multimedia means, using all the methods available to the virtual learning environment / reality. The information must be presented through multimedia learning resources: text, image, video, simulations, educational games, etc., and the learning process thus benefits from the multisensory stimulation of the student, which leads to optimizing the learning process by achieving the proposed operational objectives. Lessons should be made up of reusable learning objects, which can be grouped into complex topics tailored to class level and intellectual abilities. Due to the advantages of dual encoding (using multiple information objects to present the same notion), some multimedia combinations are more efficient than traditional methods of presenting information. Thus, the information processed simultaneously through the verbal and imagistic channels is better retained than the one processed through only one of them, and the learning performance in the conditions of combining the images with the verbal is better than in the conditions of combining the verbal with the text.

The lesson should contain activities related to real situations and gradual activities as a level of difficulty. The virtual learning space offers the advantage of describing real-life situations that must be fulfilled by the student - this is done mainly through simulation. The simulation can be performed by directly manipulating real objects (but which are shown on the screen). Procedural simulations are those used mainly for the formation of skills. Another type of simulation is that of problem situations: the user is placed in a context in which he has to make a decision. The content of the learning material is structured sequentially in time, from simple to complex, from known to unknown, the last aspect representing the conditional acquisition of knowledge, the acquisition of new knowledge based on the activation of previous knowledge.

The lesson should provide the opportunity to assess the student along the way. Student assessment plays an important role in structuring a lesson because immediate feedback is used: the program is designed to provide immediate and continuous feedback to the user - each student's reaction to a program stimulus is analyzed, appreciated, and contributed, when adjusting the individual path. Evaluation can also be done with the help of error (error training), a very important method when using the scaffolding strategy (or scaffolding):

Errors become a necessary part of the learning process, the error acting as feedback for what the person does not yet know. Errors provide an opportunity for the subject to learn from his own experience. Feedback is thus needed to detect and understand what is wrong, why, and how to reduce the chances of error. In general, the student is assisted by the teacher until the correct completion of the course.

The lesson should provide the opportunity for final assessment. The evaluation of the personal path can be done at the end of a learning stage, whether it is an intermediate stage or a final stage. The existence of recapitulative moments makes possible an assisted evaluation of indications and returns. Assessment thus becomes a method of learning and an appreciation of a student's progress.

The user should receive feedback immediately and in various ways. The program must be designed in such a way as to provide the user with the opportunity to receive immediate and continuous feedback - each student's reaction to a stimulus of the program is analyzed, appreciated and contributes to the regulation of the individual path. The student is stimulated by various learning resources: text, graphics, active diagrams, simulations, etc. to provide feedback through which his path can be analyzed. This kind of feedback stimulates:

✓ a behavior that denotes the student's participation: he is active and through educational stimuli is forced to take part in activities;
✓ the student participates in the construction of knowledge, instead of passively receiving information, he performs certain tasks that will lead him to understanding and learning. When learning takes place with corrective feedback, the student receives suggestions or information on how improvements can be made to succeed in a correct path. If the test does not have corrective feedback, the number of tests is limited (it must be strictly lower than the number of answers provided, in the case of multiple choice questions). This kind of interaction influences learning due to its frequency. Students practice in order to enrich their knowledge and skills. In virtual learning situations, students have the opportunity to complete activities that use a variety of testing and feedback methods.

Ease of navigating and using interactive lessons. The lesson should be designed so that the student has control throughout its use, assisted by the teacher, until the correct completion of the work tasks. The student can intervene to repeat some activities. The navigation skills required must be kept to a minimum. The files used by the teacher must be small in size and easy to upload, requiring short waiting times.

Researchers at Children's Digital Media Center of Georgetown University studied how virtual characters influence children's relationships, and if there is a process of learning of the cognitive tasks related to these relationships. The conclusions reached are that interactive characters can improve early learning under certain special conditions: when they are programmed to provide specific feedback, they are receptive to children's reactions and their graphic representation has similar characteristics (Calvert et al. 2014). Children who interacted with personalized virtual characters (had the same gender as the child, said his name, hummed his favorite songs, etc.) made significant improvements in acquiring new information. When a non-personalized version of the interactive character was involved, its quality was relatively poor, learning process being significantly improved only by exposure to personalized interactive characters. It has been shown that an essential factor in this type of learning is the formation of emotional relationships.

Spatial orientation, social skills and problem solving are other cognitive dimensions that can be improved through digital media. Of all these, problem solving requires the most complex mental strategy, including discovering, analyzing, planning, and approaching the task in a specific way. In an experimental study, preschoolers watched at random between one and five episodes of a program called "Blue's Clues." *Blue's Clues* and *Blue's Room* were two American series between 1996 - 2007 that had a target audience of preschoolers, with the goal of developing problem-solving skills and the creative use of acquired knowledge. In order to understand the concepts presented in the program, the child must be able to maintain his attention. Assuming that the understanding of the content and the attentional process are closely linked, a specific scenario has been created, where video techniques, character voices, musical cues, sound effects and repeatable dialogue contribute to maintaining constant attention. The researchers involved in the study claim that preschoolers who watched the Blue's Clues program demonstrated a better understanding of the specific information presented in the show. Moreover, children who watched five episodes developed a better understanding than those who watched only one episode.

The research findings revealed a positive association between school preparation, vocabulary development and early exposure to educational media programs (Crawley et al., 1999).

When digital programs are designed in an attractive way, children show sustained attention, make extra efforts to process information, even when the content is difficult, because they expect the next material to be more easy to understand, and interesting too (Campbell et al., 1987). Digital education programs designed in an attractive way are highly appreciated by children because they indicate that the program is made especially for children and will have an accessible and enjoyable content.

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PART 2 - METHODS AND TECHNIQUES USED IN DISTANCE EDUCATION

INTRODUCTION

Education is a field that, in its essence, follows changes, does not run away from them, adapts the technological progress taking place in the world, and the general technological progress significantly changes education. There is no shortage of technological innovations in 21st century education, and the implemented modern solutions are a response to the changing pace of life and the adaptability of society.

E-learning provides a model of learning irrespective of place and time and often also the speed of absorbing educational material. With the current available technology, this distance learning often takes place online, hence distance learning in this issue is often the same as e-learning - online learning. Thus, the transmission of knowledge in an online manner through a distance learning platform and available distance working tools is a technique and "distance" itself a method of teaching. In other words, distance learning is one way of education, another form of organizing teaching processes, while e-education is a set of tools. Global megatrends are forcing changes in the approach to education. Without taking them into account, online education has no chance to be the education of the future and for the past.

What does it look like in online education? Does education follow the changes?

Processes are being automated and new technologies, especially artificial intelligence (AI), are creating completely new conditions for building human competences.

https://pl.freepik.com/darmowe-wektory/lekcja-sluchania-malych-dzieci-przez-laptopa-elementarne-e-learning-plaska-ilustracja-nauczyciela_12699865.htm#page=1&query=edukacja%20online&position=16&from_view=author

The competence needs for industrial revolution 4.0 are illustrated in a table from the report: Armstrong K., Parmelee L., Santifort S., Burley J., Van Fleet J.W., Preparing Tomorrow's Workforce for the Fourth Industrial Revolution for Business: A Framework for Action. Johannesburg: Deloitte and Global Business Coalition for Education, 2018.

Skill Categories	Definition	Purpose	Examples	Teaching & Training Methodology
Workforce Readiness	Foundational to individuals' entry and ongoing success in the workplace, ranging from initial job search to maintaining continuous employment	To support youth in finding and securing employment, and succeeding within the workplace	Literacy, numeracy, digital literacy, resume writing, self-presentation, time management, professionalism, etiquette, social norms	
Soft Skills	Personal attributes, social skills, and communication abilities that support interpersonal relationships and interactions with others	To support youth as they integrate and collaborate with internal and external workplace stakeholders, such as customers, co-workers, and management	Communication, critical thinking, creative thinking, collaboration, adaptability, initiative, leadership, social emotional learning, teamwork, self-confidence, empathy, growth mindset, cultural awareness	• Team-based • Project-based • Practical application • Experiential • Case simulation • Business exposure • Job shadowing • Mentorship • Coaching
Technical Skills	Knowledge and capabilities to perform specialized tasks	To give youth technical or domain expertise to perform job-specific tasks	Computer programming, coding, project management, financial management, mechanical functions, scientific tasks, technology-based skills, and other job-specific skills (e.g., nursing, farming, legal)	
Entrepreneurship	Knowledge and abilities that support success in creating and building a workplace opportunity or idea	To support youth in establishing their own business, supporting entry into freelance, contract work, or gig work, and/or developing as a self-starter within a work environment	Initiative, innovation, creativity, industriousness, resourcefulness, resilience, ingenuity, curiosity, optimism, risk-taking, courage, business acumen, business execution	

Lifelong Learning:
A continuous process of gaining new knowledge and skills as individuals progress through their professional and personal careers.

https://www2.deloitte.com/global/en/pages/about-deloitte/articles/gx-preparing-tomorrow-workforce-for-the-fourth-industrial-revolution.html

The mentioned publication notes that the formation of future competences takes place through the use of a variety of working methods and techniques.

Many teachers in distance education use only single methods of working with students. **In this chapter we present a whole set of methods that provide opportunities to adapt lessons to the needs of a particular class, group.** We present selected methods of working with students transferred to distance education with a brief description of how to implement them in the classroom.

Choosing online teaching methods is difficult, but the more you know about the range of methods, the easier it will be to adapt the method to the situation. What's more, it is said that there are no ready-made methods - each online instructor/trainer creates their own.

Dear teacher!

METHOD VERSUS TECHNIQUE

Teaching method is a more general term than technique. **A teaching method is used for the purpose of acquiring knowledge and skills. In the area of a particular teaching method, different techniques can be used. A technique is a specific procedure/prescription for applying a method in practice.**

In this report, you can find examples of teaching methods belonging to a specific group of methods. Some of them are additionally supplemented with techniques by which a specific method can be implemented. This is not the only correct classification because often in the literature the terms method and technique are mentioned as synonyms.

The basic methodological rule, which guides the designer of distance training (e.g., in the form of e-learning), is the activation of learners. The possible forms of such activation are different and can be grouped according to the method. **The main groups of methods are:**

- **Instructional methods** - are used to provide learners with declarative knowledge in a possibly accessible way. The basis and main source of knowledge is the teacher;

- **Problem-based methods** - are used to transform students' passive knowledge into active knowledge and to discover new knowledge and apply it in practice. The essence of this type

of methods is to put the participant in a difficult situation, which should be overcome by working out a solution individually or in a group;

- **Expository methods** - used to create an emotional experience in the learner and to demonstrate the values according to which the learner later forms his/her opinions and judgments;

- **Practical methods** - used to enable direct understanding of reality and develop skills that are useful in everyday life practice;

- **Program methods** - a way of teaching and learning in which the assimilation of information by a student takes place on the basis of a structured program containing logically connected blocks of information on a specific topic;

- **Active methods** - a way of leading groups and the teacher that enables active learning, i.e., learning by doing and experience, the teacher is a guide who organizes didactic situations and controls the student's discovery of knowledge.

INSTRUCTIONAL METHODS IN DISTANCE LEARNING.

The aim of the method is to provide ready knowledge, understanding and memorizing the message by learners. The following can be mentioned within this method:

- **Instructional lecture;**

- **Explanation;**

- **Talking;**

- **Storytelling;**

- **Description.**

INSTRUCTIONAL LECTURE

The teacher gives information to the audience. The role of the students is to actively listen. The lectures should be completed with a demonstration or presentation (sharing a desktop / presentation or webcam view). A sense of humour and anecdotes can help to overcome the monotony of lecture. Lecture content should include summaries and relevant and interesting examples. In this form, successive stages/elements of the argument should be clearly marked, the text should be supported by elements of demonstration, illustrating the discussed issues (to catch the attention of the listeners - e.g., graphic files, video and audio fragments).

Method of implementation:

- Real-time online meeting - teacher=lecturer;

- Audio or video recording by the teacher and making it available to students - whole audio (podcast) or video (embedded file);

- Uploading a link with a video recorded by somebody else.

EXPLANATION

The teacher explains various theorems to the students. This involves deriving a theorem from others already known to the students. The role of the students is to actively listen and ask questions. When explaining, it is useful to use a presentation or virtual whiteboard, and the method can be applied to a real-time online meeting.

TALKING

Conversation between teacher and students with the idea that the teacher is the person in control. If any ideas appear during the discussion, it is advisable to write them down, e.g., in a text editor (desktop sharing) or on a virtual whiteboard, and apply the method to a real-time online meeting

STORYTELLING

Storytelling is the presentation by a teacher of some action, real or fictional, that takes place over a period of time. The role of the students is to actively listen. Creating stories of subject content requires expert knowledge and understanding of the history of the content, the context, the connections to other subject areas or disciplines. Stories can be chosen from or inspired by existing stories in a book (e.g.; autobiographies, non-fiction, …) or can be completely invented by the teaching staff member. Pictures or a presentation (sharing a desktop during a real-time online meeting) can be used to increase students' interest. This method can also be implemented through asynchronous methods:

- Recording an audio or video by the teacher and making it available to students;
- Uploading a link with a recording prepared by somebody else.
-

DESCRIPTION

The teacher introduces the students to unknown people, things, natural phenomena, geographical landscapes, historical events etc. When describing, it is advisable to use a presentation or photos (sharing a desktop / presentation). Description can be implemented through:

- Real-time online meeting;
- Recording an audio or video by the teacher and making it available to students;
- Uploading a link with a recording prepared by somebody else.

PROBLEM-BASED METHODS IN DISTANCE LEARNING

The aim of the method is to put the student in a situation where they are forced to find and verify solutions to a problem on their own, to implement the principles of the scientific analysis of a problem

The essence of this type of method is to put the student in a difficult situation, which must be overcome by working out a solution individually or in a group. Such a difficulty (problem) evokes curiosity, forces to analyse the presented situation, requires formulation of solution proposals (hypotheses), and then verification of their value. Problem-based methods developing critical thinking skills. A variety of sources of information are used, e.g., didactic films, photographs, drawings, the Internet, numerical data. The cognitive-educational

The cognitive-educational processes that take place in this process consist of analysing, explaining, evaluating, comparing and inferring.

A problem usually takes the form of a question or an assignment. It usually does not present all the data needed for the solution. The student who undertakes to solve a problem must demonstrate cognitive activity and emotional resilience. The problem should have something intriguing in it, make the student curious, induce him/her to be active.

Due to the nature of the method and the variety of problems, the possibilities of implementation in a distance form are virtually unlimited. A few suggestions of an organizational character are presented below:

FORUM/CHAT

- Group forums or chats and class forum or chat;
- Group forums or chats and real-time online meeting.

Students are divided into groups to which the teacher sets up separate forums (or chats). The problem situation can be presented as a forum question in separate groups, with a request to propose solutions for a set period of time - students can only present their solutions to their group. After the suggestions have been collected, the phase of verification and discussion of the presented ideas follows, first in groups and then in the class forum.

OPEN TASK

The problem situation can be presented to the participants as a task content. It can also be presented in a real-time online meeting with an e-table or text editor where ideas will be written down. Everyone individually transfers their proposed solutions to the lecturer with a record of the process of their verification. At the end of the course, the teacher arranges an "exchange" of solutions - learners can discuss the proposals of others in the forum, or using voting, choose the best in their opinion.

DOCUMENT SHARED

The problem situation is presented in the form of an HTML page, a shared document and the participants work out their joint solution in a shared document. At the end, the result of each group's work is discussed in the general forum.

So, it can be implemented through a virtual drive - files for groups e.g., text editor with access for selected students and teacher and a class forum or online meeting in real time. The teacher presents the problem. Divided into groups, students. Divided into groups, students work out their joint solution in a shared document (with teacher access).

For organizational reasons (long time to develop solutions in asynchronous mode), for some group-solved problems it will be more effective to deliver the content using the classic problem-solving method in synchronous mode (including communication tools such as text chat or videoconference) or in stationary form (blended learning).

The group of problem-based methods also includes activation methods, e.g.

- **case study;**
- **situational method;**
- **role-play;**

- **didactic discussion;**
- **didactic games.**

They are described in detail in the section on activating methods.

Expository methods are used to shape values, change them and organize them into a system. The essence of this method is to experience certain feelings. We will describe below

- Film, theatre show, performance;
- Exposition (e.g., online gallery).

FILM, THEATRE SHOW, PERFORMANCE

Preparation for participation can take the form of a real-time online meeting or providing students with materials to prepare themselves. The film can be uploaded to a learning platform or a link can be provided. Discussion of the film can be carried out in a discussion forum.

Projection of the film, performance can be done by providing a link to the material or uploading a file. The projection of the film material should be preceded by a preparation phase (providing information on the author and/or the work) and followed by an analysis of the work, which involves discussing the emotions involved in the projection and forming an emotional attitude towards the discussed topic.

The analysis of the work (film or play) should take place with particular attention to the emotions during e.g.: a real-time encounter. NOTE: In the presented approach "film" is a method, i.e., a way of teaching, not a didactic device. As a didactic device, film is only an audio-visual material that helps to introduce or illustrate certain concepts or events. Online streaming of cultural events or performances can also be used.

EXPOSITION- ONLINE GALLERY

Preparation for the reception can take place during an online meeting in real time or transfer of materials for self-preparation. Visiting a gallery / viewing an artwork by providing a link to the material or uploading a photo. Virtual museums are worth mentioning at this stage. What can you see without leaving home? As it turns out, a great deal. Museums, science centres and monuments around the world have opened up to virtual tours. The mysterious Pyramid of Cheops, the world-famous Louvre in Paris, or perhaps NASA's science centre? The internet is full of listings of museums from all over the world that are worth visiting online, you just need to fit such a tour into your curriculum and invite your students to it.

PRACTICAL METHODS IN DISTANCE LEARNING

The aim of this method is to involve the participant in practical tasks. The purpose of the task as well as the rules and procedures to be followed (e.g., in the form of successive steps of a procedure) should be communicated to the participants. It is also necessary to inform them about the tool (e.g., software) they have to use while performing the task and provide information on how to use it. In some cases (e.g., the need to work with commercial software) it is necessary to organize a stationary meeting (e.g., in a computer lab - blended learning). After finishing the task, the lecturer should review the result of work and correct any errors.

- Diagrams, descriptions, instructions
- Project method

DIAGRAMS, DESCRIPTIONS, INSTRUCTIONS

https://www.shutterstock.com/pl/g/swstock

The information necessary to do the exercise students receive from the teacher in the form of a list of rules and methods of operation, which they have to follow (e.g., in the form of successive steps of the procedure) in a text file (Word, pdf, instructions in HTML pages and e-books).

It is worth supplementing them with instructions in the form of video files, and in the case of software operation - in the form of screencasts.

During the implementation of the task there should be a forum where learners can get help from the lecturer or other participants of the course in case of failure or doubts, or subject exercises where the teacher sends learners a link to a ready-made (or self-created) exercise page.

PROJECT METHOD

There are many projects that can be successfully "transferred" to the web. Especially if we manage to find a suitable tool to replace the activities we usually used at school. The project method allows for integration of school and out-of-school knowledge, practical use of knowledge and skills. It exercises creative thinking, fosters integration of content from various teaching subjects. It teaches how to make independent decisions, plan, work independently and in groups, solve problems, select information, analyses content. The project combines many methods and techniques. Working on a project is a multi-stage process and usually takes a long time. The result of work on the project is the creation of some " product" (exhibition, publication, recording, staging, etc.).

The project method is the use of a combination of working tools and techniques.

It can look like this, for example:

- ✓ the teacher gives the students instructions on how to work on the project, e.g., in a file;
- ✓ students are divided into groups, which develop a project by editing a shared file or folder;
- ✓ communicators can be useful to allow for conversations to be shared between channels on a particular topic while also allowing materials to be shared;
- ✓ applications which allow for the collection of opinions (anonymous brainstorming, voting which allows for choosing the best of the proposed solutions) can be useful;
- ✓ tools supporting planning may be indispensable - here it is recommended to use the ones which have been useful in project work in business and non-governmental organizations for a long time;
- ✓ presentation of projects during an online meeting in real time.

## PROGRAMMED METHODS IN DISTANCE LEARNING

The aim of this method is to learn a part of the material with ongoing verification of the level of assimilation of knowledge, consolidation of information through repetition, individualization of work with the material.
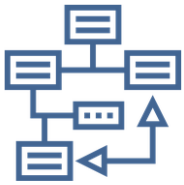
The programmed method is based on dividing and structuring the material in such a way that consecutive parts are separated by control questions - checking whether the learner has understood and memorized the content. The division of the material into parts is done according to the criterion of the didactic aim that the part is supposed to fulfil (not the size!). Moving on to the next part is possible only when the student gives the correct answer. Incorrect answers should lead to supplementary, repetitive and explanatory blocks, thanks to which the student will be able to correct his answer. Review questions should be both close-ended and short-answer questions - this avoids the situation where answers are chosen at random. They can also act as jumping-off points where the student can choose from several options for their further learning pathway according to their interests or needs. Questions should be structured in such a way that the answers require an understanding of the subject (i.e., they should not be based on mechanical memorization or simple word searches).

The material blocks and questions structured in this way form a branching tree, which the learner navigates according to the individual learning progress, the initial state of knowledge and the student's choices.
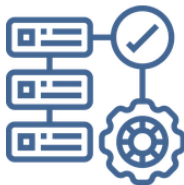
The following parts can be treated as task stations. Depending on the tasks prepared for the participants, the task station method allows for: teaching reading comprehension skills, searching for information, analysing given information; teaching time planning skills, self-control. Task stations combine different techniques, and activities using task stations should be designed to develop different skills.

ONLINE COURSE

Organizing an online course for a particular unit (topic) Remember that the introductory content should be grouped into thematic blocks. After each block you should check the student's understanding of the topic. Depending on the results, either the participant moves on, or is returned to repeat the topic one more time. A single tool of a distance learning platform e.g., an online book, a presentation or a lesson e.g., on Moodle constructed according to this method. The correct answer always directs to the next page. An incorrect answer should direct you to the page containing feedback and/or further guidance. It is also a collection of single-choice, multiple-choice and short-answer questions to identify links between the pages.

ESCAPE ROOM

It is a recently fashionable method. It can be created using an online form or a ready-made application. Most often it consists in testing knowledge of certain material. To qualify as a programmed method, after each "failure" the learner should be referred to information or tasks to be practiced (e.g., a page from a textbook, a link to an e-book, a video or online exercises).

ACTIVE METHODS IN DISTANCE LEARNING

Activation methods aim at increasing the students' involvement in the learning process by acting on their feelings and emotions. The constitution of the previously presented methods also has the characteristics of activating methods, here we present the classically understood activating methods, which does not exclude that other are not activating

DISCUSSION METHOD

The aim of this method is to train the skills of listening to each other, formulating arguments, formulating a thesis, presenting and defending one's position, and drawing conclusions. The following questions can be used to sum up and evaluate each discussion: What should be improved in the next debate? Which arguments were the most convincing? Was anyone convinced and changed their mind? What interesting new views did you hear for the first time?

It facilitates joint decision-making when team members have different views, and it allows to choose the best solutions to problems. Discussions can be held in distance learning on webinars, chat rooms and discussion forums.

Discussion techniques:

- **Debate 'for and against'.** This type of debate is used when we want students to look at the same problem from two different points of view, analyses it together, and then make a decision. This form of debate develops the ability to think logically and argue, to solve problems, to search and organize information (a skill that students learn while preparing for the discussion), to verify their own - often superficial - opinions. The teacher chooses the topic and defines the rules of the debate, helps students to prepare for it, divides the participants into two debating sides: supporters and opponents of the thesis. During the debate the teacher listens carefully to what

students have to say, without commenting on it. The debaters present their arguments. The observers (by means of an observation card) or the audience (by voting) decide whose arguments are more convincing. The debate "for" and "against" should be directed by moderators. They are responsible for supervising the course of the debate, opening the discussion, giving and taking the floor when the time limit is exceeded, and ensuring the culture of the discussion.

- **Panel debate** the topic in a panel discussion is publicly discussed by a nominated group, or "panel", which is led by a person called the moderator. The group prepares in advance for the discussion and determines exactly what is to be said. It is desirable that the panellists present different views. The moderator usually knows what the panellists have to say and directs them a little like an orchestra conductor. After the speeches, there is time for the audience to speak. They can ask questions of the panellists and comment on their views, as well as present their own point of view. The moderator gives the floor to the audience and the panellists. He then briefly summarizes what has been said, adding his comments. A well-run panel discussion never ends with a clear evaluation, but gives each participant a sense of the importance of his or her own opinion.

- **The Oxford Debate** It is a variation of the "for" and "against" debate. Two teams of several people take part in it, presenting opposite views on the discussed issue. The participants take turns speaking, with the representative of the team defending the thesis starting the debate. The audience can also take the floor during the debate. Before the debate begins, a maximum time limit must be set, and a person must be elected as leader to ensure that the rules are observed. The most important moment of the debate is the vote - the audience decides which thesis has been justified in a more convincing way.

- **Socratic discussion** It is an intellectual conversation focusing on a selected text (it can be an essay, report, poem, video, painting, newspaper article, etc.). The participants, having studied the specific source material, engage in a discussion focused on finding the truth. What is unclear should be explained, and what is not should find its justification.

- **Discussion with an invited guest.** The first part of the meeting belongs to the invited person, in the second part participants ask questions and comment on what they have heard before. Example - Ask an expert- a subject matter expert from industry or elsewhere is invited to join the class via skype or a similar conferencing software to give a short talk on a specific subject and to respond to questions from the students. The session lasting no more than an hour, should be prepared and hosted by a small team of students, allocating roles such as moderator, recorder, etc. to specified

students. It can also be recorded and used to support a discussion amongst the students afterwards.

- **Metaplan** - presentation or summary of a discussion or more generally of a problem in graphic form with the focus on the description of the current situation, the description of the desired situation and the reasons for discrepancies between them; to be carried out individually or in groups. This method allows for an in-depth study of the discussed issue and encourages critical analysis of facts, formulation of judgements and opinions. If the work with the use of metaplan takes place in a group, it is worth preparing a poster, and determining the time of discussion. It is usually based on these 3 questions:
  1. How is it? How it was?
  2. How things should be? How should it be?
  3. Why is it not as it should be?

- **"Six hats" by de Bono**

https://pixabay.com/pl/vectors/kapelusz-sze%c5%9b%c4%87-kapelusze-g%c5%82owa-35006/

It is both a discussion and a problem-solving technique. When solving a problem-discussion we put on successive "thinking hats" in the team. Participants in the process take a colour point of view.

WHITE HAT. Facts, figures, data, information. What do we know? What data do we need to get?

RED HAT. Emotions, feelings, hunches, intuition. What do we feel about the issue as we think about it?

BLACK HAT. Caution, assessing veracity, judging, checking, verifying facts. Are the facts consistent? Will it work? Will it be safe? Is it possible?

YELLOW HAT. Benefits, advantages, gains, savings. Why is it worth doing? What will the benefits be? Why will it be worthwhile?

GREEN HAT. Exploring possibilities, inquiring, searching, suggestions, proposals, ideas, innovations. Alternative solutions. What can be done here? Can it be done in a different way? Do we have any ideas?

BLUE HAT. Thinking about thinking. Controlling and steering the thinking process. Summary. Where have we come to? What should be the next step? Problem solving program

Focusing on one's own point of view broadens the perspective, gives other arguments, makes discussions more interesting

- **The aquarium** - a traditional discussion can be difficult to hold - due to the crowd of opinions expressed, but this variant seems to be easier to implement; with several people leading the discussion, the rest of the students can focus on writing down their conclusions. Traditionally in this form of discussion in the classroom the participants (several people) sit in a circle and talk about the chosen topic. The others sit around them and are observers. It is up to them to analyse the discussion in terms of the choice and effectiveness of arguments, respect for rules of procedure, behaviour and the general flow of the discussion. In an online meeting a role can be assigned on a virtual whiteboard. The purpose of such a discussion is primarily to teach each other and improve argumentation skills.

ROLE PLAY

The aim of this method is to learn empathy - to understand the motives of different behaviours, to express thoughts and feelings, to understand different attitudes and behaviours; to improve communication skills and the ability to present one's position. It also allows for better mutual understanding and consolidation of the learned contents. In English there is a saying "to be in somebody's shoes" which means taking somebody else's perspective, their way of thinking, their position in a discussion. This saying is a good way to introduce role-playing, which is based on taking on someone else's role when trying to solve a particular problem. Role-playing can be used as an educational method, which involves the active identification of students with fictional roles and situations. It activates the student's knowledge and skills and creates new opportunities for cognitive, emotional, sensory and motor activities based on the student actively taking on someone else's role.

- **Didactic games**, where the scenario assumes that students become "actors" for the duration of the game;
- **Role-playing** - an element of many games where students, entering into roles set by teachers or chosen by themselves, practice skills such as negotiation, decision-making, expressing their own opinions and emotions or communication;
- **Conducting interviews, surveys and polls** - in distance education we use dedicated applications for such work, it may be part of the homework and then we can stay with the traditional form - personal, or offer a mix of tools that allows you to enter the role of the interviewer;
- **Simulation** - is an active learning method/technique that is based on imitating reality in order to gain experience close to the real thing. The aim of simulation is to show a certain process from beginning to end. Simulations can therefore be thought of as a miniaturized image (representation) of reality or a model of a social, political or economic process. The following terms are used interchangeably: simulations, social simulations, simulation games. The problem with the definition does not stem from the innovation of the method, but is rather a consequence of different ways of imitating reality and different ways of using simulations in pedagogical practice;
- **Drama techniques** - drama scenes students can record themselves at home and present during online meetings or work during remote meetings using drama techniques.

ANALYSING AND SOLVING PROBLEMS

Kształcenie umiejętności wnikliwej analizy sytuacji problemowej; ustalania priorytetów, poszukiwania rozwiązań, wyszukiwania i formułowania argumentów, uczą też współpracy, doskonalą umiejętności komunikacyjne (słuchania i wypowiadania się).

Techniques related to analysis and problem solving:

- **Brainstorming** - a discussion that takes place in the online meeting in real time. Writing down all the ideas on an e-table or in a text editor provided by the teacher. Depending on the purpose of the brainstorming, it may also have an evaluation stage for each idea. Brainstorming" - also known as "idea factory", "idea exchange", "idea fair", and "postponed brainstorming session". and "deferred evaluation session". The essence of the method consists in giving various associations, solutions, which are brought by imagination and a momentary flash of inspiration.

Brainstorming is usually carried out in three stages:

I - idea generation (important quantity not quality, important thinking even the most crazy and ridiculous);

II - evaluation, analysis of the submitted ideas;

III - application of ideas and solutions in practice.

- **"Six pairs of shoes"**- six pairs of shoes, or six ways of acting. Shoes suggest an action that leads to the chosen goal. If you are going somewhere, shoes are essential, but what kind? Each pair of shoes is assigned a different colour and a different cut. Each pair of shoes therefore symbolises a different course of action. The starting point is the assessment of the situation, followed by a concrete decision on the style of action, according to your own initiative, intuition and common sense. By putting on the "shoes" appropriate to the situation, we decide to assign a behaviour to them, and so: we act

- routine   navy blue shoes,

- we engage emotions   pink slippers,

- we fight obstacles   brown half-shoes,

- we gain information   grey tennis shoes,

- we make an instant decision   orange wellingtons,

- take charge   purple jackboots.

During an online meeting, the colour division can be organised as a background for the camera icon or the colours can be allocated to the forum font colour

- **Decision tree** is a method of graphical decision-making process. It allows us to consider: what are the possibilities of solving a given problem, what might be the consequences of adopting a particular option, what values the decision-maker considers. This method teaches how a choice should be made in order to realize its consequences, which should be in accordance with accepted values.

Instructions:

- ✓ The teacher prepares a tree diagram and states the problem to be considered;
- ✓ Then different possible solutions are written down;
- ✓ According to the accepted goals and values students fill in the next level of the tree: positive and negative effects of each solution;
- ✓ With the help of the teacher, pupils are summarising the results of the discussion and choose the best solution.

Diagram of the decision tree:
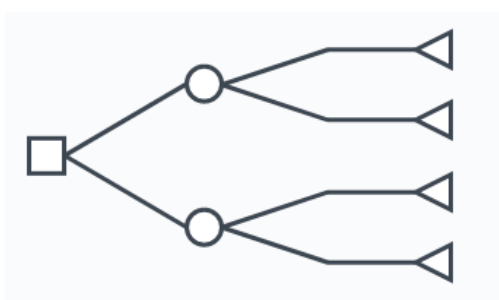
- Decision
- Goals and values
- Positive effects of solutions Negative effects of solutions
- Possible solutions
- Problem (situation requiring a decision)

- **Diamond ranking** - consists in arranging priorities in a diamond pattern, distinguishing the most important, important, moderately important and least important aspects of the problem discussed. Traditionally students give, for example, the causes or effects of a given historical event and write their ideas on sticky notes.
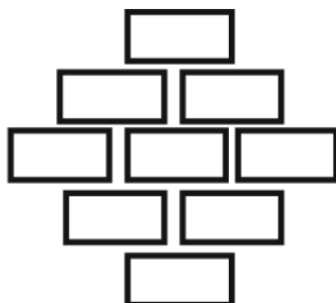
The templates for this method can be found here:

All suggestions are then read out and the class decides together which part of the diamond the sticky notes should be stuck to. In this way, a ranking of importance is created. In online learning, it is possible to work on a virtual whiteboard of ideas.

- **SWOT analysis** - SWOT analysis is one of the basic methods of strategic analysis of an enterprise, it can also be used as a problem-solver in educational processes.

The name of the method is an acronym for **strengths, weaknesses, opportunities and threats**. It can be used for the whole enterprise, or in individual spheres of its functioning, or to analyse a given problem or issue. By using ready-made templates available on the web, specially dedicated to SWOT analysis, we can invite a group of our students to work together.

https://www.smartsheet.com/14-free-swot-analysis-templates

- **Advantages, disadvantages and what is interesting**

This technique involves evaluating each idea in terms of its advantages, disadvantages and interesting aspects. The latter can be the basis for the development of the idea. The technique allows you not only to evaluate the solutions you have developed, but also to refine them. Once the advantages, disadvantages and interesting elements of the idea have been identified, the group considers how to improve the solution in order to reduce the number of disadvantages or to transform some of them into advantages, using the characteristics diagnosed as interesting. The solution is chosen which, after modification and refinement, has in the final assessment the least number of disadvantages and the most advantages. By using this technique, we widen the field of vision of the problem space, we improve the understanding of the decision-making situation.

The procedure for applying this technique in distance education starts with providing students with a set of questions:

1. what advantages does it have?

2. what are the disadvantages?

3. what is interesting about it?

4. "I wonder what would happen if ..."

5. "I wonder where this lead?"

6. "I wonder what would happen if ..."

The discussion forum can be divided into the elements of this technique and during the debriefing the achievements of the different teams, individuals can be summarized.

ONLINE LEARNING GAME

Teacher sends students a link to a ready-made (or self-created) online role-playing game. They teach competition, how to follow rules, how to succeed, and how to learn to lose. These include a variety of lotteries, guessing games, puzzles, tests, association games, which they are based on the principle of competition. Educational games generally require the use of

scoreboards, in which the successive achievements of the participants are recorded. Winning depends on a number of factors, for example game-playing skills, risk-taking, etc.

Many educational games are an effective way to practice useful skills as well as concepts from history, geography, economics, law, etc. These games are based on people's tendency to compete, are highly engaging, have high motivational value, and are therefore worth using. A well-known example of this type of game is "Monopoly", which can also be played online.

PORTFOLIO

The portfolio can be thematic or documenting development - to observe one's own development. It can be individual or group work. It allows for training the skills of searching and collecting relevant information and selecting materials; it shapes regularity and improves self-assessment, teaches self-presentation. Until recently, its creation required a good knowledge of HTML technology and a lot of self-denial. For some time, there have been very popular services that allow you to build a website without any IT skills.

Portfolio is about searching and collecting materials on a chosen topic in a virtual folder. Thanks to the necessity of constant sorting and valuing of the collected materials, students learn to organize their knowledge. They also learn how to use different sources of information and how to cooperate effectively while exchanging materials.

VISUALIZATION

A method which helps to develop the ability to extract important content from a text, enriches vocabulary, teaches the correct understanding and interpretation of a text, improves the ability to associate and remember.

Visualization techniques:

On the web we can find special applications dedicated to online visualization techniques. We can also use a mixed model, where the technique is part of a self-study and is only presented in an online meeting. The use of the tool in this method is not crucial, it is more a way of implementation and should not be focused on, nevertheless, depending on the teacher's decision on how to technically "visualize" in the online classes, it is worth doing a review of the available tools.

- **Mind Maps** are a tool for representing information graphically, making it easier to structure, organize and remember. It is also perfect for learning or repeating information.
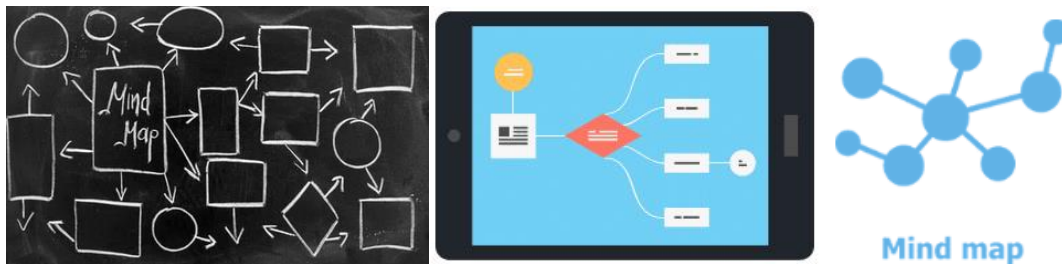
The available graphics programs can be used for

- ✓ **Drawing illustrations and comic strips;**
- ✓ **Making posters;**
- ✓ **Arranging rebus puzzles.**

Or digitalize handmade works by taking photos, displaying via QR codes, or special programmes for specific graphic activities.

THE CASE STUDY

The case study involves analysing specific individual problems in order to learn more and better understand certain processes. The case study can be used e.g., in lessons about road safety, to evaluate historical figures or to analyse educational problems. On the one hand, it allows you to look at a problem from an individual's point of view, and on the other hand, it allows you to generalize the conclusions of your individual experience to the whole topic under discussion. The case study can be implemented online as a combination of tools, working techniques and communication channels.

When deciding which case study to use, you should take into account that:

- ✓ related to the curriculum;
- ✓ has multiple possible solutions to the problem;
- ✓ reflects universal phenomena;
- ✓ it is close to pupils' experiences;
- ✓ it is attractive enough to be of interest to students.

A teacher who wants to use the case study method should prepare a case description in the form of a short, brief text. There should be no moralizing or judgements in the text. The case described can come from everyday life, examples taken from historical facts or newspapers. If the case is not found in the press or in history, the pupils simply have to make it up themselves.

Students read the case study individually or in groups. This is followed by a discussion of the cases and their conclusions. The teacher guides the students' thinking through appropriate questions such as "What happened? Why? What were the reactions of the different participants? Why were they like that? What were the good and bad sides of the situation? What conclusions can be drawn? What can we learn from it?

Through the use of case studies pupils develop the ability to read with comprehension, to analyse presented situations, to infer and generalize from them, and to evaluate situations/behaviour/reactions of those involved.

A typical case study consists of five stages:

- Diagnosis - students are given a case description and read it;
- Search for a solution - students search for a solution to the problem;
- Predicting consequences - students try to predict the consequences of the proposed solutions;
- Discussion of solution - students present results of their work, give reasons and exchange opinions;
- Adaptation to real life conditions - students consider to what extent the developed solutions can be applied in other cases, they can do it e.g., using another method - project.

FLIPPED CLASSROOM

The idea of 'flipping' the classroom has been around for several years. Essentially it means adapting what is done traditionally in the lecture theatre – one-way transmission of knowledge through lectures – and making the lecture content available to students to either watch or read in their own time and as preparation for the class. You then use face-to-face classroom time for active learning opportunities where the emphasis is on higher-order cognitive skills such as the skills of analysis, problem-solving and evaluation. Much of the supporting literature suggests that 'flipping' the classroom in this way supports deeper learning, is a better and more efficient use of increasingly dwindling resources and helps students achieve a far more comprehensive understanding of the subject matter. The aim of this method is to free up precious class time to enable students take part in more student-cantered learning opportunities, such as active learning, discussions, problem-based learning, and other forms of interactive group work and peer instruction. The flipped classroom approach can be applied across any discipline and learning level. It is however an approach that is best considered at course level rather than at the level of an individual module or

lesson as it requires quite some effort on the part of the teaching staff to adapt their learning practices and procedures and for students to fully benefit from such an approach.

Begin by considering the overall design of the course with the other members of the teaching team including all technical support staff. Identify the elements that constitute one-way transmission of knowledge – normally these are lectures and separate these from those where real-time interaction is required, e.g., tutorial sessions, group work, mentoring etc.

Prepare the lecture materials as either reading materials or recorded lectures in formats that are easily accessible to your students and in manageable content 'chunks' that match the structure and format of the overall course and the content. Use the available face-to-face time normally spent on lectures for the types of activities where interaction is required, considering the different requirements of student project work in groups, or individual student/tutor and student/student interaction in order to prepare the face-to-face time appropriately.

Remember to build in regular evaluation opportunities to assess how well this approach is working and to finds ways in which your approach can be improved.

INDIVIDUAL LEARNING MODELS.

E-learning allows for the individualization of the learning process of the herds and it is also worth mentioning the techniques of individualized learning.

The Keller Plan

This is a **personalized learning method** in which students receive material in small units. When they are ready, they take a test on the unit they have just completed. If they pass, they then move onto the next unit. Learners progress at a comfortable pace, i.e., their own pace. https://marketbusinessnews.com/financial-glossary/keller-plan/ "The Keller Plan (also called The Personalized System of Instruction) is an instructional method introduced by Fred Keller, J. Gilmour Sherman, and several other researchers in the 1960s."

https://www.learning-theories.org/doku.php?id=learning_theories:the_keller_plan

This plan can be implemented with great success in distance learning courses, the individual modules of which discover themselves as the students' progress individually.

- ✓ **Programmed instruction**

This is **a method of presenting new subject matter to students through a graded sequence of controlled steps with corresponding activities**. ... This method consists of a network of tests and statements which direct the student accordingly depending on their pattern of errors. Programowane uczenie się jest najbardziej odpowiednim przykładem najnowszej koncepcji technologii instruktażowej. Jest to innowacja edukacyjna i urządzenie auto-instruktażowe. Jest to nie tylko technika efektywnego uczenia się, ale także skuteczny mechanizm informacji zwrotnej służący modyfikacji zachowania nauczyciela.

In this method, the teacher provides the student with a programme for achieving the task in the form of a pre-prepared brochure, information boards or an online course. The participant learns, monitors, corrects and evaluates their own actions. Hence, the model of the programmed learning method is designed for adults who are able to self-monitor the movement technique tasks they master. On the basis of the way of answering the questions contained in the individual parts of the programme, differences in the course of learning, the size and structure of the information doses, forms of controlling the scope and degree of absorption of information by students and the possibility of individualizing the learning process, a linear and a branched programme can be distinguished.

- ✓ **Computer-assisted instruction**

(CAI) refers **to instruction or remediation presented on a computer**. Computers provide immediate feedback, letting students know whether their answer is correct. If the answer is not correct, the program shows students how to correctly answer the question.

These are teaching systems implemented almost entirely by computers, both in the lecture part and in various exercises and tests.

- ✓ **One-to-one instruction**

In this model each lesson is completely customized for that individual student. In one-to-one class settings, the students do not need to decode the messages their instructor give them. They don't have to figure out how to communicate back to the teacher, and can practice or seek greater clarification when they haven't worded a response exactly on target. With one-to-one instruction, communication and sharing of ideas are aligned with the student first.

This is more of a working model that is particularly easy to implement in online induvial meetings, such activities are also popular in language teaching, especially in conversations with native speakers, where online they are not restricted by their work location and can connect with their students around the world and conduct individual consultations.

Education is not just about meeting in a classroom or joining an online class, taking a distance learning course or following the instructions provided by a teacher or software. It is also all the activities we undertake outside the classroom.

✓ **Travel;**
✓ **Exploring;**
✓ **Experiments;**
✓ **Interviews;**
✓ **Exhibitions;**
✓ **Homework.**

When we cannot do them traditionally, we can use some of the technology, open resources on the web and a combination of the methods and techniques outlined in the earlier chapters to apply distance learning.

SUMMARY

Online teaching methods - the easiest and most effective.

The easiest way to teach is to use the delivery method, as a lot of information can be presented in a short period of time. However, if we come to some conclusions ourselves - we understand them better and remember them better, therefore it is justified to use the problem-based course. The recipient wants to actively participate in the process. Additionally, online education creates the possibility of individualization of this process, and by using a combination of active methods it can be a didactic adventure.

We also recommend a detailed description of methods used in online learning with examples and how to use them you can find in EFE project. You can also find the implementation on the

project website.

https://efe-project.eu/methods/

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PART 3.1 - THE IMPORTANCE OF TECHNOLOGY SELECTION IN DISTANCE EDUCATION

INTRODUCTION

With so many tools, media, and technologies available for digital learning and teaching it's getting difficult to choose the right ones. There are several variables that should be taken into account in the process of choosing some in the large variety of the ones available. But before diving into the large eco-system of Educational Resources, looking to the ones that fit better the needs for specific training, it's a good idea to look at the digital learning process himself. How do students engage in digital learning, what are the most common digital learning modalities, how to develop autonomy for digital learning, and, finally, how to keep students motivated during digital training? These are critical questions that should be incorporated into any digital distance learning session. Having some answers for these questions will help not only the teachers but also the students to build better experiences, and to learn more and better through digital distance learning contexts.

The next section of this module will introduce important questions and will try to answer them in an open and curious way. Our role with this module is not only to help teachers and students to ground their knowledge about distance learning but also to provide concrete tools that can be used to improve the overall quality of learning and teaching in distance education.

HOW TO ENGAGE DIGITAL STUDENTS PARTICIPANTS?

Engaging students is crucial in general learning activities but it is particularly challenging in distance learning settings. In these scenarios, students are prone to feeling disconnected and even lost, since they don't have any teacher or colleagues nearby.

There are several techniques that can be used to promote student engagement.

First, it is important to make use of bidirectional channels of communication. The communication must flow not only in the teacher-student direction but also in the student-teacher and student-student directions as well.

In synchronous classes, this is especially important. Most video-conferencing tools allow participants to also speak and show their face using a camera; raise hands and other common gestures and chat using text messages.

Teachers should start by making make sure every participant is comfortable using these features. Some ice-breaking activities at the start of the class may be useful to trigger students' engagement, such as "raise a hand if you are into hip-hop music" or "everyone writes their favorite movie in the chat".

More advanced features allow collaborative highly-engaging forms of communication. The first is the ability to draw in a virtual whiteboard that is shared with the rest of the class. The second is the possibility of breaking the class into small groups that get their own virtual classroom (these are usually called breakout rooms in ZOOM). The latter is particularly useful for larger classrooms where it may be difficult to have everyone participating in discussions. The teacher can assign a few students to each breakout room and give them a set of activities they must perform together. After some time, the breakout rooms are closed and they come back to the main room where each group can share their ideas and results.

It is also important to engage students in asynchronous classes. For example, providing recorded lectures in video or studying material is only using the teacher-student channel and therefore should be complemented by other means, such as online forums where students can comment on the provided material, ask questions and even help struggling colleagues.

Finally, teachers can further engage their students by making them participate in the assessment process. Some digital platforms (see module 9 for a detailed list of tools) allow students to submit their work and assess the work submitted by their colleagues, preserving their anonymity. Students learn not only by doing but also by critiquing what others have done, fostering critical thinking skills. And they usually love playing the role of the teacher!

When researching on the Internet, students must apply critical thinking[1] to the available content which may not be accurate. They should always try to identify the information source, investigate their reputation and find an alternative or complementary sources of information. In this era of disinformation, it is crucial for the students to develop skills that allow them to distinguish clear evidence and facts from ill-documented opinions and preconceptions.

WHAT ARE THE MOST COMMON DIGITAL LEARNING MODALITIES?

When we talk about digital learning, there are some common modalities that teachers should be aware of.

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[1]Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action - https://www.criticalthinking.org/pages/defining-critical-thinking/766

FIRST - SET THE RULES FOR ONLINE CLASSES

Students are more likely to follow and accept classroom rules if they have a hand in creating them. Focus on those rules that will contribute to a successful, orderly learning environment. Teachers can also get the student's input on the consequences of breaking the rules. Developing rules for digital learning will help foster engagement and accountability. For example, getting the teacher's attention in a synchronous class is more difficult, so students must use the raise hand button as seen in the image below.
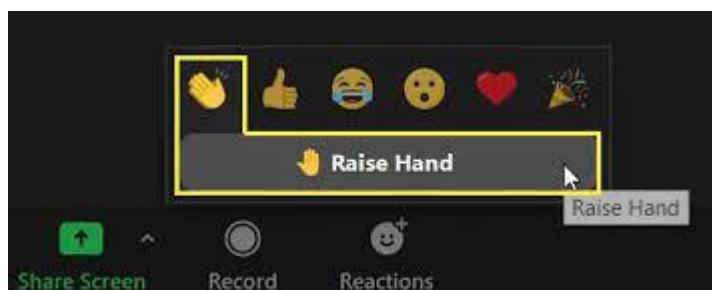
 Raise hand button in the ZOOM interface

SECOND - SYNCHRONOUS AND ASYNCHRONOUS ACTIVITIES

Synchronous activities require a virtual meeting between the teacher and students from different places. ZOOM is a tool compatible with synchronous activities. In synchronous activities, teachers are able to provide support while students are completing tasks and activities. Also, teachers can provide the students with asynchronous learning elements, such as online audio and video and discussion forums, at the time and place of their choosing. A blend of asynchronous and synchronous tools is recommended (see module 9). For example, ZOOM meetings can be complemented with files that can be accessed through asynchronous platforms such as Moodle.

THIRD - OPEN RESOURCES APPROACH

Using open educational resources[2] helps to prevent students' access problems. If any of the suggested resources, which can be files or videos, is not accessible, teachers will get an inbox full of student emails and eventually waste all of your time troubleshooting. It is better to spend a few extra minutes carefully searching for fully open access materials in order to avoid a headache later ☺.

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[2] Open Educational Resources (OER) are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. OER form part of 'Open Solutions', alongside Free and Open Source software (FOSS), Open Access (OA), Open Data (OD) and crowdsourcing platforms. https://en.unesco.org/themes/building-knowledge-societies/oer

FOURTH - INTERACTIVE ACTIVITIES (QUIZZES AND SUMMARIES)

ZOOM or Moodle includes a range of features to create a fun (but serious) interactive learning activities. When teachers create quizzes, they should make sure all questions can be answered by referring to the given learning resources. When teachers ask students to write a summary of lecture videos, they should make it clear that this is not a serious report, producing the best outcomes and responses from students. A set of 10 quiz questions or a 200-word summary is enough to engage students for 20/30 minutes.

FIFTH - ADEQUATE USE OF THE CAMERA

As a teacher, the camera should be on so students can see and read teacher's body language. Teachers should consider giving students the option to turn their video on or off. Some students might feel uncomfortable being on camera or showing their home. If this is the case, encourage them to take advantage of digital backgrounds.

HOW TO DEVELOP AUTONOMY FOR DIGITAL LEARNING?

Without the physical presence of a teacher, students must learn to be autonomous in their studying routines.

Unlike traditional in-person classes, where there is a clear distinction between study and leisure environments, distance learning usually takes place in the same environment. Students may be watching video classes in their bedroom, after which they will watch Netflix or HBO movies in the exact same environment.

So, the first step is to incentivize students to create a specific environment just for studying. It may be enough to sit properly at the desk in the bedroom (not the bed), well-lighted, clear of distractions, phone in silent mode and dressed as if he were going to a real class. This will tell the brain that now is the time for studying.

It is also important to set up a study schedule. Synchronous classes establish a certain routine but students are supposed to work on their own outside these classes, practicing, researching, and going deeper on each subject. This is more effective if the student plans ahead to reserve daily time slots for these tasks. A famous technique of time management that can help

students to keep focused on the task at hand is the Pomodoro technique where the students use a timer to break work into intervals of 25m separated by short intervals[3].

A Pomodoro kitchen timer, after which the method is named Source: wikipedia

Since there isn't a teacher nearby, students must be able to overcome their difficulties by searching for answers in their books but also in the myriad of the available content on the Internet: blogs, online forums, and videos are just an example. Also, teachesr may have set up an internal chat room (see module 9) just for that class – students should take advantage of this communication channel. The general idea is to help students to not being stuck in a certain exercise – if the students can't solve the problem using the aforementioned techniques, they should reach out to the teacher using the previously defined means to do so (email, chat, etc.).

Some digital learning platforms provide exercises and quizzes that give instant feedback and even hints to help students going forward. These are very important tools to practice autonomously and without teacher intervention. They can also be quite engaging, with game-like strategies such as collecting points for each solved exercise.

When researching on the Internet, students must apply critical thinking to the available content which may not be accurate. They should always try to identify the information source, investigate their reputation and find an alternative or complementary sources of information. In this era of disinformation, it is crucial for the students to develop skills that allow them to distinguish clear evidence and facts from ill-documented opinions and preconceptions.

HOW TO KEEP STUDENTS MOTIVATED DURING DIGITAL TRAINING?

Staying motivated during digital training can be difficult. Here are some simple tips to overcome those difficulties.

FIRST - SETTING GOALS DURING DIGITAL TRAINING

Students complain frequently about the hardship of academic life. To ensure a different perspective, a digital learner should invest in the development of time management skills. In

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[3] The Pomodoro Technique is a time management method developed by Francesco Cirillo in the late 1980s. It uses a timer to break work into intervals, traditionally 25 minutes in length, separated by short breaks. Each interval is known as a pomodoro, from the Italian word for tomato, after the tomato-shaped kitchen timer Cirillo used as a university student. https://en.wikipedia.org/wiki/Pomodoro_Technique

that sense, students must set goals, organize their schedules in order to study not less than required, and also have fun in the meantime. This is critical since digital learning, unlike traditional education methodologies, is based on the concept of flexibility and autonomy. Setting goals ensure that each learner can meet the challenges posed by digital learning, maintaining their rest and leisure routines balanced.

SECOND - GETTING SOCIAL DURING DIGITAL TRAINING

Unlike the traditional education methodologies, digital training may difficult the socialization among peers. With the usage of the correct tools, such as Moodle, Discord, WhatsApp, Slack among others (see module 9), students can create discussion forums and chat about their difficulties and training-related questions, since the conversation is accompanied by the teacher and peers that can give it a hand to overcome student's difficulties. Exchange of good practices should be encouraged by all the students, creating a good environment while avoiding using social media, which is an easy way for students to lose focus on important topics they have at hand. Students should have social interaction in order to make synchronous and asynchronous classes more pleasant and more enjoyable since peers will be closer to supporting each other in times of greater doubt.

THIRD - INCENTIVIZE STUDENTS TO REWARD THEMSELVES FOR THEIR CONQUERS

Digital learning may be less personally rewarding for the learners because, unlike traditional learning, there is no physical contact with the materials, peers, and the teacher. Students should reward themselves for little conquers, such as achieving a targeted grade or just for sticking to the weekly study schedule. Rewards may be simply getting more time for leisure in the study schedule, eating something special for dinner, or buying something online, as a way to feel more motivated and avoid the pressure that students often feel.

In conclusion, staying motivated during digital learning is really important. Finding ways to make your students prouder of their work, by socializing or setting goals, may lead to better results and make students feel more confident about themselves. This confidence can possibly be transferred to the other students, stimulating them all to follow these practices.

HOW TO CHOOSE APPROPRIATE MEDIA OR TECHNOLOGIES FOR TEACHING

Models to help teachers and trainers choose appropriate media or technologies for teaching are not abundant in the literature (Bates, 2015). The present section of this module will explore some of the available models and will explore in mode detail the **SECTIONS** Model proposed by Bates (Bates, 2015)

Why is it important to reflect on the reasons for media and technology selection for distance education? The answer is complex because it depends in great part on the nature and specificities of the learning process, namely the nature of the subjects, the students, their motivation and knowledge, and, finally, the knowledge and skills of the teacher, not only

about the topics of the training but also his general familiarity with media and technologies, the so called media literacy[4]

Accordingly with Bates (2015) from the most recent models available on the literature on the subject of media selection and technology for teaching, the **ACTIONS** model (Bates, 1995) - Access, Costs, Teaching & Learning, Interactivity & Friendliness, Organizational issues, Novelty, Speed - is the one of the mostly used among the studies on the subject available.

The model **CASCOIME** - Cost, Acessibility, Social-Political Suitability, Cultural Friendliness, Openness / Flixibility, Interactivity, Motivacional Value, Effectivness - , proposed by Patsula (2002), improves the ACTIONS model by including socio-political suitability, cultural friendliness, and openness/flexibility.

Following the CASCOIME model, Zaied (2007) developed an alternative model based on choices from IT specialists and students, including dimensions related with student satisfaction and professional development.

A different approach was followed by Mayer (Mayer, 2009, Bates, 2015) when proposing a more holistic vision with the cognitive theory of multimedia learning based on twelve principles of multimedia design. Those principles were grounded on extensive research developed by the author at the University of British Colombia[5] that tried to find the best combination.between words and images, "and rules to follow such as ensuring coherence and avoiding cognitive overload" (Bates, 2015).

Later Koumi (2014, 2015) proposed pedagogical roles for video, considering techniques and teaching functions that video is outstandingly capable of yielding. This model was primarily design to help decide on the best mix between vídeo and text content when designing MOOCS.[6]

Due to the increasing pace of technological and media change it is become increasing difficult to be inline with all the new systems, novelties and buzz words arround the last super system or application for distance learning. New possibilities arise almost every day. Teachers need time to test them, to eventually incorporate them in their teaching methodologies andto evaluate them in face of specific goals. In this scenario it´s sometimes easy to adopt a specific technology or system just for the sack of it, for the novelty of it, not for their real added value for the process.

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[4] Media literacy consists of practices that allow people to access, critically evaluate, and create or manipulate media - https://en.wikipedia.org/wiki/Media_literacy

[5] For more information please check https://wiki.ubc.ca/Documentation:Design_Principles_for_Multimedia

[6] A massive open online course is an online course aimed at unlimited participation and open access via the Web - https://en.wikipedia.org/wiki/Massive_open_online_course

Theoretical Models can help teachers guide their choices when developing a distance learning education process. Bates (2015) states that a model for technology and media selection is needed because "every teacher, instructor, and increasingly learner, needs to make decisions in this area [media selection], often on a daily basis".

Accordingly with Bates (2015) this proposed model should has the following characteristics: :

- ✓ it will work in a wide variety of learning contexts;

- ✓ it allows decisions to be taken at both a strategic, institution-wide level and at a tactical, instructional, level;

- ✓ it gives equal attention to educational and operational issues;

- ✓ it will identify critical differences between different media and technologies, thus enabling an appropriate mix to be chosen for any given context;

- ✓ it is easily understood, pragmatic and cost-effective;

- ✓ it will accommodate new developments in technology.

The **SECTIONS** model proposed by Bates is one of the most widespread models used for media and technology selection in the present day. The SECTIONS stand for:

- **S** tudents
- **E** ase of use
- **C** ost
- **T** eaching functions, including pedagogical affordances of media
- **I** nteraction
- **0** organizational issues
- **N** etworking
- **S** ecurity and privacy
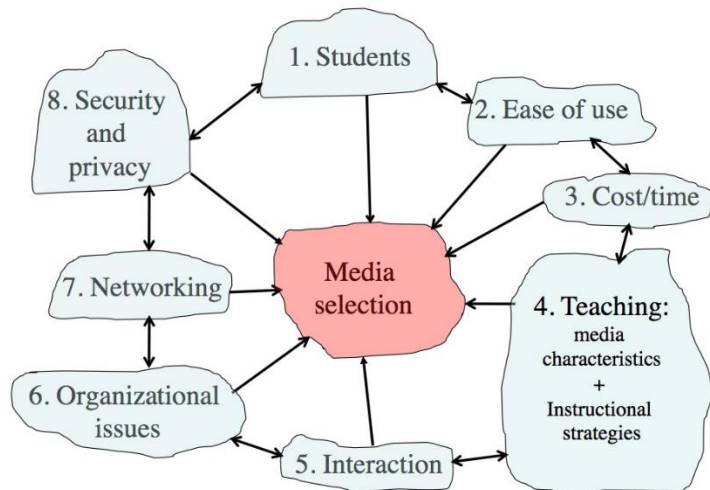
The SECTIONS Model proposed by Bates (2015)

For this module, we will use an abbreviated version of the SECTIONS model proposed by Laura Pasquini (Pasquini, 2015).

STUDENTS

The first criteria are students. For this, we should take into account the student's demographics, access, and differences in how students learn.

According to Pasquini, the student dimension should help teachers too:

✓ Review accessibility mandates or policies of your institution, department, or program.
✓ Determine demographics of the students and appropriateness of technology.
✓ Consider student access to technologies, both off-campus and on campus.
✓ Determine the digital skills and digital readiness of your students with learning expectations from your learning outcomes and overall course design.
✓ Justify students' purchases of a new technology component (if needed) for learning.
✓ Assess prior learning approaches and how technology can support student-learning differences.

The model proposed also includes some key questions and data that teachers should have access to before starting to design a distance learning experience. The questions are the following:

1. What is the mandate or policy of your institution, department or program with respect to access? How will students who do not have access to a chosen technology be supported?

2. What are the likely demographics of the students you will be teaching? How appropriate is the technology you are thinking of using for these students?

3. If your students are to be taught at least partly off-campus, to which technologies are they likely to have convenient and regular access at home or work?

4. If students are to be taught at least partly on campus, what is – or should be – your or your department's policy with regard to students' access to devices in class?

5. What digital skills do you expect your students to have before they start the program?

6. If students are expected to provide their own access to technology, will you be able to provide unique teaching experiences that will justify the purchase or use of such technology?

7. What prior approaches to learning are the students likely to bring to your program? How suitable are such prior approaches to learning likely to be to the way you need to teach the course? How could technology be used to cater for student differences in learning?

EASE TO USE

The role of technology in distance learning varies based on the type of content that is being taught. It could have a central role or just a marginal one. In both cases, it's important that the teachers and students don't spend a great deal of time learning to use it. Using technology that is easy to learn and use could improve the learning experience. The opposite could have a great negative impact on the overall learning.

So, ease to use should include:

- ✓ Selection of the technology based on ease of use by instructor and students.
- ✓ Identify technology that is reliable for teaching and learning.
- ✓ Verify that the technology set up, maintenance, and upgrade is simple.
- ✓ Confirm the technology provider/company is stable to support hardware or software use.
- ✓ Outline strategies to secure any digital teaching materials you create should the organization providing the software or service cease to exist.
- ✓ Locate technical and professional support, both in terms of the technology and with respect to the design of materials.
- ✓ Determine technologies to best support edits and updates of learning materials.
- ✓ Outline how the new technology will change your way of teaching and get better results with your learners.
- ✓ Assess risks and potential challenges for using this technology for teaching and learning.

Questions/aspects that should be addressed before:

- ✓ How intuitively easy to use, both by students and by yourself, is the technology you are considering?
- ✓ How reliable is the technology?
- ✓ How easy is it to maintain and upgrade the technology?
- ✓ The company that is providing the critical hardware or software you are using: is it a stable company that is not likely to go out of business in the next year or two, or is it a new start-up? What strategies are in place to secure any digital teaching materials you create should the organization providing the software or service cease to exist?
- ✓ Do you have adequate technical and professional support, both in terms of technology and with respect to the design of materials?
- ✓ How fast developing is this subject area? How important is it to regularly change the teaching materials? Which technology will best support this?
- ✓ To what extent can the changes be handed over to someone else to do, and/or how essential is it for you to do them yourself?
- ✓ What rewards am I likely to get for using new technology in my teaching? Will use of new technology be the only innovation, or can I also change my way of teaching with this technology to get better results?
- ✓ What are the risks of using this technology?

COST

The increasing availability of technology for education and the lowering of the costs associated with the production of multimedia materials resulted in teachers having a tremendous amount of possibilities for producing quality content.

- ✓ Consider media selection by the length of time and ease of use during course development.
- ✓ Factor the time it takes to prepare class content such as lectures and determine if the development of digital learning materials will save time and encourage interaction with students (online and/or face-to-face).
- ✓ Investigate if there is extra funding for innovative teaching or technology applications; if so, determine how to best use that funding for learning technologies.
- ✓ Assess the local support from your institution's instructional designers and media professionals for media design and development.
- ✓ Identify open educational resources for the course, e.g. an open textbook, online videos, library page of articles, or other potential OERs.

		Cost drivers (for instructors)				
		develop-ment	delivery	scal-able	experi-ence	self-dev.
Medium	**Face-to-face**	lectures	medium	medium	partly	low	low
		semi-nars	low	high	no	medium	low
	Print	books	high	high	yes	high	high
	Audio	pod-casts	low	low	yes	low	low
	Video	talking heads	medium	low	yes	low	medium
		afford-ances	high	low	yes	high	high
	Com-puting	OCL	low	high	no	medium	low
		CBL	high	low	yes	medium	medium
		ans. or sims	high	low	yes	high	high
		virtual worlds	high	low	?	high	high

TEACHING & EDUCATIONAL FACTORS

Decisions about the resources that will be used and the way they will be used for teaching is a central part of the teaching process.

- ✓ Determine the desired learning outcomes for the course.
- ✓ Design instructional strategies to facilitate the learning outcomes.
- ✓ Outline specific pedagogical characteristics and needs appropriate for the course and learners in terms of content presentation and skill development with regards to:
- ✓ textbook, readings, or online text materials;
- ✓ audio, such as podcasts, streaming audio from news, etc.;
- ✓ video, such as slide presentations, lectures, tutorials, and screencasts; and
- ✓ social media, such as blogs, wikis, microblogs, photo-sharing, curation, etc.
- ✓ Plan the learning aspects that must be face-to-face (in-person or synchronously online).

Please consider the following questions when deciding on this matter:

- ✓ Who are my students?
- ✓ What content needs to be covered?

- ✓ What are the desired learning outcomes from the teaching in terms of skills development?
- ✓ What instructional strategies or approaches to learning do I plan to use?
- ✓ What are the unique pedagogical characteristics of different media? How might different media help with the presentation of content and the development of student skills in this course?
- ✓ What is the best way to present the content to be covered in this course? How can media help with the presentation of content? Which media for what content?
- ✓ What skills am I trying to develop on this course? How can media help students with the development of the requisite skills for this course? Which media for which skills?
- ✓ What principles do I need to use when designing multimedia materials for their most effective use?

INTERACTION

Interaction is again one of the most important dimensions of any learning process. How media will improve or enable interaction with students. Will interaction improve the results of learning? If yes, how should interaction be designed? Research suggests that students learn best when they are active in their learning (bates, 2015).

Topics that should be addressed

✓ Identify the skills for development and interactions to determine the best type of media or technology to facilitate this learning.

✓ Determine the kinds of interaction that produce a good balance between student comprehension and student skills development.

✓ Estimate the amount of time the instructor will be interacting personally or online with students and the type of medium for this interaction.

	Media interaction characteristics		
	Inherent	*Designed*	*Learner-generated*
Types of student interaction — *Learner-materials*	• adaptive learning • xMOOCs • simulations • computer-marked assignments	• textbooks • LMSs • podcasts	• TV broadcasts • novels • podcasts • YouTube videos
Learner-teacher	• face-to-face seminars	• online discussion forums (OCL) • face-to-face lectures • e-portfolios	• e-mail • e-portfolios
Learner-learners	• cMOOCs • virtual worlds	• group work	• social media • wikis

Media and student interaction (Bates, 2015)

Questions for consideration when focusing on interaction:

✓ In terms of the skills, I am trying to develop, what kinds of interaction will be most useful? What media or technology could I use to facilitate that kind of interaction?
✓ In terms of the effective use of my time, what kinds of interaction will produce a good balance between student comprehension and student skills development, and the amount of time I will be interacting personally or online with students?

ORGANIZATIONAL ISSUES

Organizational aspects are one of the most important dimensions for the success of teaching. Teachers and students should be together under a roof that puts teaching excellence in the center of their hearts. The introduction of technology and new content should come both from top-bottom and bottom-up strategies. This is a good way to avoid the buying or adoption of technology just for the sake of it.

Questions that should be considered

- ✓ How much and what kind of help can I get from the institution in choosing and using media for teaching? Is help easily accessible? How good is the help? Do the support people have the media professionalism I will need? Are they up to date in the use of new technologies for teaching?
- ✓ Is there possible funding available to 'buy me out for a semester and/or to fund a teaching assistant so I can concentrate on designing a new course or revising an existing course? Is there funding for media production?
- ✓ To what extent will I have to follow 'standard' technologies, practices, and procedures, such as using a learning management system, or lecture capture system, or will I be encouraged and supported to try something new?
- ✓ Are there already suitable media resources freely available that I can use in my teaching, rather than creating everything from scratch? Can I get help from the library for instance in identifying these resources and dealing with any copyright issues?

NETWORKING

Networking was not considered in the first version of SECTIONS. In the previous model, the 'N' stood for Novelty. In the present model, Networking stands for enlarging the scope of the learning process beyond the classroom, be it physical or virtual. Bates (2015) put it like this "how important is it to enable learners to network beyond a course, with others such as subject specialists, professionals in the field, and relevant people in the community? Can the course, or student learning, benefit from such external connections? "

This is in fact one of the most important questions that we put today. The efforts that the European Commission has been done to improve the linkage between universities and companies is a strong indicator that the way should be made in a strick articulation between teaching and practice, with the professionals or specialists that are on the field.

Questions that should be considered:

- ✓ How important is it to enable learners to network beyond a course, with others such as subject specialists, professionals in the field, and relevant people in the community? Can the course, or student learning, benefit from such external connections?
- ✓ If this is important, what's the best way to do this? Use social media exclusively? Integrate it with other standard course technology? Delegate responsibility for its design and/or administration to students or learners?

SECURITY & PRIVACY

The S from the previous version of SECTIONS stood for speed. In the new version, the S stands for Security and privacy. This is again one of the big concerns today and has multiple

dimensions and reaches different aspects of the life of teachers and students. Where the student, teachers, and institutional data is stored today? The increasing use of cloud solutions could impact the privacy and security of the data. What student data should be kept? Should grades be publicly available to all to see? Are there subjects that a teacher should be careful teaching? Are there guidelines for topics to teach? Are teachers free to propose and discuss changes? New topics?

Questions that should be considered:

- ✓ What student information am I obliged to keep private and secure? What are my institution's policies on this?
- ✓ What is the risk that by using a particular technology my institution's policies concerning privacy could easily be breached? Who in my institution could advise me on this?
- ✓ What areas of teaching and learning, if any, need I keep behind closed doors, available only to students registered in my course? Which technologies will best allow me to do this?

CONCLUSIONS

The design of teaching is a complex process. It should take into account several factors that interact with each other in different ways and in different scales. During this module is described several models for technology and media selection for teaching. We had focused on the SECTIONS model proposed by Bates (2015) because of its flexibility and range of criteriums included. Course design could be facilitated if instructors use this framework from the very beginning. Take into consideration that the model is just that, a model. Your decisions won't always be the right ones. Some mistakes will happen. Some surprises will also happen. Some good things and bad ones will pop up during the course. SECTIONS model should be looked as a guide that could help you on your path to teach and learn better.

Questions that should be answered:

- ✓ who are the students?
- ✓ what are the desired learning outcomes from the teaching?
- ✓ what instructional strategies will be employed to facilitate the learning outcomes?
- ✓ what are the unique educational characteristics of each medium/technology, and how well do these match the learning and teaching requirements?
- ✓ what resources are available?
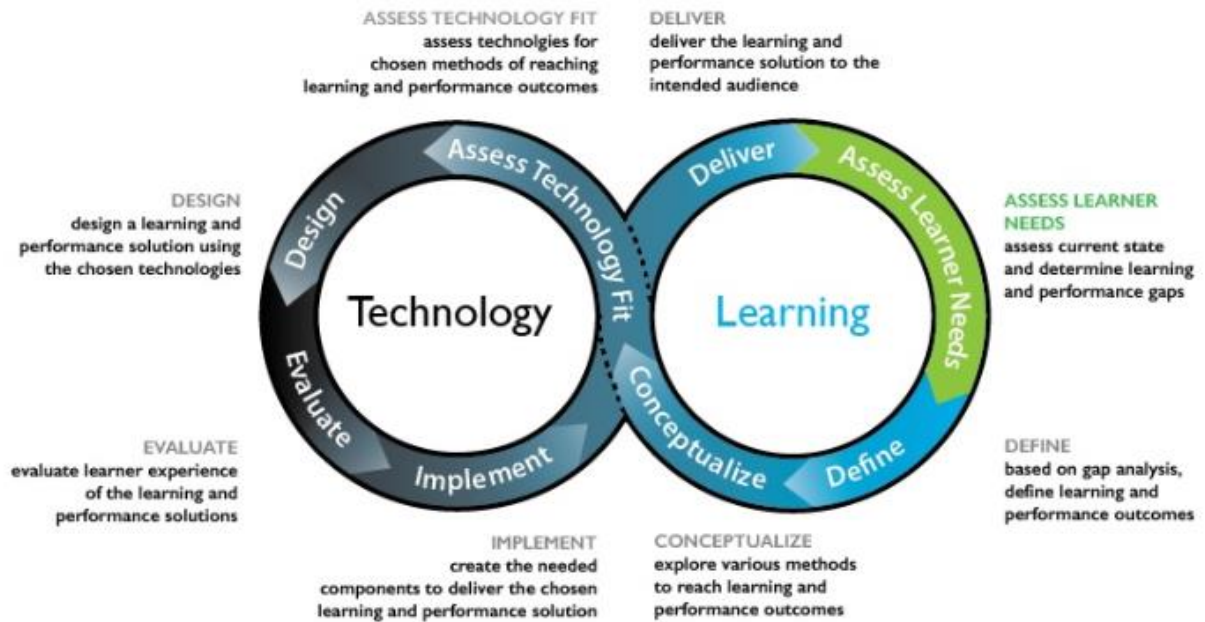
Hibbitts and Travin's Learning + technology development model

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PART 3.2 - TECHNOLOGICAL TOOLS THAT CAN BE USED IN DISTANCE EDUCATION

In this section you will find useful tools that can be used to create the best distance learning environment as possible. Depending on your needs you should select the appropriate tool to work with, as each of the ones presented has different functionalities applicable to each case.

Here you can find, distributed by different categories, some information corresponding to each of the platforms presented, namely, the logo and name of the service, a brief description, some of the features to be highlighted, the platforms that are compatible with the software, its price and the link to the respective website.

Proper use of the following tools will result in better interaction with your students in terms of the interactions you will have in online teaching. Feel free to explore any additional features that you think are relevant in addition to the ones presented. Be creative!

HELPFUL TOOLS FOR STUDENT INTERACTION

Creating an interactive presentation and taking multiple approaches to interactions with students is crucial to ensuring that you create an environment that encourages teaching and learning effectively and efficiently. Use the tools below to demonstrate practical examples, as you would do if you were in a face-to-face teaching environment.
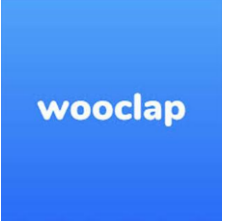
*Please note that the values referred in the price section might be subject to change according to the service needs.

Some services offer Free, Commercial or Both Plans

Logo	Service	Description	Features	Platforms	Price	Website
Google Classroom	Google Classroom	Google Classroom is your central place where teaching and learning come together. This easy-to-use and secure tool helps educators manage, measure, and enrich learning experiences.	**Teachers** ➔ Start a video meeting. ➔ Create and manage classes, assignments, and grades online without paper. ➔ Add materials to your assignments, such as YouTube videos, a Google Forms survey, and other items from Google Drive. ➔ Give direct, real-time feedback. ➔ Use the class stream to post announcements and engage students in question-driven discussions. ➔ Invite parents and guardians to sign up for email summaries with a student's upcoming or missing work. **Students** ➔ Track classwork and submit assignments.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free	Visit

			➔ Check originality, feedback, and grades. ➔ Share resources and interact in the class stream or by email.			
edmodo	Edmodo	Edmodo is a global education network that helps connect all learners with the people and resources needed to reach their full potential.	➔ Discussion forum ➔ Learning material management ➔ Asynchronous document sharing ➔ Content Library allows teachers to store unlimited content for easy sharing and re-use ➔ Secure platforms which ensures safety and privacy for users ➔ No private information is required from students ➔ Students join classes by invitation only from teacher/instructor (i.e. via a group code) ➔ Teacher/instructor has full management control ➔ Teacher/instructor can track student progress ➔ Mobile learning - anytime, anyplace ➔ Mobile apps for iOS and Android platforms ➔ Accessible via mobile browser (m.edmodo.com) ➔ Updates and notifications on the go ➔ Ability to create polls, quizzes, assignments, notes, blogs, and award badges online	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free	Visit
Mentimeter	Mentimeter	Build interactive presentations with the easy-to-use online editor. Add questions, polls, quizzes, slides, images, gifs and more to your presentation to create fun and engaging presentations.	➔ Build beautiful interactive presentations in the presentation builder. ➔ Collect polls, data and opinions from participants using smart devices. ➔ Get insights on participants with trends and data export. ➔ 13 interactive question types including Word	All (With Internet Access) Web-Based Windows	Free 9,99$ / month 24,99$ / month	Visit

			clouds and Quizzes. ➔ Build entire presentations quickly and easily with Content Slides. ➔ Select from different presentation themes or build your own. ➔ Integrated with free stock image and GIF libraries. ➔ Easy-to-use presenter mode. ➔ The audience interacts anonymously with a smart device. ➔ Use the Mentimote to moderate and control presentations. ➔ Enable profanity filters in multiple languages. ➔ Export data in a PDF or Excel file. ➔ Compare data over time with Trends. ➔ Segment response to get deeper insights. ➔ Collect feedback via surveys.	Macintosh Linux iOS Android		
padlet	Padlet	Padlet provides a cloud-based software-as-a-service, hosting a real-time collaborative web platform in which users can upload, organize, and share content to virtual bulletin boards called "padlets."	➔ Add posts with one click, copy-paste, or drag and drop. ➔ Works the way your mind works. ➔ Changes are autosaved. ➔ Simple link sharing. ➔ Available in 29 languages. ➔ Working towards greater accessibility. ➔ Others Contribution - signup not required. ➔ Work with unlimited contributors. ➔ Give read-only, writing, moderator, or admin access; revoke at any time. ➔ Updates appear instantly across devices.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free Pro (Individuals) From 5€ / month Briefcase (Business) 12$ per user/month	Visit

			➔ Use your work as a template. ➔ Upload files from your computer, take a picture or video from your phone, or link. ➔ Post images, documents, videos, music, and files from Photoshop, Illustrator, and more. ➔ Embed content from anywhere on the web.		Backpack (Schools) Starting at 700€	
edpuzzle	Edpuzzle	EDpuzzle is a web-based eLearning application allowing users to select a video and customize it by editing, cropping, recording their own audio, and adding quiz questions directly to the video stream.	➔ High-quality lessons - Choose from our library of teacher-created content and Edpuzzle Originals, or screen record your own video! ➔ Interactive learning - Embed questions in your videos, and watch them as a class in Live Mode or let your students watch at their own pace. ➔ Student accountability - Let students answer with text or audio, give them instant feedback, and prevent them from skipping key content. ➔ Easy-to-read analytics - Keep track of who understands your lesson and who needs more help, in order to differentiate for your students.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free Pro Teacher 12,50$ / month Schools & Districts Quote Basis Price	Visit
wooclap	Wooclap	Wooclap is an interactive electronic platform used to create polls and questionnaire. The users answer questions anonymously through technology devices such as smart-phones or laptops.	➔ 20 ways to interact - Collaborate with your learners through multiple choice questions, word clouds, competitions and many other features. ➔ Participation via the Web or SMS - Participation has never been so easy and fast. Wooclap does not require any downloads & works on smartphones, tablets or computers. ➔ Synchronous or asynchronous learning - Give your students access to questionnaires and files to work on before or after the class. ➔ Participation with identification or anonymously - Let your participants respond anonymously or ask	All (With Internet Access) Web-Based Windows Macintosh Linux	Free and Paid Starting at 6,99€ / month	Visit

			them to identify themselves. It's your choice.	iOS	
			➜ Live or distance learning - Maintain your online courses interactive to offer your students an awesome and effective learning experience.	Android	
			➜ Share your questions with your colleagues - Exchange your content with your colleagues in 1 click.		

ASSESSMENT AND EVALUATION

In an online teaching environment, assessment can and should be done in the most interactive, interesting and stimulating way possible. Use the tools presented to create quizzes, exercises, puzzles, games, flashcards, among others. Improve the way you assess your students, without losing the dynamism you would have in a face-to-face environment.

Logo	Service	Description	Features	Platforms	Price	Website
Kahoot!	Kahoot	Kahoot! is a game-based learning platform, used as educational technology in schools and other educational institutions. Its learning games, "kahoots", are user-generated multiple-choice quizzes that can be accessed via a web browser or the Kahoot app. Kahoot! can be used to review students' knowledge, for formative assessment, or as a break from traditional classroom activities.	➔ Create a quiz in minutes ➔ Add slides with a classic layout ➔ Choose one of our pre-designed templates as the basis ➔ Duplicate and editing existing kahoots ➔ Import questions from a spreadsheet ➔ Search from millions of questions in our question bank ➔ Combine multiple kahoots ➔ Add drawings in our iOS app ➔ Insert YouTube videos into questions ➔ Host kahoots live in class or via video conferencing ➔ Display questions and answers on students' devices in live kahoots ➔ Assign student-paced challenges for review or homework ➔ Get students to play individually or in teams ➔ Add multiple choice quiz questions ➔ Grab attention with true/false questions	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 10$ / month	Visit

			➔ Give more context and teach with slides ➔ Adjust timer options depending on complexity of question			
	Quizizz	Quizizz is an Indian creativity software company headquartered in Bengaluru, India, that creates and sells a gamified student engagement platform. The software is used in class, group assignments, pre-test review, formative assessments and pop quizzes.	➔ Instructor paced lessons/Quizzes: Teachers control the pace; the whole class goes through each question together. ➔ Student paced lessons/Quizzes: Students progress at their own pace and you see a leaderboard and live results for each question or lesson. ➔ Bring Your Own Device (BYOD): Students always see the content on their own device, be it PCs, laptops, tablets, and smartphones. ➔ Access to millions of Quizzes: Import any public quiz as-is, edit and customise them. ➔ (Quiz + Lesson) Editor: Choose from 5 different question types to add images, video and audio to teleporting questions from other quizzes and lessons. ➔ Reports: Get detailed class-level and student-level insights for every quiz. Share with parents/guardians to monitor student progress. ➔ Options to Customise: Options to customize your quiz sessions to toggle the level of competition and speed. ➔ Sharing & Collaboration: Share your quiz with other instructors and/or ask them to be collaborators.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 19$ / month	Visit

socrative	Socrative	Immediate feedback is a vital part of the learning process. Socrative gives you just that for the classroom or office - an efficient way to monitor and evaluate learning that saves time for educators while delivering fun and engaging interactions for learners.	➔ Remote Computer Monitoring: As reported in 38 Socrative reviews. Monitor student computer activity remotely from an administrator terminal. ➔ Interactive Quizzes: Create and share assessments and quizzes that students can access remotely from their computers. This feature was mentioned in 59 Socrative reviews. ➔ Student Assignment Distribution: Based on 41 Socrative reviews. Assign and distribute homework or classwork to students through the software. ➔ Student Assignment Collection: Collect and grade student homework and classwork through the software. This feature was mentioned in 46 Socrative reviews. ➔ Progress Reporting: Receive detailed reports of student success and progress that can be shared with parents or administrators. This feature was mentioned in 47 Socrative reviews. ➔ Shared Content Libraries: Share files such as class notes, quizzes, and presentations with students or parents through content libraries accessible through the software. 27 reviewers of Socrative have provided feedback on this feature.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android Kindle	Free and Paid Starting at 89,99$ / year	Visit
Quizlet	Quizlet	Quizlet makes simple learning tools that let you study anything. Start learning today with flashcards, games and learning tools — all for free.	➔ Flashcards - Learners can revise words from a lesson using digital flashcards made by the teacher. Flashcards can be words + meanings or words + images. You could also make question and answer cards. Students could also make their own flashcards if they want.	All (With Internet Access) Web-Based Windows	Free and Paid Starting at 31,99€ / year	Visit

			➔ Learn - Read the meaning/look at the image and type the correct word ➔ Spell - Type the target word you hear ➔ Test - An auto-generated mix of written, multiple choice, and true and false questions based on the vocabulary set ➔ Match/Gravity - a couple of games using the vocab set. Match works well on an interactive whiteboard ➔ Live - play a live game with multiple participants	Macintosh Linux iOS Android		
	Poll Everywhere	Poll Everywhere's product allows audiences and classrooms in over 100 countries to use mobile phones, thereby "plotting the obsolescence" of proprietary hardware response devices otherwise known as clickers.	**Asynchronous feedback** ➔ Pinned activities: Keep an open backchannel for questions at any time. ➔ Activity results: Show the results of a multiple choice question when responding. ➔ Dedicated support: Work with the Poll Everywhere team when you have a question. **Before you present** ➔ Team Collaboration: Simultaneously create, present, and collaborate, from anywhere. ➔ Custom keywords: Create a unique text response code that enhances your story. ➔ Custom Usernames: Transform ordinary presentations into unique experiences. **During your presentation** ➔ Registered Participants: Reliably track participation with registered participation. ➔ Custom Branding: Personalize your	Windows Macintosh iOS Android	Free and Paid Starting at 42$ / month	Visit

			presentation to match your brand.			
			➔ Moderation: Filter and approve responses as they come in.			
			After you present			
			➔ Reporting: A deep dive into your audience's insights			
			➔ Grading: Assess and track student comprehension			
			➔ Learning Managment system: Integrate your university- or department-wide account with your learning management system (LMS)			
	Quizalize	The best quiz platform for remote or face-to-face classrooms. Engage your class with fun, standards-tagged quizzes. Get instant data on student mastery. Automatically assign differentiated follow-up activities.	➔ Quizalize is a virtual teaching assistant: The software acts as a TA, living in the classroom, observing all students and supporting the teacher with insights and recommendations on how to help each and every student's progress. ➔ Quizalize is fun AND engaging: Our software makes formative assessments fun for students. ➔ Tagged Curricula: When a teacher creates a quiz they are able to tag the studied curricula to their content. ➔ Automated Personalisation: With Quizalize it is easy to set up personalised follow-on activities for students. For example, teachers can assign custom pathways based on test scores. ➔ Freedom: Teachers can use any of the 1 million pieces of content already live in Quizalize or create their own. PDFs, Youtube videos, audio clips, gifs and images can all be used on the Quizalize platform.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android		Visit

FILE SHARING APPLICATIONS

Document sharing may be required. Below is a list of services that you can use to share files free of charge, quickly and effectively, facilitating your interactions with students. They will be able to access the download links without having to create an account with the respective service.

Logo	Service	Description	Features	Platforms	Price	Website
	Google Drive	Google Drive is a file storage and synchronization service developed by Google. Allows users to store files in the cloud, synchronize files across devices, and share files. Google Drive encompasses Google Docs, Google Sheets, and Google Slides, which are a part of the Google Docs Editors office suite that permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more. Files created and edited through the Google Docs suite are saved in Google Drive.	➜ Storing files: By default, Google gives you 15 GB of free storage space across Gmail, Google Drive and Google Photos. If you ever hit that limit, you can always pay for more space by upgrading to a Google One account. ➜ Sharing files: Files are private until you share them. But at any time, you can invite others to view, edit, or download files and documents. ➜ Accessing files from anywhere: Files can be accessed from any smartphone, tablet or computer. Offline access is also available. ➜ Comprehensive search: Drive can recognize images and even text in scanned documents, making searching for files even easier. ➜ Secure storage: Drive files are protected by an AES256 or AES128 encryption, the same security protocol used on other Google services.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 1,99$ / month	Visit

![Dropbox logo]	Dropbox	Dropbox is a file hosting service operated by the American company Dropbox, Inc., headquartered in San Francisco, California, US that offers cloud storage, file synchronization, personal cloud, and client software.	➜ Store and access files from anywhere: Store your files in one safe place, accessible from your computer, phone, or tablet. Back up important folders like your "Desktop"—any changes will sync across your account. ➜ Bring all your content together: Create and edit your work—including cloud content and Microsoft Office files—directly in Dropbox, so you spend less time switching between apps or searching for files. ➜ Work smarter from your desktop: Our desktop experience with smart content suggestions lets you work with your team, content, and tools—all from the convenience of one organized place. ➜ Always be informed: Get notified of progress updates and to-dos added to descriptions, and stay up to date with a recent activity view that lives alongside your work. ➜ Connect your tools to Dropbox: Stop searching and switching between apps when you connect your content to the tools you use, Slack, Zoom, HelloSign, and other Dropbox integrations. ➜ Dropbox Paper puts everyone on the same page: With Paper, a collaborative doc for your team, you can create content easily and organize your projects using timelines, to-dos, and tables.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 9,99$ / month	[Visit](#)
![OneDrive logo]	OneDrive	Microsoft OneDrive is a file hosting service that Microsoft operates. Enables registered users to share and synchronize their files. OneDrive also works as the storage back-end of the web version of Microsoft Office. OneDrive offers 5	➜ Unlimited file access, anytime ➜ Renders files available from anywhere for collaboration ➜ Organisational platform for files ➜ Free-up device storage	All (With Internet Access) Web-Based	Free and Paid Starting at 1,99$ / month	[Visit](#)

		GB of storage space free of charge, with 100 GB, 1 TB, and 6 TB storage options available either separately or with Office 365 subscriptions.	➔ Sharable content across teams, large or small ➔ Customisable sync experience (for admin) ➔ Securely store files and information ➔ Supports multimedia	Windows Macintosh Linux iOS Android	
	WeTransfer	WeTransfer is the simplest way to send your files around the world. Share large files and photos. Transfer up to 2GB free. File sharing made easy!	➔ Access Controls/Permissions. ➔ Content Management. ➔ Data Synchronization. ➔ Document Management. ➔ Document Storage. ➔ File Management. ➔ File Sharing.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 12€ / month	[Visit]
	Mega	MEGA provides user-controlled encrypted cloud storage that can be accessed through standard browsers and mobile apps. Unlike other cloud storage providers, your data is only encoded and decrypted by your devices, never by us.	➔ MEGA provides massive cloud storage space ➔ Download files using links with no need to sign up ➔ The file transfer centre easily manages your transfers ➔ Complete file and transfer management, even on mobile devices ➔ Install the MEGA Desktop App and enjoy fast synchronisation between your computer and your MEGA Cloud	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 4,99€ / month	[Visit]

PRESENTATION PREPARATION TOOLS

The way content is shown to students can determine their level of involvement in the class, and this fact becomes even more relevant when we adopt an online teaching system, due to the lack of contact with students. Use the tools presented below to create more dynamic and interactive presentations, significantly improving the quality of your classes.

Logo	Service	Description	Features	Platforms	Price	Website
Prezi	Prezi	Web-based tool for creating presentations (called prezis for short). It's similar to other presentation software like Microsoft PowerPoint, but it offers some unique features that make it a good alternative. If you're looking to create a presentation that's a bit more eye-catching and engaging, Prezi may be for you.	➔ Presenter View: separate display in the desktop app that shows where you are in your presentation and what's coming next. ➔ Presenter notes: Sometimes we all need a heads-up. Don't freeze on stage, use presenter notes to record your ideas and reminders and then revisit them while presenting. ➔ PDF export: Leave your audience with more than a lasting impression by sharing a PDF version of your presentation. ➔ Downloading a presentation: Use the desktop app to download your presentation to a standalone file that's viewable even without an internet connection. ➔ Live Prezi: With Live Prezi you can present to anyone, from anywhere, in the world. Create a personalized presentation space and invite up to 100 audience members to join remotely and in real time by sending your own unique link. ➔ Presentation online: Navigate your presentation on your phone or tablet with the Prezi Viewer app so you can focus on conversational presenting while having the freedom to move around the stage and	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 12$ / month	Visit

				engage your audience.		

	Powtoon	Powtoon is a visual communication platform designed to help businesses to create animated videos & presentations for marketing, HR, IT, training & more. With a large variety of pre-built templates & a drag and drop editor, Powtoon allows businesses and teams to create fully customized presentations.	→ 115K video backgrounds and full video, animation, GIF, and image file implementation. → Hundreds of templates, thousands of scenes, backgrounds, characters and assets to choose from. → Access to 5 visual looks: modern edge / flat, Infographics, whiteboard, animation, live video and social → Use the drag and drop editor to create custom presentations with ease. → Export created presentations to YouTube, Facebook, LinkedIn, Twitter, Wistia, Hubspot, Ads Manager, Slideshare, and Vimeo, or publish as PPT or PDF.	Web-Based Windows Macintosh	Free and Paid Starting at 17€ / month	Visit
	Canva	Canva is used to create social media graphics, presentations, posters, documents and other visual content. The app includes templates for users to use. The platform is free to use and offers paid subscriptions such as Canva Pro and Canva for Enterprise for additional functionality.	→ Capture every move with online video recorder → Catch the perfect timing with Trim and Split tool → Resize videos in a few clicks just like magic → Easy video editing with free stock videos → Get even more out of Canva Presentations → Edit and convert your PDFs into online designs → Let your words flow with Text Animations → Tell it with a twist using Curved Text → Design better together → Apply Texture for Homey, Lived-In Designs → Crop Your Images for Trim, Precise		Free and Paid Starting at 11,99 € / month	Visit

			Compositions → Say It Loud with a Drag and Drop Speech Bubble → Add Text to Any Photo for a Quick Caption or Compelling Commentary → Add Stellar Photo Effects to Make Your Photos Magnificent → Straighten Your Photos to Keep Your Snapshots Looking Sharp → Create Soft, Dreamy Designs with Transparent Images		
visme	Visme	Create professional presentations, interactive infographics, beautiful design and engaging videos, all in one place. Visme offers other features including a wide range of fonts, free images and icons to customize the content.	→ Presentations Keep your audience engaged. → Documents Formalize your branding. → Videos Add movement to your brand. → Infographics Share information visually. → Printables Create content for printing. → Charts and Graphs Bring life to your data. → Social Media Graphics Create scroll-stopping content.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 15,00 $ / month	Visit
genially	Genially	Use Genially, the most powerful online tool for creating interactive and animated content. Stun with your creations.	**Template Creation** → Image Upload: Directly upload images to use for your graphic on the platform. → Stock Image Library: Choose from pre-loaded images to use for your banner. → Drag & Drop Editing: Ability to edit without	All (With Internet Access) Starting at 7,49 $ / month	Free and Paid	Visit

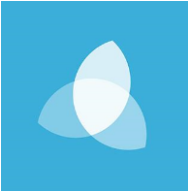|						
			any coding or design knowledge. ➜ Variety Of Banner Types: Create a stactic, animated or interactive banner. **Design & Editing** ➜ Shape & Clip Art: Insert a variety of shapes and clipart onto your design. ➜ Font Selection: Chose from a variety of fonts to layer over your graphic. ➜ Scale: Scale your image to a variety of sizes. **Ad Management** ➜ Ad Sets: Ability to duplicate and save your design as an ad set. ➜ Export As Different File Types: Ability to save your image as a variety of file types. ➜ Schedule: Schedule banners to be published ahead of time. **Analytics** ➜ Reporting: Ensure your ads are reaching your target demographic. ➜ Heatmap: Ability to see how your audience is interacting with your ads. ➜ Budget: Ability to adjust your campaign budget. **Planning** ➜ Collaborative Editorial Calendars / Scheduling Content: Create editorial calendars that can be accessed by multiple users. Schedule content in advance to post at a later date.	Web-Based Windows Macintosh Linux iOS		

INTERACTIVE WHITEBOARD APPLICATIONS

In face-to-face classes it becomes easier to show (through drawings, diagrams and figures) what we intend to teach, making the process of explaining a given topic easier. Did you know that in an online environment you can also use digital boards to draw what you want, exemplifying to students how they should perform a certain task, through examples. See the list below with some of the tools you can use.

Logo	Service	Description	Features	Platforms	Price	Website
	Google Jamboard	Jamboard is a digital interactive whiteboard developed by Google to work with Google Workspace, formerly known as G Suite. It has a 55" 4K touchscreen display and can be used for online collaboration using Google Workspace. The display can also be mounted onto a wall or be configured into a stand.	**Simple as a whiteboard, but smarter** ➔ Jamboard is one smart display. Quickly pull in images from a Google search, save work to the cloud automatically, use the easy-to-read handwriting and shape recognition tool, and draw with a stylus but erase with your finger – just like a whiteboard. **Share ideas in brainstorms or lectures** ➔ Jamboard makes learning visible and accessible to all collaborators on the jam session. Plus, It's easy to present your jams in real time through Meet, allowing for easy sharing or making real-world connections. **Students can jam from anywhere** ➔ Educators can engage all students in the learning process, whether working together in a traditional classroom, a group seminar setting, or through distance learning. The Jamboard app for Android and iOS makes it easy for students and educators to join in on the creativity from their phone, tablet, or Chromebook.	Windows Macintosh Linux iOS Android (Requires a Jamboard Device to Work)	Starting at 4999$ + 600$ / year	Visit

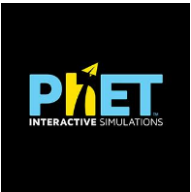|					
	Microsoft Whiteboard	Microsoft Whiteboard is an infinite, collaborative canvas for effective meetings and engaging learning. You can use Whiteboard to collaborate with other people and accomplish many activities, from brainstorming and planning to learning and workshops.	➜ Running effective meetings. ➜ Brainstorming. ➜ Learning and coaching. ➜ Sprint planning. ➜ Project management. ➜ Problem solving. ➜ Continuous improvement. ➜ Incident management.	Web-Based Windows Macintosh Linux iOS	Free	[Visit](#)
	Miro	Miro is the online collaborative whiteboard platform that enables distributed teams to work effectively together, from brainstorming with digital sticky notes to planning and managing agile workflows	➜ Create, collaborate, and centralize communication for all your cross-functional teamwork. ➜ Templates & frameworks: Use pre-built templates or create your own templates and smart frameworks. ➜ Infinite Canvas: Unleash your creativity and work the way you want to with an infinite canvas. ➜ Widget: Utilize sticky notes, freeform pen, shapes, arrows, smart drawing, and more. ➜ Mouseover collaboration: See collaborators' cursors to track how team members engage with your boards. ➜ Easy screen sharing & presentations: Share your work directly from the Miro platform. ➜ Embedded video, chat, & commenting: Get feedback, reviews, and approvals with multiple communication options.	Windows Macintosh Linux iOS	Free and Paid Starting at 8$ / month	[Visit](#)

| | Explain Everything | The online interactive whiteboard app where people share and learn without boundaries. Join from any device and collaborate in real-time both visually and audibly. Turn ideas into understanding with Explain Everything. | ➔ Explain Everything is an interactive whiteboard platform where people collaborate, share, and learn without boundaries. Every project starts with an infinite canvas where you can add new and existing media (including video, images, PDFs, and web browsers), annotations, and text to create truly unique visual stories.

➔ Teachers create explainer videos for students to view (either from Explain Drive or an LMS).

➔ Teachers provide live instructions with the app. Students can work on assignments alone or in small groups together.

➔ Both teachers and students create explainer videos.

➔ Both teachers and students actively collaborate within the app on a cloud project. Students can work on their own and download any number of projects.

➔ Students do not create their own projects and only work live on projects provided by teachers. Students cannot work on projects in the absence of the teacher. | All

(With Internet Access)

Web-Based

Windows

Macintosh

Linux

iOS | Free and Paid

Starting at 29,99$ / per user / year | [Visit](#) |
| | Stormboard | Use Stormboard's shared workspace to generate more ideas, and then prioritize, organize, and refine those ideas to make your meetings, brainstorms, and projects more productive and effective. | ➔ Infinite digital canvas – Generate ideas and collaborate with others on an infinitely created digital whiteboard.

➔ Add images, text, files, and videos – Make your ideas come to life with inspirational reference materials.

➔ Connect and collaborate across devices – The tool is available on all devices, making it easy to connect.

➔ Choose from a wide selection of templates | All

(With Internet Access)

Web-Based

Windows

Macintosh | Free and Paid

Starting at 8,33$ / month | [Visit](#) |

				Linux		
			to easily and quickly create a workspace suited to your specific needs.	iOS		
			➔ Templates: Choose from hundreds of templates, including calendars, project management, Agile, and Design Thinking.			
			➔ Getting Started: This crash course will provide you with the tools and resources needed to get started.			
			➔ Video Tutorials: Learn visually through these helpful walkthrough tutorial videos.			
			➔ Training Programs: Choose from several training programs that can help you and your team get custom-tailored help with the software tool.			

The adoption of interactive tools is a great way to ensure that students remain motivated during the classes, especially when they are carried out online, since these lack not only the lack of a relationship between professors and students, but also the lack of interactions between classmates. Discover the tools below and take your online classes to the next level.

Logo	Service	Description	Features	Platforms	Price	Website
poster mywall	PosterMyWall	Visual Presentation PosterMyWall is a cloud-based graphic design solution that helps enterprises create custom content, headers, and posters for various social media platforms and marketing campaigns. It enables users to import custom fonts into the system and download image and video templates from the built-in library.	➔ Thousands of design templates ➔ Millions of free stock graphics ➔ Quick and easy menu-maker ➔ Promote events with the schedule maker ➔ Customize with easy tools ➔ Resize in one click ➔ Remove background ➔ Download social media designs for free ➔ Schedule or publish social media posts directly ➔ Send email campaigns to your audience ➔ Publish designs direct to digital signage ➔ Create animated posts ➔ Bring your text to life ➔ Add music to your designs ➔ Play engaging content on your signage screens ➔ Stickers	All (With Internet Access) Web-Based Windows Macintosh Linux iOS	Free and Paid Starting at 9,95$ / month	Visit

	Powtoon	Show Video Powtoon is a visual communication platform designed to help businesses to create animated videos & presentations for marketing, HR, IT, training & more. With a large variety of pre-built templates & a drag and drop editor, Powtoon allows businesses and teams to create fully customized presentations.	➔ 115K video backgrounds and full video, animation, GIF, and image file implementation. ➔ Hundreds of templates, thousands of scenes, backgrounds, characters and assets to choose from. ➔ Access to 5 visual looks: modern edge / flat, Infographics, whiteboard, animation, live video and social ➔ Use the drag and drop editor to create custom presentations with ease. ➔ Export created presentations to YouTube, Facebook, LinkedIn, Twitter, Wistia, Hubspot, Ads Manager, Slideshare, and Vimeo, or publish as PPT or PDF.	Web-Based Windows Macintosh	Free and Paid Starting at 17€ / month	Visit
	PhET	Utilizing Simulation Phet is web-based Interactive Simulations for Science and Math. Teachers have access to simulation-specific tips and video primers, resources for teaching with simulations, and activities shared by the community.	➔ Simulations in different areas like Physics, Chemistry, Math, Earth and Biology. ➔ Simulations in HTML5, Java and Flash ➔ Tips and resources for teachers ➔ Guidance for using particular simulations ➔ Access to a community ➔ Google and Apple apps	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free	Visit

	Voki	Voki is an educational tool for teachers and students, that can be used to enhance instruction, engagement, and lesson comprehension. Voki can be used in class (for student work), as an animated presentation tool, for student assignments, and as a virtual supervised discussion forum (Voki Hangouts).	➔ 250+ characters. Historical figures, cartoons, animals, and more. ➔ Give te character a voice by recording your voice. ➔ Voki Creator, Presenter, Hangouts, Classroom ➔ Unlimited support	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 4.99€ / month	Visit
	Cram	Flashcards it's a Leitner System based platform, that helps students to memorize almost any type of information. Multiplication tables, vocabulary lists, a new language, or just plain old definitions, flashcards will help organize the information in a way that helps students learn more efficiently.	➔ Create flashcards ➔ Share flashcards with friends ➔ Ready-to-use digital flashcards ➔ Memorize facts or master complex concepts	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free	Visit

ACTIVITIES TO BE HELD IN THE DEVELOPMENT SECTION AND APPROPRIATE WEB TOOLS

Preparing for online classes can sometimes be a challenge. It is in this sense that some tools are listed below that will allow you to structure content according to your needs, topics and areas to be addressed. The use of the services below, can be combined, and will allow you to explain to your students in a better way, guaranteeing the correct understanding of the contents, even at a distance.

Logo	Service	Description	Features	Platforms	Price	Website
Prezi	Prezi	Presentation Preparation Web-based tool for creating presentations (called prezis for short). It's similar to other presentation software like Microsoft PowerPoint, but it offers some unique features that make it a good alternative. If you're looking to create a presentation that's a bit more eye-catching and engaging, Prezi may be for you.	➔ Presenter View: separate display in the desktop app that shows where you are in your presentation and what's coming next. ➔ Presenter notes: Sometimes we all need a heads-up. Don't freeze on stage, use presenter notes to record your ideas and reminders and then revisit them while presenting. ➔ PDF export: Leave your audience with more than a lasting impression by sharing a PDF version of your presentation. ➔ Downloading a presentation: Use the desktop app to download your presentation to a standalone file that's viewable even without an internet connection. ➔ Live Prezi: With Live Prezi you can present to anyone, from anywhere, in the world. Create a personalized presentation space and invite up to 100 audience members to join remotely and in real time by sending your own unique link. ➔ Presentation online: Navigate on your phone or tablet with the Prezi Viewer app so you can focus on conversational presenting while having the freedom to move around the stage and engage your audience.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 12$ / month	Visit

	Google Classroom	Interaction in the Virtual Classroom Google Classroom is your central place where teaching and learning come together. This easy-to-use and secure tool helps educators manage, measure, and enrich learning experiences.	**Teachers** ➔ Start a video meeting. ➔ Create and manage classes, assignments, and grades online without paper. ➔ Add materials to your assignments, such as YouTube videos, a Google Forms survey, and other items from Google Drive. ➔ Give direct, real-time feedback. ➔ Use the class stream to post announcements and engage students in question-driven discussions. ➔ Invite parents and guardians to sign up for email summaries with a student's upcoming or missing work. **Students** ➔ Track classwork and submit assignments. ➔ Check originality, feedback, and grades. ➔ Share resources and interact in the class stream or by email.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free	[Visit](#)
	Moovly	Displaying Video/Animation Moovly is a video making solution designed to help businesses of all sizes and educational institutions create tutorials or promotional videos using a combination of uploaded pictures, videos, text, and voice, customizable templates, as well as a library of stock images,	➔ Browser based, drag-and-drop video creation ➔ Upload your own images, sounds and videos ➔ Use over 1.3 million free media objects ➔ Create videos in any style or shape ➔ Add animations and transitions ➔ Add music, sounds and voice ➔ Record your webcam or your screen	All (With Internet Access) Web-Based Windows Macintosh	Free and Paid Starting at 24.92$ / month	[Visit](#)

		visuals, and audios using a drag-and-drop interface. The system enables video editors to download and publish the curated videos across various platforms including YouTube, Vimeo, and Moovly's Gallery.	➔ Remove a color from images or videos ➔ Add subtitles to your videos – or generate them automatically ➔ Import PowerPoint files ➔ Publish directly to video hosting sites ➔ Share your video projects with other users ➔ Collaborate on video projects	Linux iOS Android		
	Piktochart	Utilizing Infographics Piktochart is a web-based graphic design tool and infographic maker which allows users without intensive experience as graphic designers to easily create visuals, including infographics, reports, presentations, posters, flyers, and social media graphics, using customizable templates.	➔ Very easy to use. ➔ One of the best tools for creating infographics. ➔ Strict design guidelines make for visually appealing creations. ➔ Remote collaboration is excellent for corporate teams. ➔ Very generous media library. ➔ Extensive collection of templates. ➔ Reasonable subscription pricing. ➔ Full desktop publishing capabilities. ➔ Discounts available for educators.	All (With Internet Access) Web-Based (works best on Chrome and Firefox)	Free and Paid Starting at 14.00£ / month	Visit
	Zoom	Video Conferencing It is noted for its simple interface and usability, regardless of technological expertise. Features include one-on-one meetings, group video conferences, screen sharing, plugins, browser extensions, and the ability to record	➔ Virtual Background. Zoom's Virtual Background is one of its highlight features among all and the most used one. ➔ Keyboard Shortcuts. ➔ Integrate Third-Party Apps. ➔ Touch Up Your Look. ➔ Audio Transcript. ➔ Breakout Rooms.	All Android, iOS, Mac, iPad and web platforms	Free and Paid Starting at 13.99 € / month	Visit

		meetings and have them automatically transcribed. On some computers and operating systems, users are able to select a virtual background, which can be downloaded from different sites, to use as a backdrop behind themselves.	➔ Disable Audio/Video When You Join. ➔ End-to-end encryption ➔ Zoom scheduling ➔ Waiting Rooms ➔ Meeting recordings ➔ Meeting reminders on mobile			
	Mindmeister	Using Mind Maps MindMeister is an online mind mapping application that allows its users to visualize, share and present their thoughts via the cloud. Provides a way to visualize information in mind maps utilizing user modeling, while also providing tools to facilitate real-time collaboration, coordinate task management and create presentations.	➔ Mindmap templates ➔ Mindmap editor ➔ Attachments ➔ Project management ➔ Images, video, and more ➔ Publishing and embedding ➔ Import and exports ➔ History mode ➔ Mindmap presentations	Windows Mac iOS Android	Free and Paid 4.99€ / month	Visit
	Discord	Discord is a free voice, video, and text chat app that's used by tens of millions of people ages 13+ to talk and hang out with their communities and friends People use Discord daily to talk about many things, ranging from art projects and family trips to homework and mental health support. It's a home for	➔ Video Backgrounds ➔ Find Your Friends ➔ [Mobile] Screenshare ➔ Slash Commands ➔ Keyboard Navigation ➔ Video & Screenshare Updates - Multistream and More! ➔ Video Calls ➔ Reduced Motion Setting	All Android, iOS, Mac, iPad and web platforms	Free and Paid Starting at 9.99$ / month	Visit

		communities of any size, but it's most widely used by small and active groups of people who talk regularly..	➜ Go Live and Screen Share ➜ Quick Switcher ➜ Streamer Mode ➜ Games Overlay ➜ Server Folders			
	Slack	Slack is a messaging app for business that connects people to the information they need. By bringing people together to work as one unified team, Slack transforms the way organizations communicate.	➜ Project-friendly structure ➜ Integrate your other tools ➜ Easy, automated reminders ➜ Task list management ➜ Easy note-taking ➜ Collaborate with posts ➜ Powerful search capabilities ➜ Custom shortcuts and slash commands ➜ Audio and video calls ➜ Useful bots	All Android, iOS, Mac, iPad and web platforms	Free and Paid Starting at 6.25€ / month	Visit
	Howspace	Howspace is an AI-powered digital collaboration platform that brings social learning to the forefront of organizations' processes and development initiatives.	➜ Noiseless Space ➜ Simple to Use ➜ Flexible and Scalable and Secure ➜ Co-Create & Collaborate ➜ Facilitate the Proccess ➜ Provide Transparency ➜ Theme Clustering ➜ Summary and Sentiment Analysis ➜ Word Cloud and Widgets	All Android, iOS, Mac, iPad and web platforms	Paid Starting at 180€ / month	Visit

Assessment is an integral part of the teaching process, being one of the tools used to understand the learning level of our students. Below you can see listed some services that will help you in carrying out this important task, namely, through evaluation exercises, implementation of questionnaires, among others. Use these tools in existing evaluation moments.

Logo	Service	Description	Features	Platforms	Price	Website
	Tricider	Discussing on an Issue Tricider is a website that offers a free brainstorming and voting platform to help people make decisions. Billed as a "social voting tool," the site is geared toward business teams, classes, or anyone looking to gauge a group's response to an idea.	➜ Collect ideas ➜ Voting ➜ Invite participants ➜ Spam protection ➜ Deadlines ➜ Discuss ➜ Multimedia ➜ Pool of participants ➜ Post to Facebook, Twitter, etc... ➜ Contests ➜ Optimized for smartphones ➜ Embedden in Blogs ➜ Admin Rights	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free	Visit
	LiveWorkSheets	Interactive Worksheets Liveworksheets is a tool which allows teachers to create interactive worksheets for their students. Teachers upload traditional print	➜ Interactive online exercises with self-correction (interactive worksheets). ➜ Include sounds, videos, drag and drop exercises, join with arrows, multiple choice, speaking exercises, among others. ➜ Website and Blog Embedding.	All (With Internet Access)	Free	Visit

		worksheets in PDF or as Word documents, and can then transform these into interactive exercises using different formats such as multiple choice, drag and drop or join the arrows, which can include audios or videos if necessary. It is also possible to create speaking exercises where students have to record themselves using the tool's microphone. A variety of worksheets already created by other users can also be accessed.	➜ Worksheets are also available for download as a pdf file. ➜ Students can send their answers to the teacher via email. ➜ Have a big collection of worksheets already made.	Web-Based Windows Macintosh Linux iOS Android		
Mentimeter	Mentimeter	Q&A - Questions and Answers Build interactive presentations with the easy-to-use online editor. Add questions, polls, quizzes, slides, images, gifs and more to your presentation to create fun and engaging presentations.	➜ Build beautiful interactive presentations in the presentation builder. ➜ Collect polls, data and opinions from participants using smart devices. ➜ Get insights on participants with trends and data export. ➜ 13 interactive question types including Word clouds and Quizzes. ➜ Build entire presentations quickly and easily with Content Slides. ➜ Select from different presentation themes or build your own. ➜ Integrated with free stock image and GIF libraries. ➜ Easy-to-use presenter mode. ➜ The audience interacts anonymously with a smart device. ➜ Use the Mentimote to moderate and control presentations. ➜ Enable profanity filters in multiple	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free 9,99$ / month 24,99$ / month	Visit

			languages.			
			➔ Export data in a PDF or Excel file.			
			➔ Compare data over time with Trends.			
			➔ Segment response to get deeper insights.			
			➔ Collect feedback via surveys.			
	Padlet	Collaborations Padlet provides a cloud-based software-as-a-service, hosting a real-time collaborative web platform in which users can upload, organize, and share content to virtual bulletin boards called "padlets."	➔ Add posts with one click, copy-paste, or drag and drop. ➔ Works the way your mind works. ➔ Changes are autosaved. ➔ Simple link sharing. ➔ Available in 29 languages. ➔ Working towards greater accessibility. ➔ Others Contribution - signup not required. ➔ Work with unlimited contributors. ➔ Give read-only, writing, moderator, or admin access; revoke at any time. ➔ Updates appear instantly across devices. ➔ Use your work as a template. ➔ Upload files from your computer, take a picture or video from your phone, or link. ➔ Post images, documents, videos, music, and files from Photoshop, Illustrator, and more. ➔ Embed content from anywhere on the web.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free Pro (Individuals) From 5€ / month Briefcase (Business) 12$ per user/month Backpack (Schools) Starting at 700€	Visit

	SurveyMonkey	Conducting Surveys SurveyMonkey is online survey software that helps you to create and run professional online surveys. It is very powerful and a well known online application.	➔ Text analysis ➔ Survey Templates ➔ SPSS integration ➔ Skip Logic ➔ Real-time results ➔ Net Promoter Score ➔ Filter and cross-tabbing ➔ Export Results to Excel and PDF ➔ Enterprise-grade features ➔ Customizable Survey Links ➔ Customizable Design Themes ➔ Custom reporting ➔ Custom branding ➔ Consolidated account management ➔ Answer Validation	All Windows Macintosh Linux iOS Android	Free and Paid Starting at 30€ / month	Visit
	Socrative	Online Test Creation Immediate feedback is a vital part of the learning process. Socrative gives you just that for the classroom or office - an efficient way to monitor and evaluate learning that saves time for educators while delivering fun and engaging interactions for learners.	➔ Remote Computer Monitoring: As reported in 38 Socrative reviews. Monitor student computer activity remotely from an administrator terminal. ➔ Interactive Quizzes: Create and share assessments and quizzes that students can access remotely from their computers. This feature was mentioned in 59 Socrative reviews. ➔ Student Assignment Distribution: Based on 41 Socrative reviews. Assign and distribute homework or classwork to students through the software. ➔ Student Assignment Collection: Collect and	All (With Internet Access) Web-Based Windows Macintosh Linux iOS	Free and Paid Starting at 89,99$ / year	Visit

			grade student homework and classwork through the software. This feature was mentioned in 46 Socrative reviews. ➔ Progress Reporting: Receive detailed reports of student success and progress that can be shared with parents or administrators. This feature was mentioned in 47 Socrative reviews. ➔ Shared Content Libraries: Share files such as class notes, quizzes, and presentations with students or parents through content libraries accessible through the software. 27 reviewers of Socrative have provided feedback on this feature.	Android Kindle		
	Wordwall	Gamification A word wall is a literacy tool composed of an organized (typically in alphabetical order) collection of words which are displayed in large visible letters on a wall, bulletin board, or other display surface in a classroom. The word wall is designed to be an interactive tool for students or others to use, and contains an array of words that can be used during writing and/or reading.	➔ Interactives and printables. ➔ Create using templates. ➔ Switching template. ➔ Edit any activity. ➔ Themes and options. ➔ Sharing with teachers. ➔ Embedding on a website. ➔ Student assignments.	All (With Internet Access) Web-Based Windows Macintosh Linux iOS Android	Free and Paid Starting at 5€ / month	Visit

Lusophone University of Humanities and Technologies

Paulo Ferreira's research domains include e-marketing, web advertising, eye tracking for web usability, social uses of technology an audience research. Since 2004, Paulo Ferreira has published several articles and delivered presentations at international conferences. He is the IT coordinator for the implementation and innovation of e-learning systems at Universidade Lusófona; he is involved in several projects for the development of mobile applications for distance learning; he is responsible for the in-house programs for the training of academic teachers in the use of new technologies.

Bruno Lino is specialized in IT Management and Multimedia Products Development. He holds a Degree in Applied Communication: Marketing, Advertising and Public Relations and a postgraduate in Digital Marketing. He is responsible for managing the social networks and content of some of Lusófona University institutions and integrates some research projects related to multimedia content production in the E-Learning area such as: IC-ENGLISH - Innovative Platform for Adult Language Education (2018-1-PL01-KA204-050784); MMTLA - Montessori Method in Teaching 2nd Language to Adults (2019-1-TR01-KA204-074258); VIRTEACH - A Virtual Solution for a Comprehensive and Coordinated Training for Foreign Language (2018-1-ES01-KA203-050045); PESE: Professional English Skills For Employability Across EU (2020-1-UK01-KA202- 079035).

PART 4 - USING LIVE LESSON TOOLS ACCOMPANIED BY SCENARIOS

INTRODUCTION

In this module, you'll find ideas on how to use a meeting service like Zoom in different teaching scenarios. Keep in mind that the same principles apply to other video conferencing software. The exact user interface is not relevant because it is easy to get used to any of them.

In simple words:

1. **Prepare the digital environment**
2. **Prepare participants**
3. **Prepare your lesson and plan it (including technical)**
4. **Start your lesson**
5. **End your lesson**

Technological advances can enhance the learning experiences for students. Online lessons offer educators the capability to create engaging, dynamic coursework that can increase student engagement. These tools allow students to collaborate with other learners in ways that enhance their understanding of complex ideas.

In the time of social distancing, Zoom has arguably become the best distance education tool on the market. Zoom allows teachers to communicate with classes of up to 1000 students. Teachers and students can communicate privately in online classrooms, or in a large group setting. On zoom, teachers can give quizzes and surveys instantaneously to their classes, obtaining data and analyzing it using graphics and graphs. Another benefit to using zoom is that it allows teachers to break up their students into breakout rooms so they can work together on problems as they would if they were all physically in the same room together.

If you want to use the tools available in Zoom to support your online teaching, such as Q&A, polls, breakout rooms, and sharing video content, you need to plan how you'll use these tools and any other materials you want to share before your class begins.

This module will be based on Professor Diana Laurillard's Conversational Framework pedagogy. Professor Diana Laurillard from the Institute of Education, University of London, has developed the Conversational Framework pedagogy based on studies of teaching methods in higher education and workplace learning. The framework describes six learning types that have shown to be an extremely successful way for assisting teachers in describing and discussing the student learning process.The six learning types have shown to be an extremely successful way for assisting teachers in describing and discussing the student learning process.

DIANA LAURILLIARD'S SIX LEARNING TYPES:

1. **Acquisition**
2. **Investigation**
3. **Practice**
4. **Production**
5. **Collaboration**
6. **Discussion**

1. ACQUISITION

When learners read from books or websites, watch demos or videos, or listen to recordings of lectures, they are learning through acquisition. The teacher sets the narrative for learning.

Learners will:

- ✓ Read
- ✓ Observe
- ✓ Name
- ✓ Tell
- ✓ Recall
- ✓ Define
- ✓ Repeat
- ✓ Describe
- ✓ Arrange
- ✓ Memorise
- ✓ Recognise
- ✓ State

2. INVESTIGATION

Allowing learners to direct their learning and skill development is the goal of an investigation. An investigation can help learners increase their knowledge, comprehension, and understanding of concepts and ideas taught in teaching materials by encouraging them to practice the knowledge and skills in real-life situations. Learners investigate, compare, and analyze the concepts, ideas, and skills contained or taught in training materials.

Examples and ideas for investigation based learning:

- ✓ Browsing, seeking and collecting information
- ✓ Problem-solving or answering big questions
- ✓ Inquiry driven investigation of authentic situations

- ✓ Case-based study of individual cases
- ✓ Evaluating and using online guidance
- ✓ Analysis of ideas and information
- ✓ Comparison and analysis of the range of digital sources
- ✓ Finding and evaluating information and ideas

3. PRACTICE

Learning by doing is more than just an important component of the learning process. It allows the learner to tailor their activities to the task goal and utilize feedback to better their next action. Feedback may come from self-reflection, peers, the teacher, or the activity itself if it demonstrates how to improve the outcome of their actions in connection to the aim.

4. PRODUCTION

The instructor inspires the student to solidify what they have learned by expressing their present conceptual knowledge and how they apply it in practice.

Examples and ideas for production learning activities:

- ✓ Constructing, designing and making objects drawings, models, representations of designs.
- ✓ Performing or presenting to an audience
- ✓ Reflecting on activities (discussion, writing, production)
- ✓ Assessing learners (learning through giving / receiving constructive feedback)
- ✓ Creating digital artefacts and designs (e-portfolio, blog, website, videos, animations, photos, slides)

5. COLLABORATION

Learners gain knowledge through collaborating on a project or assignment. They create something to try to discover meaning, solve an issue, or exhibit what they have learned. Collaboration occurs throughout online or offline conversation, practice, and production and is based on research and acquisition. Consider the size of the group and whether the job will be synchronous or asynchronous when constructing the collaborative activity.

Examples and ideas for collaborative tasks:

- ✓ Small group projects
- ✓ Building something together
- ✓ Discussing each others' projects and giving feedback

6. DISCUSSION

Learning via conversation necessitates the student articulating their own ideas and questions, as well as challenging and responding to the ideas and questions of the instructor and/or their peers. The usefulness of reciprocal critique of ideas and how this contributes to the development of a deeper conceptual understanding is the pedagogical focus.

Examples and ideas for discussion:

- ✓ Discussion groups and forums
- ✓ Web-conferencing and chat tools (synchronous & asynchronous)
- ✓ Seminars
- ✓ Sharing experiences
- ✓ Applying concepts to experiences or examples
- ✓ Interacting with others

HOW CAN WE ATTAIN THESE FORMS OF LEARNING ONLINE USING ZOOM?

As an online teacher, you may be wondering how your online classes can best mimic the in-person experience. How do you get students to participate in the class? How do you make sure they learn what they need to know? The answers to these questions and others depend on the type of learning activities you choose to implement in your online courses.

Many of the activities that you and your students do both in and out of the classroom would fall into one of these categories. The recommendations below can help you brainstorm some activities that you can build and implement in an online context.

USING ZOOM FOR ACQUISITION

Zoom allows session hosts and attendees to share their screens on computers, tablets, and mobile devices. Teachers can screen share their complete computer desktop or just a specific program such as a web browser, PowerPoint, or other software application with students to share everything they see on their computer. Teachers can also share a whiteboard with students, request that students share their whiteboard with everyone, and enable students to annotate their shared screen and/or whiteboard.

Share files

Click the Share Screen button in the toolbar at the bottom of the meeting window.

If you are sharing your screen, you will see a small window pop up showing what you're sharing. It may take a few seconds for this to appear.

You can share a PDF, document, or any other file on your local computer by clicking the FILES tab. You can also share files from your Microsoft OneDrive or Google Drive accounts by clicking the respective icons above the FILES tab.

If you need to stop sharing and return control to the meeting moderator, click Stop Sharing at the top left of your screen (this won't close out of your document).

The ADVANCED tab is where the magic happens.

While all of the basic functions can be accessed from the other tabs (e.g. screen sharing, webcam, whiteboard), there are some special functions that deserve their own special space.

For example, if you'd like to share only a portion of your screen (without sharing your entire desktop), then you'll need to use the ADVANCED tab. You'll also need to use this tab to share a document camera or any other device that has been connected to your computer via USB cable. Finally, you can use this tab for ambient sharing: for example, if you'd like to play music while students work independently (but not show them your screen).

Your students will love using Zoom's annotation and screen sharing tools, but it's important that you know how to avoid student annotations on top of your screen.

It's fun for your students (and you!) to be able to draw on their teacher's screen, but you may want to avoid this if they're drawing while you're trying to teach a live lesson.

If your Zoom account is configured to allow it, participants may be able to use Zoom's "annotation" function. Locate the Annotation setting in your Zoom account's In Meeting settings.

Only the instructor (host) can annotate on top of his or her shared screen if ANNOTATION is set to OFF (or shared whiteboard). If you enable students to screen share, they will only be allowed to annotate on their own shared whiteboard, not on the shared whiteboards of others.

IF ANNOTATION IS SET TO ON, then all participants will be able to utilize the annotation tools on any shared screen item (desktop, application, or whiteboard). For a reminder of how to stop attendee annotation to avoid students from annotating on top of your shared screen during your lectures, see Teacher Tip: AVOID SURPRISE SCREEN ANNOTATIONS

Are you struggling to keep your students' attention? Is it hard for your students to engage with what you are teaching? Then it's time for a change. Instead of sharing your entire desktop, consider sharing just one application.

You could share only the Chrome web browser window in which you have opened a hyperlinked presentation. That way, the students will hear your voice and see the interesting content without being distracted by other windows or tabs.

Maybe you share only your open Word document in which you are typing up rough drafts of a persuasive essay. That way, your students can see parts of speech as they are added and can also see the proper formatting as you add it.

You could share only your connected document camera or iPhone camera as you show how to perform a math problem or write an equation on a white board or piece of paper. That way, the students see just enough to learn but not so much that they get distracted.

Maybe you share only your open Mindmap software as you build out an idea map or concept map with different digital sticky notes, connecting lines, and icons. That way, the students can watch the map grow organically out of the words they provide and their own research findings as well as from their classmates' contributions to it

USING ZOOM FOR INVESTIGATION

Investigation demands students to locate and assess their own sources rather than ingesting the materials you offer to them. You may give a certain subject or issue to students and ask them to find their own source, which could be journal papers, news items, videos, or a piece of data, among other things. You may then invite students to add this to a common resource bank, such as Padlet or a Canvas discussion. Students profit not only from the discovery of their own resources, but also from the communal bank of resources.

USING ZOOM FOR PRACTICE

Examples and ideas for practical activities:

✓ SIMULATION TO INTERACT WITH THE SIMULATED WORLD OR BRANCHING SCENARIOS

Simulations are a way for educators to show students how a process or system works. Zoom can be used easily as a tool that lets educators use interactive simulations and branching scenarios for their lessons. .Specific uses of simulations in education includes showing students how a process or system works, as well as fostering conversations about difficult issues. In the classroom, simulation examples include: Simulations can be designed to illustrate a process or system and show students how one would work.Simulations are used in order to foster conversations about difficult issues by allowing students to explore different sides of the issue, learn about their role in the group, and make judgments about different outcomes.

✓ GAME-BASED LEARNING ENGAGING LEARNERS WITH THE GAME ENVIRONMENTS

Online teaching is a growing trend and game-based learning is one of its most popular methods.

The use of game-based learning in online teaching has been successful in engaging learners and applying their knowledge to real life situations. . Online learning is focused on active participation and co-operative activities, which can be increased with game-based approaches.

✓ PRACTICING EXERCISES

A learner performs a practical task to practice the skill or knowledge and use the feedback to improve their next action. This process is called "learning by doing" and it is widely used in education.

In a typical example of learning by doing, a student might be asked to answer math problems. The student will first try an answer and then get feedback on whether they are right or wrong. They will

then try again, making changes until they have found the correct answer. Learners can repeat this process as many times as they need until they have mastered the skill or knowledge.

✓ ROLE-PLAY ACTIVITIES

Role-plays can be used in a variety of ways. They can be built into a teaching plan with pre-assigned roles and advance student preparation, or they can be used spontaneously to address a particular point, or they can be used as a form of assessment.

Role-plays are often used as an assessment tool for students to demonstrate their understanding of the subject matter. They are also used in the classroom to help students practice their skills in different scenarios and work on how to react and respond to situations that may not occur in real life.

Role-plays are also typically done with pre-assigned roles where the teacher assigns different groups with specific roles.

Spotlight the students in the role-play while the rest of the class observes

You can put the students in the role-play "on stage" using Zoom's Spotlight Video video feature. Spotlight Video allows you to choose up to 9 participants as primary speakers so that their video feeds will be visible to all participants. This feature is often used to spotlight a keynote speaker or presenter. This article describes how to turn the spotlight on and off.

Students conduct the role-plays in Breakout Rooms and then the class debriefs together

In this approach, pairs or groups of students conduct the role-play while in Breakout Rooms. You can assign students to groups manually or randomly (aka "automatically" in Zoom). Be sure to provide clear instructions and time frames to students before you put them into Breakout Rooms.

Debrief: Discuss the role-play

You might debrief the role-play as a whole class in Zoom, using discussion prompts like "How realistic was the interaction?", "What was surprising?", "Why did you say/do _____?", "What would you have done differently?", "What makes this kind of interaction so hard?"

If you're teaching a large class, you might also use the Zoom chat and polling features to solicit input broadly and quickly.

USING ZOOM FOR PRODUCTION

This might be a formative or summative evaluation that demands students to demonstrate their knowledge obtained throughout the module. Again, the zoom share screen tool which many will be acquainted with, will allow students to submit work for you to offer feedback on. Allow students to adopt a flexible approach to this by enabling them to pick how they will respond to a task. Students might submit a video, audio, or recorded presentation instead of merely a written response.

USING ZOOM FOR COLLABORATION

Collaboration, like discussion activities, may be done both synchronously and asynchronously. Present to students a shared task, which might be the development of a shared resource, such as a presentation, a definition of a phrase, or a diagram, or the completion of an activity (or set of tasks) within a collaborative document. This might be accomplished simultaneously by using Zoom breakout rooms, which allow students to share their displays with one another.

USING ZOOM FOR DISCUSSION

Online talks may be held both synchronously and asynchronously. For a synchronous exercise, you might use Zoom's breakout rooms to divide the class into smaller groups, such as 3-4 groups or pairs for a 'think-pair-share' activity. Kids will be able to engage in smaller groups in these spaces, making it simpler for all students to contribute. You may then visit each class to check on student progress and stimulate more inquiries and conversations after providing them with a series of questions or prompts and a time restriction. After the timer goes off, students can reconvene and provide feedback to the wider group, either orally or by providing a brief summary in the Zoom Chat.

STRATEGIES TO ENGAGE STUDENTS USING ZOOM

Now that we have all been thrust into the world of online learning, we have to figure out ways as educators to engage our students when they are online. Some of the first things schools did when shifting to remote learning was to hold regular video meetings with their students. These can vary based on the ages of the students and the frequency of when a teacher interacts with their students, but most teachers realized quickly that they can't use the same behavioral strategies (like proximity) that they use in a physical classroom. This can lead to a lack of student engagement and involvement in what is trying to be taught regardless of age.

There are some simple strategies that teachers can use to increase student engagement when using Zoom or other video conferencing platforms for distance learning.

1. SHARE YOUR SCREEN

This is a great tool for online teaching. It allows the teacher to share their screen with a small group of students and also allows them to zoom in on specific parts of the screen. It's a great way to engage students and make sure they are understanding what is being taught. This tool can be used in presentations as well. It allows the speaker to show their slides in real time and also gives them the ability to zoom in on certain parts of their presentation. .

2. USE THE WHITEBOARD FEATURE

This feature can take some getting used to, especially if you are using a mouse or trackpad. To use it, simply go to share your screen and choose "whiteboard". As you get more comfortable with Zoom and student expectations, let your students also use the whiteboard feature to share their understanding.

3. ENABLE THE ANNOTATION FEATURES

Another feature that you could use when sharing slides, photos, or websites is the annotation tools. You'll want to check your account settings to make sure these features are enabled by default. Having these tools enabled, you'll be able write over any image, highlight certain features of a website, and make the viewing experience for your students much more interactive.

4. CREATE BREAKOUT ROOMS FOR COLLABORATION

Unlike whiteboard and annotation features, the ability to create breakout rooms are not enabled by default. You'll want to go into your account settings to enable this ability before using it with your students. Once enabled, you can have Zoom either automatically or manually assign students into rooms. Even if it's automatically assigning, you can swap students out depending on group dynamics (note: it helps to have your students put their name on their Zoom login). You can even rename the rooms depending on group names or topics before assigning certain students to each room. The great thing about these rooms is that it can create a more collaborative setting than the large whole-group zoom experience. As the moderator you can float around and join rooms to check in on the discussion, post an announcement to all rooms, or even place a time limit on them. Once you ask students to rejoin the whole group and end the breakouts, they'll have 60-seconds to wrap-up their discussion and rejoin.

5. VIRTUAL BACKGROUNDS

There are very   productive uses of these virtual backgrounds. Some examples of using virtual backgrounds might be re-enacting moments in history with the appropriate backdrop, selecting a geographic landmark they might be studying or "visiting" virtually, or just having students select either a solid green or red background to quickly show if they agree or disagree with a topic.

6. SURVEY YOUR STUDENTS

In the classroom, we use the classic "raise your hand" to gather feedback from students. In Zoom, it's no different as there is a "Raise hand" button available to students, but some savvy teachers have also figured out that the chat room can act as an impromptu survey as long as it involves brief responses.

7. ZOOM CHAT

One of the most useful features of Zoom is the built-in "chat" feature. The chat feature in Zoom allows you to send messages to other meeting participants either in real time or at any time during the meeting. There are many reasons why the chat function can be useful:

It allows you to have a conversation with someone while they are sharing their screen on Zoom. For example, if they are showing you a presentation or video, you can ask them questions in the chat box and they will be able to see them while they are presenting. If someone has a question but doesn't want to interrupt, they can use the chat box instead of raising their hand (or unmuting) so that everyone else in the meeting knows who wants attention next!

8. THINK-PAIR-SHARE

Think-Pair-Share is a technique that is used in online teaching. It is a technique that involves students thinking about an idea and then sharing their ideas with the other members of the group.

Think-Pair-Share can be done using Google Docs, which allows students to share their thoughts on a document and then discuss them as a group. This way, it can help people learn from each other's ideas, which can lead to more creative solutions and innovative thinking.

9. KNOWLEDGE PROBE

The knowledge probe technique is used to engage the learner's interest and attention. It is used to encourage the learner to think critically about what they are being taught.

This technique can be done in many ways, but it usually starts with a question that relates back to the lesson. The questions should be open-ended and not have a specific answer. The teacher should then wait for the student's response before providing feedback or additional information on the topic. .Example: What is the purpose of using email in school? - Email is used to keep everyone at school informed about what's going on. The teacher provides feedback to let the student know that their answer was correct.

10. PAUSE AND CLARIFY

The Pause and Clarify technique, or the "pause and reflect" technique, is a pedagogical approach that can be used in teaching as well as in other contexts. The pause and clarify technique is a simple but powerful way to teach someone something. It can be applied to any knowledge domain. The person who is teaching will pause for a few seconds and then ask the learner if they have any questions about what was just said. If they do not, the person who is teaching will clarify anything that may have been misunderstood or any points that were not clear enough.

Works better with queries that require understanding rather than simply recollection of material. The goal is for each learner to clarify their own knowledge by contrasting their point of view to that of others.

11. QUICK THINK

Quick think exercises are a great way for students to step out of their comfort zone and get a refresher on the topic.

Some benefits of quick think exercises:

- ✓ Helps learners reflect on what they have learned so far
- ✓ Helps learners understand concepts in more detail
- ✓ Creates an opportunity for learners to try out new skills and identify obstacles

Include a "quick thought" exercise every 10-15 minutes. Examples include: choosing the best response, correcting an error, finishing a sentence starter, comparing or contrasting, supporting a point, re-ordering the processes, reaching a conclusion, and paraphrasing the concept.

12. MINI CASE

To prime learning, choose a practical situation incorporating principles that will be presented throughout your presentation. Mini-cases are more successful when learners get the case ahead of time, and they can be useful at the start of a session.

13. MINUTE WRITES

Minute Writes are a teaching tool that instructors can use for assessing students. Minute Writes are typically written quizzes, which can include multiple choice questions and short answer text points. They are often timed and take from one to two minutes to complete. Minute Writes provide a way for instructors to assess and grade their students without taking up too much of their time.

- ✓ Pose a question about a course concept; ask learners to write a response in 1-2 minutes.

✓ Collect responses & without revealing names, share sample responses & give feedback. (You can use a Google doc).

14. JIGSAW LEARNING ACTIVITY

Jigsaw learning requires that learners become experts in a subject area and then teach that topic to peers who have become experts in other topics.

✓ Pre-class work: Assign learners to small (4-6 students) groups AND assign each group a subject area to learn.

✓ In Class: Rearrange breakout groups so that there is 1 expert in each group. Experts reciprocally teach their peers.

✓ Use report outs to check understanding. (Zoom also allows you to "drop into" discussions to check understanding)

15. SOCRATIC QUESTIONING

Call on a learner to explain their thought process, probing assumptions, and asking for evidence helps them uncover answers.

16. PEER REVIEW

Having students review each other's work is a great way to make sure each student benefits from individual feedback and attention, even in a large group. To facilitate a flawless peer review, you'll need to anonymously pair students to review each other's work. Give students the tools they need to perform a successful review: sample reviews, assessment rubrics, and guidelines on giving constructive feedback.

17. LEARNING STATIONS

When students cannot move around a classroom to visit different learning stations, they can participate in different learning activities during asynchronous learning in a self-chosen order. Provide online content that includes several activities but allow students to select the order of the activities.

18. INQUIRY-BASED LEARNING

With the prevalence of online courses, and the ability to access any topic through the internet, the concept of inquiry-based learning has become easier to achieve. However, it's important to remember that facilitating inquiry-based learning is a process that requires more time and effort than simply offering lectures and information.

The "flipped classroom" model provides a means for delivering a degree of inquiry in the classroom. Provide students with subjects to investigate online prior to synchronous class time throughout asynchronous class time. For example, assuming that students are required to attend a synchronous lecture once per week, task students with researching one question or topic related to the lecture content each week. The research must be completed by the beginning of the next lecture, and it should result in a well-reasoned position paper of 2-3 pages (about 500 words) or an educational video of 2-3 minutes. Each week's paper or video can be graded as a "mini project," so that student work is completed incrementally over the course of the semester, rather than all at once at the end.

19. STUDENT PRESENTATIONS

Short presentations provide an opportunity for students to engage in peer instruction. This type of activity invites students to synthesize and communicate their knowledge.

Ideas for short presentations:

✓ Brainstorm a list of topics from class you feel confident about teaching, then give the rest of the class an opportunity to vote on their favorite topic. The winner will present for 5 minutes.
✓ Break into groups, come up with a plan for your presentation, and then present it to the rest of the class.
✓ Create a multiple choice quiz on a particular topic. Then give the rest of the class an opportunity to vote on what they think is correct. You can also set up your presentation so that you teach while they take the quiz, or they take the quiz before you teach, which will make them think about what they do or don't know about a topic.

Depending on the course, the instructor may want all students to present, or divide the class into small groups and invite a representative from each group to present. The instructor may choose to provide guidance on the form of the presentation (e.g., PowerPoint slides), or leave it open-ended so that students can experiment with different formats (e.g., Prezi). The presentations are due at the beginning of class. Students can work in groups of 2 or 3. It's up to you, but students should be aware of what your expectation is before they begin working. Presentations should not exceed 10 minutes.

Some suggestions for organizing a group presentation:

✓ Assign each group member a specific section of the topic to cover in the presentation.
✓ Decide if the entire group will speak or if one person will be designated as the "presenter."
✓ You might want to ask each group member to provide a two-sentence summary that the presenter can use to introduce each section.
✓ Have a backup plan in case one member doesn't show up on time or misses the class entirely.

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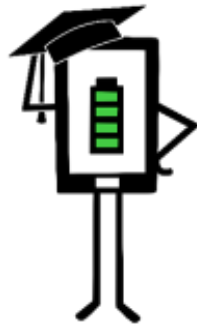
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He worked for ten years as an education designer and consultant at TUBITAK-Turkey Industry Management Institute, which he entered in 2002. While continuing his doctoral studies, İnanç Ayar, who has been teaching part-time at Boğaziçi University Faculty of Education since 2006, carries out the HerGünÖğren and Fikri Tesisat initiatives.

SUMMARY

PROJECT RESULTS CT&LT4DE Training of trainers.

We hope that this publication will be useful to teachers in distance education, educational practice and their own educational self-development.