DIGITAL TEACHING IN UNIVERSITY ENVIRONMENT

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Digital Teaching in University Environment

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1.1 Key concepts and definitions

Online Learning refers to learning that is facilitated wholly by the use of digital tools.

Distance Learning occurs when teachers, students and classrooms are separate and uses a range of approaches including online usually over significant physical distances.

Remote Learning has emerged to describe emergency measures to move instruction from physical schools to homes in online and offline modes.

Blended Learning involves the practice of using both face-to-face and digital experiences usually delivered as part of a physical classroom experience. Students access online educational content outside the classroom as well as attending a class led by an instructor. The online components are used for information transfer. Then, in class the instructor provides student-centred, active learning activities through which students put the information they have learnt into practice.

Flipped Learning is a pedagogical approach that inverts the traditional method of the teacher leading learning, instead handing responsibility over to the student. Students receive and engage with material prior to the classroom learning through videos/ tutorials delivered online.

Hybrid Learning is a hybrid approach that builds on the successes of flipped, blended, remote, distance and online learning to intentionally create learner-centered experiences that are profoundly personalized, relevant and engaging.

Self-paced learning is possibility to learn in participant's own time and schedule.

Instructor-paced learning is when the course materials become available at specific times as the course progresses.

Assessment as Learning –makes assessment part of the learning process itself. This model often makes students their own assessors. It takes many forms, including demonstrations, investigations, presentations, projects, case studies, building prototypes, etc.

Assessment for Learning -is formative, focusing on gathering information to inform both teaching and learning.

Assessment of Learning -is a summative assessment of what students have learned.

Course Aim -a statement that describes the overarching intentions of a course. It should try to answer the following questions: What is the purpose of the course? What is the course trying to achieve?

Course Structure -this refers to the choice of topics/modules and the organization and sequencing of course content. The choice of topics/modules and their organization should always support the learning outcomes for the course. The course structure can be provided through a description or a diagram.

Final evaluation -the aim of this is for students to provide anonymous feedback about a course structure, assessment, learning activities, grading, communication, etc., which can then be used to revise and improve the course for the next iteration.

Summative Performance Task -an end-of-course task through which students demonstrate their comprehension of the learning outcomes for the course.

End-of-module instructional activity -an activity which encourages students to use additional ways of integrating their knowledge after class, to reflect on what and why they are learning.

Backward Design -is a commonly used framework for designing blended learning courses. Backward Design aims for students to achieve deep understanding and show this through authentic performance tasks. In Backward Design, students:

- actively involved in the learning process;
- gain deep understanding of concepts;
- demonstrate understanding through small formative tasks and an authentic summative performance task;
- get continuous feedback throughout the course.

Source: https://www.rochester.edu/college/cetl/faculty/online/backward.html
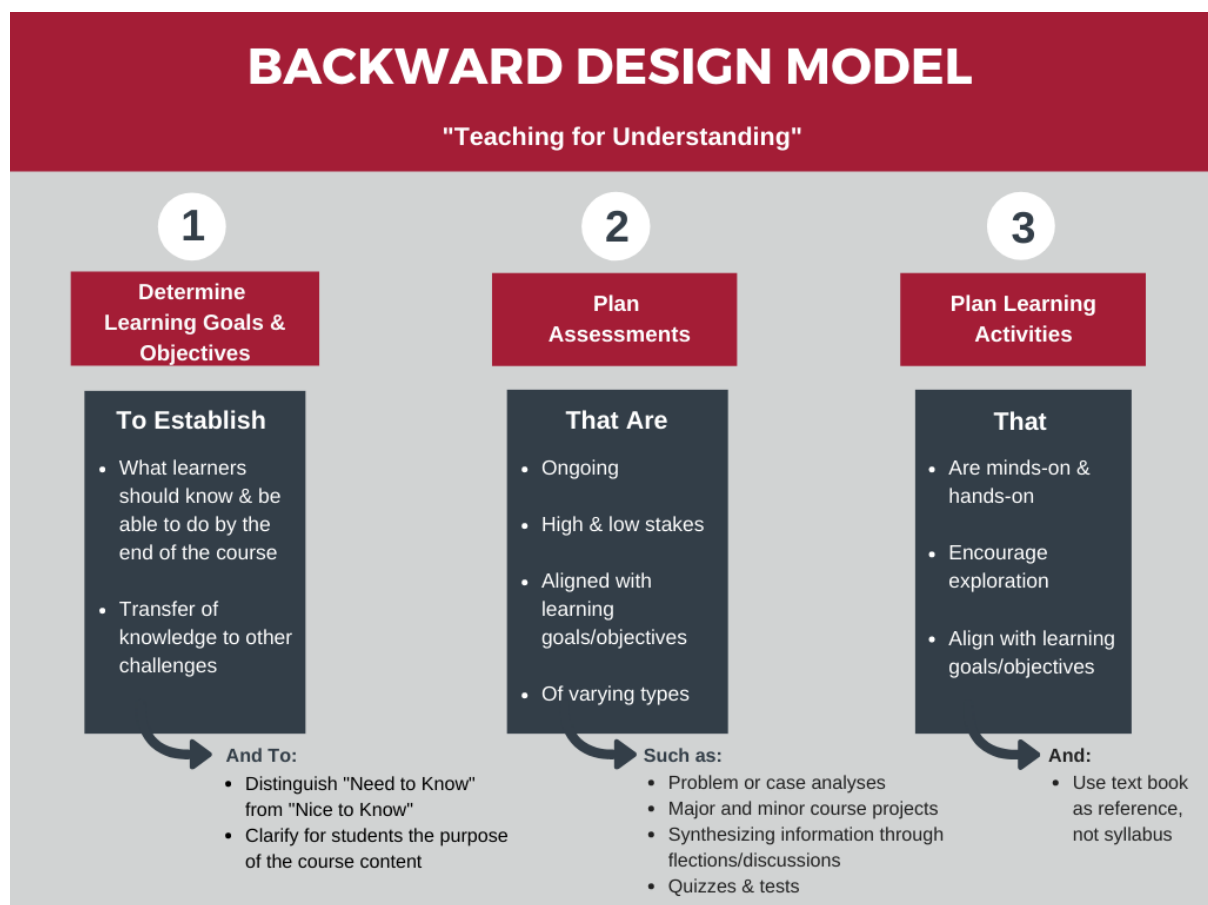
ADDIE model -is a cycle that is used by instructional designers when designing courses. It has five phases: analysis; design; development; implementation; and evaluation. In this model, each phase has an outcome that feeds into the next phase.

Source: https://www.aihr.com/blog/addie-model/
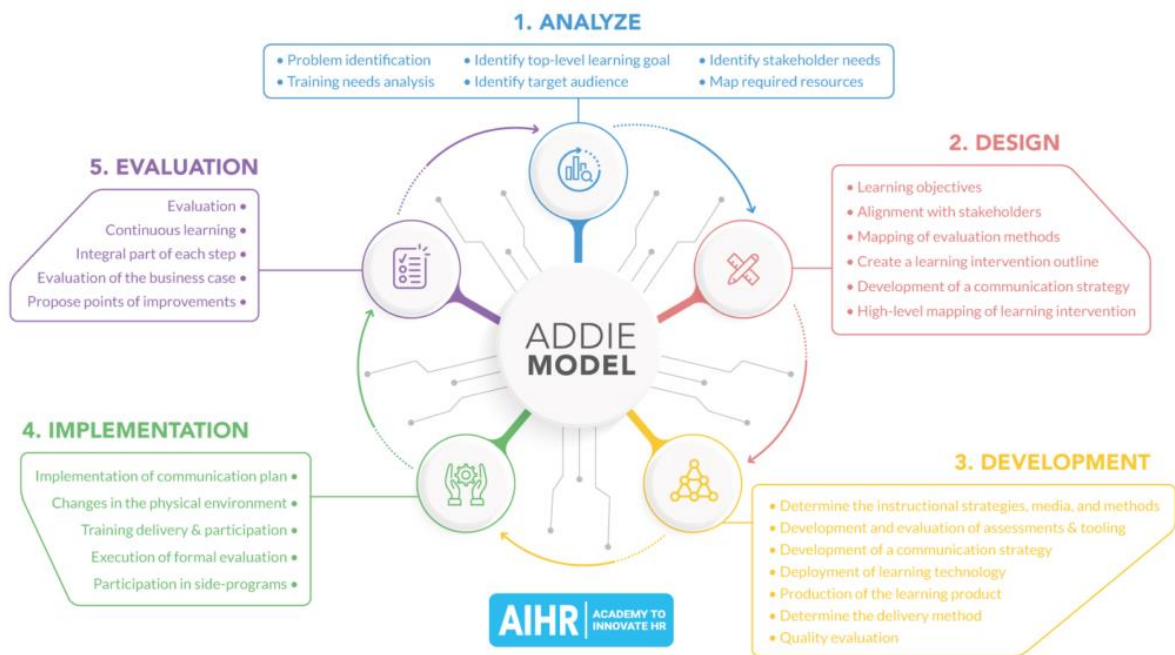
Phase One – Analysis. Goals and objectives are established. In addition, information is gathered about the learning environment and learners' existing skills and knowledge. Key questions are asked at this stage, such as "Who are the learners and what are their characteristics?".

Phase Two – Design. The course design is developed by identifying learning outcomes, modes of assessment, content, media selection, and lesson planning. In this phase, the course design is documented, and instructional strategies are applied according to the intended outcomes. A prototype of the course is created at this stage.

Phase Three – Development. Instructors create and bring together the content and artefacts that were identified in the design phase, such as videos or quizzes. These are uploaded to the learning platform, and Beta tests are performed to check for usability. Feedback from the Beta test is used to review and revise the course.

Phase Four – Implementation. The course is implemented on the learning platform. Instructors teach the course and students take the course.

Phase Five – Evaluation. This takes place formatively, at each phase of the ADDIE cycle, as well as summatively, with feedback being gathered from users. The cycle then repeats as the course is re-designed and re-implemented.

Bridging Element -a review activity, done at the start of a lesson, to get students to review what was in the pre-class content. It provides a bridge between the pre-class instructional activities and the in-class instructional activities.

Freemium Education -allows a consumer to access basic educational services free of charge but requires them to pay for any additional services considered to be premium.

Bloom's taxonomy -a framework which categorizes educational goals. In this framework, each category represents a higher cognitive level of functioning than the category below and each lower category is considered to be a precondition for achieving the next level up. The cognitive processes are presented as the actions through which learners encounter and use knowledge

Create	Produce new or original work design, compose, create, combine, formulate, invent, substitute, write, compile, construct, develop, generalize, modify, organize, produce, rearrange, role-play
Evaluate	Justify a stand or decision reframe, criticize, evaluate, appraise, judge, support, decide, recommend, summarize, assess, convince, defend, estimate, find errors, grade, measure, predict, rank
Analyse	Make connections from ideas analyse, compare, classify, contrast, distinguish, infer, separate, explain, categorize, connect, differentiate, divide, order, prioritize, subdivide, survey, advertise
Apply	Use information in new situations solve, apply, illustrate, modify, use, calculate, change, demonstrate, discover, experiment, show, sketch, complete, construct, dramatize, interpret, produce
Understand	Explain ideas or concepts explain, describe, interpret, paraphrase, summarize, classify, compare, discuss, distinguish, extend, associate, contrast, convert, demonstrate, estimate, identify
Remember	Recall facts and basic concepts define, identify, describe, label, list, name, state, match, recognize, select, examine, locate, memorize, quote, recall, reproduce, tabulate, tell, copy, discover, duplicate

Bloom's Taxonomy and action verbs.

Source: CEPHEI recommendations for course development

Fully Online Course -a course that takes place fully online; there is no in-class component.

Graphic Organizer -is a guided worksheet (supporting visual aids) that provisions the students through the learning process. It helps students to pay attention to the most important parts of the pre-class media. Graphic organizers usually include a white space for students to take notes. They may include diagrams and headings.

In-class component –a teaching/learning activity that takes place in class.

In-class instructional activities -teaching/learning activities and assessments that take place in class information transfer -the transfer of knowledge from an instructor to a student.

Instruction-the teaching and learning activities that impart knowledge or skills.

Instructional design -is the creation of learning experiences and materials in a manner that results in the acquisition and application of knowledge and skills.

Learning Outcomes -are statements that describe the knowledge or skills students should acquire by the end of a particular assignment, class, course, or programme, and help students understand why that knowledge and those skills will be useful to them.

Innovation-a process that involves multiple activities to uncover new ways to do things.

Innovative Knowledge -comes from experimental research and development activities and empirical practice activities to promote the knowledge that technical innovation and system innovation need.

Hard skills -specific abilities, or capabilities, that an individual can possess and demonstrate in a measured way. Possessing a hard skill connotes mastery and an expertise within the individual to perform a specific task or series of tasks to complete a job.

Soft skills -the personality traits, noncognitive skills and competencies that inform to how an individual relates to others.

Pre-class content -online materials designed to provide information transfer prior to class.

Prior Knowledge Activity –prior knowledge is the knowledge a learner already possesses before they meet new information. A learner's understanding of a new concept can be improved by activating their prior knowledge before watching a video or reading a text by setting a prior knowledge activity. The aim is to get students to draw on what they already know and to raise their curiosity about what they may not know. This is done by setting a prior-knowledge question that gets students thinking about the subject area prior to watching the video.

Project-based Learning –involves students gaining knowledge and skills by working for an extended period of time during which they investigate and respond to an authentic, challenging, and engaging problem.

Self-paced - courses which do not have release dates for course content or due dates for assignments. Learners can complete course material at any time before the course end date.

Social Component-a virtual space, online, in which students can pose/discuss questions.

Virtual Class Space -a shared online space where instructor and students work together simultaneously.

Synchronous learning is online or distance education that happens in real time, often with a set class schedule and required login times.

Asynchronous learning does not require real-time interaction; instead, content is available online for students to access when it best suits their schedules, and assignments are completed to deadlines.

1.2 Trends in course development

In this section we discuss the trends in education. Most of them relates to the tends in digital teaching and learning, but some of them have generic meaning, teaching in general, contact or online.

As the time goes, the way the young people receive and digest the information is permanently changing. Good news is that majority of courses doesn't require full redesign, but they require use of different packaging of the course, redesign of its delivery, rooting most of the contents in electronic means of communication. It is challenging for all and also requires teachers to learn a lot and leave the comfort zone of traditional class, but the results could be outstanding: wider audience, better engagement and happier learners.

1.2.1 From synchronous to asynchronous. From instructor-paced to self-paced

Learning stops as soon as students leave the class. According to the research only 10% of the lecture contents is remembered by students right after the lecture in the best case. The amount of interaction with the lecturer if you sit in the crowd of 100 fellows is next to zero, and interaction with other students is simply forbidden. It is obvious, especially now during COVID time, that education migrates from synchronous to asynchronous mode, from Instructor-paced to Self-Paced. And here is why:

- It is less demanding in scheduling. It is repeatable, flexible.
- Asynchronous teaching enables rolling enrolment for the course or degree.
- It is easier to automate - intermediate tests, assessments, grading as well as the learning path tracking - it all can become pre-programmed.
- The learning doesn't stop when student leave the classroom. Learners open the course materials when they have the time and the mood to learn - the efficiency of learning is higher.

How to move from synchronous to asynchronous? The main idea is to reduce number of live meetings with little or no interaction. Instead checking ifall students are present, focus on recording of the message you plan to deliver. Prepare videos and it does not mean that all the videos are to be recorded by you, it is indeed challenging for the beginning. Instead, explore Internet where chances are high that another teacher already did a very good job and published a very nice piece of lecture on your subject. The same goes with any other types of teaching materials, for example, texts. Upload as a text what you intend to release as a speech. And students can read it many times and enjoy much deeper.

Finally, having delegated most of information transfer to asynchronous carriers, do not forget to focus on the design of the Interaction of the learner with the materials, build the scenario of going though these materials, because when the student is there, you are not. Make sure that

all the interactions of the student with learning components are counted, and, in the best case, assessed. Prepare asynchronous evaluation tools as much as possible.

1.2.2 Modularity, atomization, dynamicity of contents

Traditional old school course structure is dictated by the content's logic. It is hierarchical, linear, from general to particular. But there are so many changes in life, whether we like it or not. Comparing to the last century, life is way much more dynamic, so our course should be. So, education should either adapt itself to these changes or stay traditional, rigid and perfect but lost for new students. The life becomes faster, more and more dynamic, volatile, the psychology or younger generations is totally different, they survive and successfully navigate in the flood of knowledge, although at the expense of its depth sometimes. So, the way we organize the contents of our courses and deliver it should fit these changes. The trend in the course organization, course structure is Modularity, atomization, dynamicity of contents. And here is why:

- Smaller chunks of the contents are easier to digest, to stay focus on.
- It becomes easier to modify the contents of the course.
- It becomes possible to export and import of modules/micormodules between courses and teachers

And finally, how:

- Rethink your course in a way that the primary element is neither a chapter or a lecture, but a standalone Module with relatively standard workload, combination of video, texts and assessment tools.
- Split long topics into smaller chunks, even if it might break the beautiful logic of it.
- Reduce teaching video time (15 min of teaching in video is already too long), reduce module size, better have more smaller modules than less but bigger.
- Atomization of the contents will help you to prepare different learning paths for your students, customize your course to their background, interests or learning progress. Learning path design is needed.
- Navigation signs are never too many through the course. Always tell where we are in our course, what it has been and what it is going to be.
- If you practice project-based learning design, make sure that your contents can support your students on demand, so they can easily find the required theoretical tool from your course as soon as they need it

1.2.3 Learning experience improvement and personalization

When we teach in the class, of course we worry to keep the audience awake. Funny examples, humorous anecdotes and stories sometimes work. Nothing could uplift a lecturer better than smiling faces of students, a laughter sparkling through the class, positive emotion in the air. Having been forced to provide much of my lectures remotely we painfully realized that we can't track emotional feedback of the audience anymore. Student's cameras are mostly off, microphones are muted, and potentially funny jokes meet total silence.

Younger people are more demanding in terms of communication, they are very selective in choosing the way the information is packaged and delivered. They immediately switch their attention to something else. We do not need research to conclude that education gravitates toward service sector, where customer satisfaction, engagement, positive experience and, after all, happiness are the indicator of success. That is not always bad idea. But requires some specific efforts in course design and implementation:

- When you start teaching digitally, especially when transform your course into asynchronous form, the number of enrolments grow. The growth of the number of learners should not reduce the interactivity, mentoring efforts, assessment quality. Design your interactions with each learner, or, if there are so many, organize the integration of the group in course forum or chat, for example.
- Count every effort of the learner. The learner should not feel herself alone through the course. If amount of learners is high, use Learning analytics tools, even Artificial Intelligence to add interactivity with the contents
- Course completing should leave the digital footprint, improve learner's portfolio. It is very nice if all the efforts of the learner through the course are collected as the portfolio.

What are the tools to make it happen?

- Gamification. Dashboards, digital badges, points earned, and other quantitative indicators will add to the learning experience some feeling of competition and excitement "to win more". And of course, it will help with the assessment later. Quizzes, tests, discussion boards, course chats, feed backing, cross-reviewing - all these elements of the course will increase engagement, interactivity and course progress assessments.
- Learning analytics is as challenge as powerful instrument to be used in course design. It will track learner's progress and proactively help. It can also be used to adapt/to customize the contents or the way of delivery to specific learner. Finally, imagine a bot assisting your students with small standard questions, warnings, encouragements… if you are too busy with other things.
- Make sure that the learner knows that all her efforts are counted, moreover, collected by the end of the course in a nice report. Ideally it should be a personal electronic portfolio for each learner (learning blockchain). It is always a good idea to provide a certificate of the completion of the course. By the way it can be a method of monetizing/crowdfunding of your teaching efforts, many MOOCs teach for free but take a small fee for the certificate.

1.2.4 From content-based to project-based

Surveys show that more and more students see the university not as the best knowledge bank but as the springboard to the dream employment. The more we open our course to industry, business or society the higher chances that students are hired by them or at least learn what type of real-life problems they can solve with the tools that we teach. The amount of universities in the world is permanently growing, we simply cannot afford them as pure academic knowledge trainer. We have to teach Problem Solvers, Doers. We need to give the experience of changing the world, improving the life in the community, society or business.

We need to teach practically valuable theories. We need to prove that what we teach is "easy to sell", the society needs our course.

The trend is called project-based learning. In the center of the course there is a project that students are to complete by the end of the course, in teams or individually. The problem that project solves should be setup not by professor but come from outside of the class, from a company, city administration or next door small business. The mission of the teacher is to select the problem that fits the topic of the course and to facilitate the teams by mentoring and consulting. Theoretical contents of our course should become the weapon for the students to generate the visible improvement of somebody's life or business. In other words, the course should not anymore be an agreement between Teacher and Student "Be nice and you will get your grade". The third party called "Real Life" or "Business" or "Industry" or "Society" is to enter the class. The voice of the Real Life is to sing to the students that what they are learning in the course is worth learning.

The ambition of project-based course redesign requires leaving your comfort zone and much manual control. Here your life experience is a big advantage:

- Contact companies, administrations and institutions, use any chance to enlarge your network outside of the University, hunt the problems to solve.
- Invite the business/administration to your class, let them talk to your students, let them talk about their hard life and their problems, so try to setup the problem for the project. Ask business to become guest lecturer, or course godfather.
- Become consultant for your students, not teacher. Ideally, your students need you to solve the problem not vice versa.
- Allocate enough time for groups to discuss and solve the problems.
- Try to arrange multidisciplinary and multicultural teams (coordinate with other courses) - nothing would be a better teacher for your students to communicate in real work environment.

2. SYNCHRONOUS V ASYNCHRONOUS TEACHING

Teaching has been for centuries happening only when the teacher and learners met at the same time and the same place. Early drawings, middle age painting, first black and white photos and finally what search machines brings us as pictures when the keyword "class" - they all capture a room full of students and a teacher talking something enthusiastically to them. Even computer and communication technologies and even dramatic changes due to pandemic have not influenced much this approach. We still deliver to our students the schedule of lectures, switch on ZOOM and … the process begins.

But each time when the lecture is over, some questions from the audience (if any) are answered and we switch the microphone off, each time we cannot help asking yourselves, was it worth calling 100 young people to come to specific room at specific time, if with about 95 of them we had zero interaction? Would it be smarter to give them all a video they can watch in peace in comfort, rewinding many times complicated moments? Would many of them be less shy to ask their questions by texting? Would it be easier for us to learn what they take out of the topic if we have more tools to reach each and every student with that question "Did I make myself clear?" instead of throwing that to the whole class almost rhetorically?

This module we highlight benefits and challenges of synchronous and asynchronous teaching. And going to answer these and many other questions.

2.1 Comparison

Definitions go first. As it was already noticed, the process when the teacher and learner are at the same time and in the same place is called **synchronous instruction**. Or it is sometimes called "Real time instruction". Obviously, it can be contact (or also called face-to-face teaching) but it also can be remote teaching through any communication tool, for example, web-conference channel, text chat, that is called online teaching.

Asynchronous instruction happens when the learner takes her/his own pace in approaching course materials and tasks. So, the interaction with the instructor (if any) happens through text messages, discussion board, feedback and other sequential forms of communication.

Traditional class has always been synchronous. And of cause, it has been teacher-paced. So, the teacher sets the schedule of events of the learning. And even in asynchronous way of teaching, most of education is still teacher paced. That means that the teacher defines which module is to be open for study and when the assignment is to be delivered.

But only the asynchronous course design can enable alternative and extremely attractive mode of study: Learner-based. Learner-based mode means that the learner approaches the course materials and completed the assignments at the her/his convenient time. That definitely makes the process of study more convenient, enjoyable and sensible.

One of the goals of this module and course is to help educators to make the right choice of new teaching tools, to design the class with the perfect balance of synchronous and asynchronous elements. We will try to compare these two modes of teaching from different perspectives:

- Course contents delivery
- Involvement of learners and motivation
- Simultaneous work on the course or project
- Instruments needed to support the course
- Student's feedback
- Course documentation
- Administration
- Economic aspects of teaching
- Soft skills raised through the course
- Assistantship required or needed

2.1.1 Message delivery

The story says that university started long ago when books were either unavailable or extremely expensive. The teaching was actually a form of reading by a teacher (who did have a book) to students (who did not the book, so they had to write their own copy). And it had much sense until in XV century Johannes Gutenberg invented ancient Xerox machine - printing press. Copying of information became rather mechanical routine. But …

…no professor was fired… They were still teaching by reading a book they had. We are very good at explaining why we need to students to come to the lecture hall: because the contents I teach I unique, because my lecture is like a show performance or because I have just upgraded 20% of the course and had no time to prepare materials on it etc. It always has some sense. But in the time of the finger-tip accessibility of any piece of information it seems to be really not eco-friendly to make teleport a hundred of people to one place to tell something. I wonder how many of lectures that are happening now in all universities of the world could have been just an email.

2.1.2 Engagement and motivation

Education is rapidly becoming life-long activity, it is really a part of our life. It is life itself. It is reasonable to evaluate the quality of education not only by the credits or degrees obtained but by the quality of the life we spent while learning. Are my learning hours exciting, engaging, am I having fun while learning something?

It is easier to inspire someone not by text or video, but in personal, face-to-face meeting. Although even in face-to-face teaching engagement and motivation are never enough. When is reasonable to call for synchronous event, (whether it is web-conference or in class meeting)? Here are some recommendations:

- It is your favorite topic, your best lecture, your story to tell - you need the stage for it
- The topic or the contents of the session requires instant discussion, Q&A session, synchronous exercise, game or activity
- When you feel your students are getting tired of the course, the load and loneliness, so they need an emotional uplift and socializing is needed. (You can feel of see it from asynchronous learning statistics, vanishing discussion intensity etc)

- When you invite a Guest lecturer, course godfather or business representative, arrange an interview or a panel discussion on the topic.

Motivation and engagement in online synchronous class need preparation (ready to use tools and scenarios) and special skills. In the next section you can find some tricks and tools how to increase engagement of every student who came to your lecture physically or remotely. Leadership and motivation in web-conferences requires confidence with technology. But right now, we focus now on asynchronous mode of teaching. Be aware that online synchronous teaching is reported to be more tiring vs face-to-face teaching, for student and teacher both, because it takes more efforts to stay alert, the videoconferencing kills big deal of non-verbal information channel. Engagement may vanish - so make your web conferences shorter, make longer breaks or plan diverse agenda.

2.1.3 Collaboration

Collaboration between students, and between students and teachers, is an important factor in both synchronous and asynchronous online teaching. It helps to create a sense of connection between all participants and to build a sense of community and shared purpose. And of course, collaboration creates better learning experience, engagement and motivation.

There are three commonly identified types of interactions:

- Learner-to-instructor interaction
- Learner-to-content interaction
- Learner-to-learner interaction

Learner-to-instructor interaction as this type of interaction is intuitively or deliberately used on the majority of courses. This type of interaction happens when an instructor delivers information, provides feedback or simply encourages or guides the learner. It also takes place when a learner asks the instructor questions or communicates regarding the course. So, in synchronous classroom examples of learner-instructor interactions could be initiation and participation in discussion, mentoring or working with small groups of students.

Learner-content interaction takes place when students themselves obtain information directly from learning materials. It includes students' concrete interactions with the course materials and their more abstract interactions with the concepts and ideas they present. It is more than just reading a book or watching a video. Examples could be tutorials (texts, images, videos), quizzes with feedback, quests and games, reading and reflection, simulations.

And last one, but not least, **learner-to-learner interaction**. It happens between two learners or among a group of learners studying at the same course. Interaction between students can include formal course-related collaboration and interaction as well as more informal social interaction, which can increase students' comfort with each other. Examples of learner-to-learner interactions are group projects, group case studies, role playing, discussion, peer-reviewing. Any of these examples can be used on a small or large scale, during virtual and face-to-face course delivery.

If you want your course to be engaging and keep a high retention rate, then incorporate all types of interactions to it.

Collaboration in a synchronous environment can be achieved in much the same way as in a face-to face-classroom, with discussions and group tasks (use breakout rooms!). In the asynchronous environment, collaboration can be trickier but is still very important in reducing the sense of isolation learners may feel when working online. Discussions and group tasks can work just as well asynchronously as synchronously. Indeed, because of the lack of time constraints, learners can spend time composing a quality response when contributing to an asynchronous online discussion.

Still, a lot of collaboration, such as group work or Q&A or Quizzes can be delegated to asynchronous teaching!

To sum up, to develop effective learning activities:

- include opportunities for active learning
- allow for different types of interaction
- link them, so each one builds on the preceding one,
- include useful feedback on the activities, and
- include opportunities for students to think and reflect on what they are learning, how they are learning, and the significance of what they are learning

2.1.4 Technology support

We do not need much in the basic form of face-to-face teaching: just whiteboard and projector. But as we already discussed earlier, regular PPT-based lecture lacks engagement and interactivity. And the more interactivity tools we use the better engagement - we will talk about them later.

When we teach synchronous, but online, the most important thing is obviously high-speed internet for the teacher and learners. Web conferencing software subscription (for group meetings) can make the meetings stable and enable some useful instruments of interaction.

We need to be prepared that every online meeting is technologically challenging: glitches, microphone or camera failures, delays etc. The technology risks grow as the amount of participants getting bigger. At the same time the asynchronous teaching is almost 100% bug free - one more reason to delegate a good share of instruction there!

2.1.5 Feedback

Feedback from the audience, obtained verbally or non-verbally is what we permanently sensing while teaching. How different are the feedback channels in synchro and asynchronous modes?

- In face-to-face or video conference mode the feedback may happen immediately: questions, exclamation, laughter or even the deep silence as an indicator that something might go wrong. Immediate feedback is very good for the dynamicity of the class and engagement, it is a form of socialization, interaction with teacher as well as with other learners. At the same time, it is a challenge for privacy and depersonification. Students will ask much many hard questions in any meetings if they know that they are invisible. Peer-review is almost impossible to organize in synchronous mode.

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- Feedback can be non-verbal (face language, gestures, sounds…) and these are very valuable information sources in synchronous meetings. But many students report they are not comfortable with asking voice questions or having direct voice (=synchronous) communication with teacher. These are millennials who respect privacy higher and always prefer text communication, at least at the beginning (it is interesting that texting seems to be somewhere between synchronous and asynchronous forms of communication).
- In online synchronous class the feedback channels are technologically sensitive: video or voice communication can be one-direction or not available at all. Other feedback channels in videoconferencing: Text chat, "Reactions", Pools, surveys - they have to be prepared! These tools are generally available in asynchronous forms of teaching, although they also need to be enabled and used wisely. Asynchronous teaching always and synchronous online teaching often provide the report on the feedback, that is extremely valuable source of analytics. We will talk about learning analytics a bit later.

All in one: Adding asynchronous element to your course can make feedbacking more comfortable and deeper for the audience and for the teacher because the feedback is documented. Having learnt some tools of harvesting feedback in online or asynchronous mode we would like you to meditate a bit on the following interesting question: What web-conference feedback instruments we would take back to our face-to-face class?

2.1.6 Course documentation

We already shared concerns about what is left in the heads of students after they leave the lecture hall? The research says only 10% of the contents in the best case. But what typically stays in your head after the face-to-face training session? Probably subjective evaluation of active/ not active, good/ bad students. And we typically remember this and award those who are active by better grade.

It basically means that grading has a big share of professor's subjective evaluation, if the student is "nice" and professor likes him. And it is sometimes not fair: to rely only on professor's memory or impressions. One of the biggest problems of synchronous teaching, especially in face-to-face form: **it leaves no record**. Even if we use video recording tools like Echo360 or smartphone camera - the recordings are typically of poor quality, not reusable in the future as teaching material without substantial editing. And if we want to extract from the class recording something important for students' evaluation like amount of interactions, involvement, even just attendance - we need to watch the whole video ourself and count. Videoconferencing is better in this sense but still not many of them provide session statistics after the session is over.

In asynchronous teaching collecting learning statistics is typically much easy. For example, in the picture you see the analysis of discussion forum of three our offline courses. Yellow circles are the students and red circle is the teachers. The lines represent the interactions in the forum, question-answer typically. You can immediately see who is more active in the class and who is possibly missing some motivation or interest.
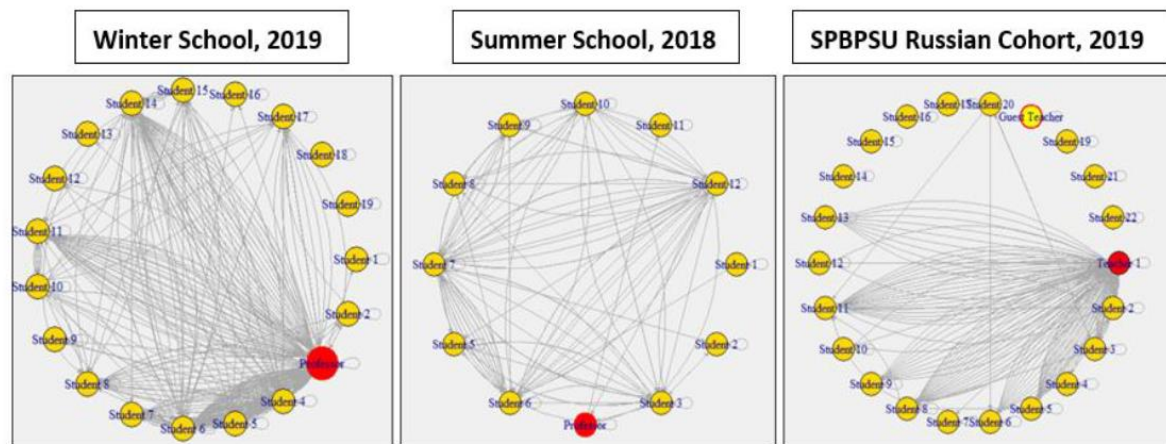
Social network graph for Systematic Creativity and TRIZ Basic Online course.
Source: Khan A. Data driven decision making in digital education: A case study from Finland and Russia. Available at https://urn.fi/URN:NBN:fi-fe2019072323186

2.1.7 Administration

University is in general very conservative organization. If the university is fed by the government there are typically many rules, instructions and ways of doing things that are very hard to change. Indeed, if the university is run by taxpayer's money, we should think twice before to go adventurous and be always ready to prove that everything has been just strictly observed. Universities have been speaking the language of synchronous teaching for several hundred years. There have been "lectures", "seminars" and "labs", academic schedules, room reservations, terms and exam weeks, the teacher's workload has been measured by contact teaching hours… If you fall out of this matrix with other forms of teaching you create problems for administration, and therefore, after very short period of time, for yourself. The funny paradox is that if you practice asynchronous, especially automated form of teaching, when students watch your videos, hit the quizzes, do the project and cross-review, then the teacher should be rather paid for **not teaching**, because due to her/his laborious preparation she or he can sit back now and enjoy receiving course reports from time to time with the progress of students.

Transformation to asynchronous mode of teaching requires certain patience and understating from administration. Do not forget to keep them informed of what you are doing and, ideally, turn your dean to your side.

2.1.8 Economic projections

Synchronous teaching is easy to account: it is just the amount of time spent in the class. Most of Skype education, additional training, mentoring happens as synchronous teaching and priced "Euro/hour" for one-to-one or small group learning (most intensive as well as expensive form of teaching).

In large organizations, like universities, the administration typically accounts teaching efforts by hours spent in the class. Since the education is synchronous, the learning workload is basically counted the same way. Even educational credits are measured by workload hours. The hours of preparation for the lecture or self-study learning ours are added to in-class hours proportionally, say, "36 hours of in class teaching plus 36 hours of self-study". Unfortunately,

this accounting system does not work when we try to apply it to the asynchronous course design.

In online asynchronous teaching it is hard to evaluate the cost of teaching efforts because much of them have been invested in preparation of videos, quizzes and other materials for self-study. Asynchronous communication with students is hard to account. "Price for the enrolment or for subscription or for certificate" is most popular option, and it is typically small (if any). But in general, asynchronous, especially self-paced courses, require much smaller or no instructor presence, it makes massive enrolment possible. As we have mention before, like the payment for automation engineer, who designs robots. If she does a good job, she is paid for not working, because the work is done by the machine.

Different approaches are used to evaluate the workload to design asynchronous course. One the most laborious elements is known to be videos, so, video design rates can be applied. Our experience tells that to produce 1 minute of quality educational video we need about 75 minutes of technical work (preparation, sound and light set up, shooting, editing, etc). Uploading of the teaching materials, designing the learning path and the scenarios of interaction of the learner with the course can be roughly counted as programmer's/technical assistant efforts. The teacher needs to prepare the scripts for the videos, the bank of questions for the quizzes and tests as well as possibly participate in video shooting process. All these efforts pay back when the asynchronous course is ready, and thousands can be taught even while the teacher sleeps.

2.1.9   Soft skills

The mission of any course is not only to provide the contents but develop soft skills of students. The skills that help to become problem solver, good team player, responsible professional with emotional wisdom and positive attitude. The drama is that the soft skills required for successful socialization are changing permanently at the rate of the change of business and social life around us. And many emerging soft skills that are in high demand can be best addressed through new forms of teaching. Let us compare synchronous and asynchronous modes of teaching from this perspective.

Synchronous teaching is teaching soft skills of synchronous communication: etiquette for face to face/remote communication, positive behavior patterns, constructive discussion rules, fast feedback and reaction skills, ability to communicate in groups, leadership and socialization.

In online (or "remote") synchronous teaching soft skills might be only slightly different to face to face, but still some specific skills should be addressed:

- Netiquette - specific etiquette/discipline for online communication (picture, voice, texting)
- skills to organize, to lead and document online meetings/events (preparation, agenda, meeting minutes, interaction tools, etc)
- balance between synchronous and asynchronous events
- in text synchronous communication (text chat channels): how to sound polite, formal enough and constructive.

Asynchronous teaching might be more challenging for raising communication skills because it generally requires less communication. And that is why many psychologies worry about the socialization skills of the generation that has been raised by eLearning, especially, asynchronous e-Learning. Nevertheless, this type of learning would definitely train the ability to focus on specific learning goal and systematically, lesson by lesson, reach it. In addition, there are certain specific forms of communication that can be (and should be) addressed:

- communicating by letters, the etiquette of working correspondence
- presenting the written reports, essays: ability to package the ideas and results in reader-friendly form
- presenting video or audio reports: ability to deliver visual contents in polite and informative, easy to digest form
- ability to organize and lead the work of the team of classmates in project-based learning, to choose right balance between synchronous and asynchronous communication, document the results.

So, to wrap it up. Pay specific attention to raising new digital soft skills when you teach synchronously. Teach your students to be fluent in expressing themselves in both, synchronous and asynchronous communication. Try not to forget about soft skills in the design of asynchronous course, do not leave your students alone there. Finally, there was a nice finding discusses at one of our workshops with teachers:

Hard skills are best learnt in asynchronous mode. Soft skills are best learnt in synchronous online and offline communication.

2.1.10 Assistantship

Traditional organization of teaching is that professor lectures, while assistant holds exercises and laboratories. So, basically there are on stage one after another, first professor with the lecture and then assistant with the exercise of a lab project. They have different tasks to do and possibly meet only when take the oral exam together.

The role of assistants in online education, synchronous or asynchronous should be different and more important. Assistants' destiny is:

- to assist synchronous meetings to be more engaging, effective, technology supported, to advice on modern technological tools to make it happen
- to provide the immediate advice on the way of perception of the materials by the students, as they were part of them recently
- to support synchronous event by, say, moderating the text chat channel
- to free the teacher from the administrative burden to focus on interaction with students.

And it is typically much better when the course should be the fruit of co-design and co-authorship of the team.

2.2 Tools for synchronous classroom

2.2.1 Video conferencing software

Comparison of **free** versions of software for video conferencing

	Zoom	**MS Teams**	**Google Meet**	**Skype**
Participants	100	200	100	100
Duration	40 mins	4 hours	60 mins	4 hours
Screensharing	yes	yes	yes	yes
Recording	yes	yes	yes/no	yes
Polling	yes	yes	no	no
Breakout rooms	yes	yes	no	no
Polling	yes	yes	no	no
Whiteboard or annotation	yes	yes	yes	no
Chat	yes	yes	yes	yes

Google Meet

Here you will find short instructions and useful links on how to use Google Meet in Education. Google For Education – Teacher Center

Free edition of Google Meet allows to join calls from any device following the link. There is no need to install plugin or download something. Google Meet can integrate with other Google services (Classroom, Docs, Sheets, Slides, Jamboard). It is possible to record and automatically save video to Google drive. for free account this feature is available till January 2022.

To create a meeting choose New meeting from https://meet.google.com or Google classroom. Copy and share link with participants or add them to the meeting (if you know their emails). During the meeting you can interact with the list of participants (mute/ask to unmute), write and read messages in chat, share screen and sound, create a whiteboard.

To create a whiteboard:

1. During the meeting on activity tab or extended menu choose Whiteboard. You can create new whiteboard or share one of the existing on your Google Drive.
2. Link to the whiteboard will automatically appear in the chat.

There is no integrated polls or Q&A services in free plan. However, you can create activities in other services and share screen and link with you students. You can find ideas on external services further in this handout. Google Meet paid plan starts from 3$ per student/per year.

Discover training lessons and related resources to accelerate your learning with Google Meet

Empowering educators and supporting lifelong learning with free, online training for the classroom

Zoom

Zoom is a video conferencing software. With a free version of software you can have unlimited group meetings for up to 40 minutes, host up to 100 participants and have unlimited in time

one-to-one meetings. Paid version for increased number of participants and duration starts from 150$ per year. Zoom does not require registration from participants.
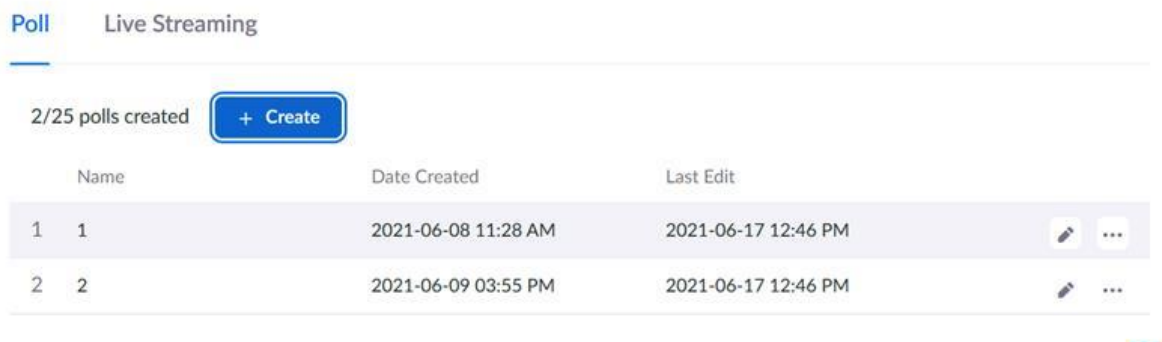
What can you do in zoom:

- polling (single or multiple choice)
- breakout rooms (automatically or manually assigned, participants choose group themselves)
- screen and sound share

You can schedule and configure Zoom meeting from the app, however, there are more configurations in browser interface. To have a greater functionality of Zoom, we recommend you schedule meeting other than using instant meeting.

Poll (how to create):

1. Login to your account on https://zoom.us/
2. From meetings tab choose the meeting for which you want to configure poll. Note you can reuse polls if you use personal meeting ID or reoccurrence meeting. If you use random meeting ID, you have to configure poll for each meeting.
3. You can create up to 25 polls for the meeting with up to 10 questions in each. At the poll section of the meeting press CREATE. You can choose between single and multiple-choice questions. The poll can also be anonymous.

Poll (how to use):

1. During your scheduled meeting choose POLLS at the task bar and select the which poll you want to use
2. You can see time and progress of voting when poll is launched. Participants of your meeting don't see results unless you share them after the polling is stopped.
3. You can immediately download result in csv format or later in your web account.

Breakout rooms:

1. During the scheduled meeting click on BREAKOUT ROOMS at the task bar.
2. Decide how many groups you want to create. Zoom gives a hint in dialog window how many participants will be assigned to each room. By default, Zoom creates groups automatically, however, you can assign participants to groups manually. Click create

groups and open groups. Participants should click JOIN. You can also allow participant to choose groups themselves. In such case they should click on the number next to group name and then JOIN. All participants can leave groups and join main room at any time.

3. From breakout rooms dialog window, you can broadcast message to all group. Don't broadcast links as participants are not able to interact with the pop-up window.
4. From breakout rooms dialog window, you can join any group. Click MOVE TO next to the room number. You can also move participants from one group to another.
5. To call all participant back to the main room click CLOSE ROOMS.

Note! the chat within breakout room is visible only to members of this group.

Screen and sound share:

1. To share screen, click on the green button SHARE SCREEN at the task bar and select which window you want to share. Usually, if you switch between different applications you need to share screen again.
2. If you want to share video with sound or audio you should first share screen. From the extended menu on top, choose share sound.
3. To stop share click STOP SHARE on the top of your screen.

Other useful options:

- **save chat automatically**. In the settings of your account in browser you can click to automatically save chat for all meetings where you are host. To activate automatic saving open https://zoom.us/ à Settings à Automatically save chat

- **reoccurrence** – when scheduling the meeting you can configure the reoccurrence meeting, for example every week at the same time. The link for all events in the reoccurrence will be same, as well as polls can be reused.

- **mute participants upon entry**. While configuring the meeting you can mute participants upon entry. Participant can later unmute themselves.

- **(not) allow participants to unmute themselves**. If you are holding an event with a big number of participants, you might want to prevent them from unmuting. To do so, start the meeting à open participants list à 3 dots will open extended settings à unclick Allow participants to unmute themselves. You can return to the previous settings at any moment.

Skype

Skype is a telecommunication software that specialize in providing video chat and voice calls across different devices. Skype is good for one-to-one communication and suitable for group meetings and discussions. To join Skype meeting, all participants should be registered and connected. Secondly, the functionality of skype is limited to chat and video recording.

How to use Skype in the Classroom it is possible to know more using this educational blog link.

MS Teams

MS Teams is the workspace for building collaborative classrooms, connect in professional learning communities, and connect with colleagues when you get Office 365 – which includes Microsoft Teams and is **free for your entire school**. Simply verify that you are an accredited academic institution to get started. Students, teachers, and staff can seamlessly work together, create content, and share resources all from a single, easy-to-learn and simple to use platform.

2.2.2 Interactive presentations software

Comparison of **free** versions of software for interactive presentations

	Mentimeter	Ahaslides	Slido	Prezi	Genially
Presentations	unlimited	unlimited	unlimited	5	unlimited
Participants	unlimited	7	100		unlimited
Quizzes or polls per presentation	5	unlimited	5	Not applicable	unlimited
Questions per presentation	2	unlimited	1		unlimited
Data export	yes	no	no	no	yes

Mentimeter

In Mentimeter you can create interactive presentations that can be used during face-to-face, hybrid or remote class. You can create multiple choice polls, word cloud, open ended problems, scales, ranking and Q&A. With Menti you can also create multiple and single choice quiz questions with score varying on the time required to answer.

Under free application you can have an unlimited number of presentations for unlimited audience. However, you can use only up to 2 question slides and up to 5 quiz slides. Paid option starts from 10$ per month.
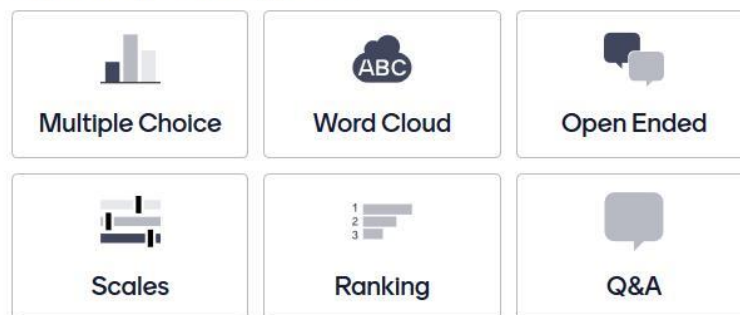
To create your first presentation in Mentimeter, create an account and login at https://www.mentimeter.com/ . Click NEW PRESENTATION and start creating by adding text and interaction slides. When your presentation is ready press SHARE to copy link for presentation and QR code. During your presentation the instruction how to join will be also shown on the top of presentation.

How does it work?

1. Ask question. Create presentation with questions and/or regular slides

2. The audience connect to your presentation through the link or QR code. The audience respond questions on polling slides and give reactions on regular slides.

3. As the audience submit their votes, the results are instantly displayed on your slides as beautiful charts, or in any other interactive format of your choice.

You can reuse all or some slide of already created presentations. After the presentation is over, within several hours you will automatically receive pdf results to your email. You can also export results manually from My presentations tab in other formats.

AhaSlides

AhaSlides is an application for live audience engagement. The functionality and interface are similar to Mentimeter. AhaSlides is good choice if you need a lot of activity slides for small audience. There are 17 slide types varying through questions, quizzes and content slides. In Ahaslides you can upload your presentation from Google Slides and integrate documents. Under free application of software only 7 participants are allowed.

To create your first presentation in AhaSlides, create an account and login at https://ahaslides.com/ Click NEW and start creating by adding text and interaction slides. When your presentation is ready press SHARE to copy link for presentation and QR code. During your presentation the instruction how to join will be also shown on the top of presentation. Results export is not allowed in the free version of software.
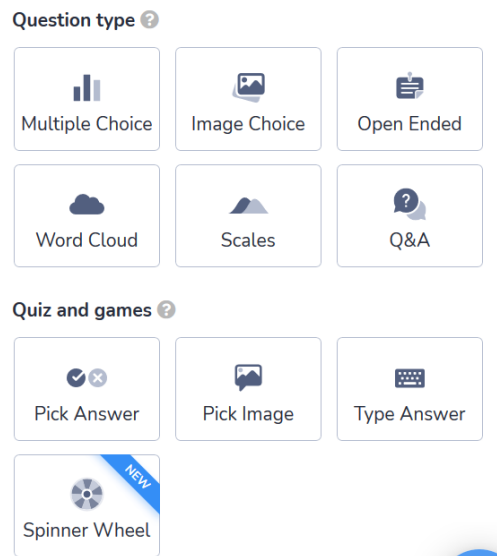
Slido

Slido is an interaction app for hybrid meetings, where you can engage with participants with live polls, Q&A, quizzes and word clouds. In comparison with Mentimeter and Ahaslides, you can have only voting slides and can't have presentation slides. However, with Slido you can add polls quizzes and Q&A directly into your Google Slides or PowerPoint presentation. You can also integrate app to MS Teams. Participants join live polls with the link or code. With the

free version you can have up to 100 joined participant per event, 5 polls, 1 topic for brainstorming and 1 quiz per event.
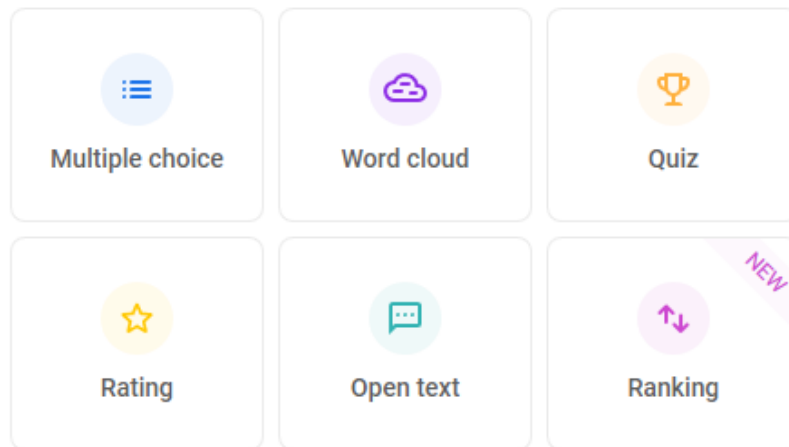
You can also add collaborator – additional user who can help you manage questions, polls and ideas.

To create your first interactions press Get started for free and create an account on https://www.sli.do/. Choose New Slido if you want to create an event with several polls. Name the event and specify dates (analytics will be available after the end date), you can invite collaborator already on this stage. Add and configure activities. When your interactions are ready press SHARE to copy link for presentation and QR code. During your presentation the instruction how to join will be also shown on the top of presentation.

How to integrate Slido to Google Slides or PowerPoint?

1. On the events tab choose Google Slides and/or PowerPoint, depending where you want to integrate the service. Follow the instructions and download adds on. The following instructions are described for Google Slides, however they are the same for PowerPoint.

2. Open existing or create new presentation in Google Slides. From the top menu chose Add-ons –> Slido for Goggle Slides –> Open the slide bar.

3. Login to your account on Slido. Choose already created polls or create new polls for your presentation. Don't delete automatically generated description to the slide.

4. To start presentation with active polls choose Present with Slido.

Prezi

Unlike other software in this chapter, Prezi allows you to interact with visuals on screen rather than audience. In Prezi you can create beautiful "alive" presentations, record videos with presentation on side, and create content that will appear right alongside you while presenting to the audience. Prezi can be integrated to the most popular video conferencing software: Zoom, Google Meet, MS Teams, Cisco and others. With free account you will have access to three products of the company: Prezi Video (up to 15 min of recorded time), Prezi Design, Prezi Present.

Prezi tutorial for different products and plans https://prezi.com/learn/

Genially

Genially is all-in-one online tool to create communicating presentations with images, infographics, dossiers, quizzes, etc. and enrich them with interactivity and animation effects in seconds. Application has over 1100 templates.

2.2.3 Gamification and quizzes

Comparison of **free** versions of gamification and quizzes

	Kahoot!	**Quizizz**	**Quizlet**	**Gimkit**	**WordWall**
Number of participants	100	unlimited	unlimited	unlimited	unlimited
Gamification elements	Competition and speed Pints collection	Competition and speed Pints collection	Group competition	Pints collection for buying upgrades in games	Yes
Timely feedback	Yes	Yes	Yes	Yes	Yes
Reuse of other authors games	Yes	Yes	No	No	Yes
Homework mode (deadline time setup)	No	No	Yes	No	Yes
Data import	Yes	No	No	Import a Quizlet flashcard set	No

Kahoot!

Kahoot! is a game-based learning platform that brings engagement and fun to learners at school, at university and at work. While answering questions students compete to have a strike of right and quick answers to get maximum points. Under free application 100 participants can play in live game or challenge. Paid plans with increased number of participants and features start from 3$ per month.

Unique features:

- Ghost mode. Kahoot! remembers how each student scored on each question. When you play the game again in ghost mode, it displays former attempts as "ghosts". Students can compare their current attempt to previous attempts to see how they've progressed. (If your students have played Mario Kart or another racing video game and have raced against their personal best, they're familiar with racing against a ghost.)
- The mobile app. This versatile app lets you create Kahoot! games on the fly, add pictures from your camera roll, and even host a Kahoot! game from your mobile device. Students can participate in Kahoot! challenges against classmates on their own devices.
- The friendly nickname generator. Have you ever battled naughty nicknames in a Kahoot! game? The generator will let students spin to choose from three appropriate nickname options.

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- Everyone sees the question and possible answers on the projector and answer simultaneously
- 5 types of questions for knowledge testing and 4 types of question for data collection

Quizizz

Quizizz is a creativity software used in class, group works, pre-test review, exams, unit test, and impromptu tests. It allows students and teachers to be online at the same time. Teacher can both use quizzes in class or assign as homework. Teacher sets how many seconds students have to answer the question. The mechanics of Quizizz is similar to Kahoot! longer strikes or right and quick answer will bring the victory. Questions and possible answers are displayed individually on student devices. Free application has extended functionality and doesn't have a limitation on number of participants. In paid plan starting from 8$ per month you can use new tools for asynchronous learning and turn off ads for you and students.

Unique features:

- Memes. These pictures with fun/funny messages are a treat. They're displayed after a question is answered to show whether it's right or wrong. Quizizz even lets you create your own (see image at right). You can use their pre-loaded images or upload your own.
- Homework mode. Students don't have to complete a game live in-person. You can use homework mode to assign it to be completed by a deadline. As someone who believes in ditching homework, I prefer homework mode to be used in rotation stations, centers and as part of choice boards instead.
- Add audio, images and math equations. When creating a new question, use the icons next to the question you're writing. The "math" button loads a keyboard of math symbols. The "media" button lets you upload audio or image.
- Power ups. Correct questions get students these powers, like immunity (second chance after incorrect answer), power play (everyone gets 50% more points for 20 seconds), and x2 (double points for one question).
- 6 types of questions.

Quizlet

Quizlet is a collaborative game. Instead of students answering individual questions on their individual devices, Quizlet puts students in groups. All possible answers are divided amongst the devices of all students participating. Think of three students with 12 possible answers … they're divided up with four on each device, so the answer may or may not be on your device. Teams race to get all answers correct in a row to win. In Quizlet it is possible to create learning cards that students can later practice in a variety of ways: connecting both sides of card, choosing, typing, listening. Under payed application starting from 4$ per month you can track students' progress, customize image and video, create detailed diagrams and more.

Unique features

- True team play. This is the best collaborative experience of the "gameshow classroom" options. One student can dominate in a team game on Kahoot! or Quizizz. When each student has only a handful of correct responses, everyone has more opportunity to participate.

- Built-in movement. Students are put into small groups and are encouraged to move next to their partners. This mixes up their environment and encourages physical movement, which boosts cognitive function.

Gimkit

Gimkit is similar to Quizizz with power-ups. In Quizizz, students collect points cumulatively throughout the game. In Gimkit, students use their points to buy power-ups in the store. Power-ups let students earn more points per question, get additional points when they hit a streak, and even lose less points when incorrect.

Unique features

- Purchase upgrades. Students can spend points from correct answers in the store to buy upgrades to earn points faster. They include insurance (less points for a wrong answer) and money per question (more points per right answer).
- Live view with class progress. The screen projected to the class as students answer questions is unique. It shows how everyone's points as a class add up together. This encourages class vs. class competition.
- KitCollab. This feature lets students create a Gimkit game together. Each student suggests a question. The teacher approves questions to be used in the game.

Wordwall

Wordwall can be used to create both interactive and printable activities such as quizzes, matching games, interactive wordsearches, interactive anagrams, and much more. Most of templates are available in both an interactive and a printable version.

Interactives are played on any web-enabled device, like a computer, tablet, phone or interactive whiteboard. They can be played individually by students or be teacher-led with students taking turns at the front of the class.

18 types of templates are available for game creation. Some of them are suitable for synchronous mood of teaching, such as Random wheel, Open the box and Random cards. In Free version it is possible to create up to 5 tasks.

Match up
Drag and drop each keyword next to its definition.

Quiz
A series of multiple choice questions. Tap the correct answer to proceed.

Random wheel
Spin the wheel to see which item comes up next.

Group sort
Drag and drop each item into its correct group.

Missing word
A cloze activity where you drag and drop words into blank spaces within a text.

Find the match
Tap the matching answer to eliminate it. Repeat until all answers are gone.

Unjumble
Drag and drop words to rearrange each sentence into its correct order.

Matching pairs
Tap a pair of tiles at a time to reveal if they are a match.

Labelled diagram
Drag and drop the pins to their correct place on the image.

Wordsearch
Words are hidden in a letter grid. Find them as fast as you can.

Open the box
Tap each box in turn to open them up and reveal the item inside.

Random cards
Deal out cards at random from a shuffled deck.

Anagram
Drag the letters into their correct positions to unscramble the word or phrase.

Gameshow quiz
A multiple choice quiz with time pressure, lifelines and a bonus round.

Crossword
Use the clues to solve the crossword. Tap on a word and type in the answer.

True or false
Items fly by at speed. See how many you can get right before the time runs out.

Maze chase
Run to the correct answer zone, whilst avoiding the enemies.

Flip tiles
Explore a series of two sided tiles by tapping to zoom and swiping to flip.

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2.2.4 Polling software

	Poll everywhere	Poltab	MS Forms	Polly	Google Forms
Number of participants in free version	25	unlimited	unlimited	unlimited	unlimited
Types of question	Word cloud, Multiple choice, Open-ended, Clickable image, Ranking, Q&A, Surveys, Competitions	Checkboxes, Multiple choice	Multiple choice, Short/long answer, Rating, Date, Ranking, Likert scale, File upload, Net Promoter Score	Multiple Choice, Numerical Scales, Ranking, Point Allocation	Short/long answer, Multiple choice, Checkboxes, Dropdown, File upload, Linear scale, Multiple choice grid, Checkbox grid, Date, Time
Sections	No	No	Yes	No	Yes
Branching	No	No	Yes	No	Yes

Poll everywhere

In free version of Poll everywhere you have unlimited users, unlimited questions, 25 max audience size, and access to a support center with webinar tutorials.

Pros	Cons
✓ It's deceptively **simple to use for teachers**. Showing how to use the features, create & modify questions, and viewing polling data, is much easier than it first seems. ✓ **Customizable**. There are a surprising amount of alternate ways to poll users and present questions in more ways than just "Question and 2-4 possible answers. ✓ It's quite **easy to use as an attendee**, sign in and vote in polls are very clear.	✓ Single sign-on (SSO) could be a little smoother ✓ LMS grade integration requires many steps, sometimes frustrates faculty ✓ New quiz/gaming feature is still not as good as Kahoot - some technical issues in presentations

https://www.polleverywhere.com/videos/tutorials - Video tutorials

Polltab

In Polltab is possible to create a more engaging poll by associating an Image or YouTube link to the poll. Easy to use and totally free application. Polltab offers authentication voting for polls that requires extra security. You can optionally set the voting security to Google, Facebook,

Reddit, or Twitch. This will require voters to login to their account and authenticate before they can cast a vote. Poll Results are updated in real-time, this means the moment a vote goes through you will see the results update without having to refresh the page.

Pros	Cons
✓ Easy to create and set up questions ✓ Every poll created receives a unique link and QR code that can be shared with others. ✓ Polltab offers customizable poll settings and advanced security options when creating polls	✓ Just 2 types of questions possible to create ✓ No possibility to make pages or sections ✓ No possibility to use branching

MS Forms

Application for creation surveys, quizzes, and polls. Application process automation and has custom mobile apps. There is a possibility to send out the web link to the test in a variety of ways: in an e-mail; as a link in a shared OneNote document; or embed in a webpage or in OneNote Online.

Polly

Application for creating polls and surveys, integrated with Slack and Teams. It is possible to use 5 types of questions in free version of the program.

Pros	Cons
✓ Easy to create and set up questions ✓ User friendly interface ✓ Works as bot and results are visible in channels of the workspace (Slack or Teams)	✓ Limited set of question types ✓ If write your poll in the wrong format, there is no way to get your text back or modify it

https://www.polly.ai/help/microsoft-teams - Polly for Teams tutorial

Google Forms

Google forms are widely used to create surveys easily and quickly since they allow you to plan events, ask questions to your employees or clients and collect diverse type of information in a simple and efficient way. Google forms allow us to include different types of questions such as short answers, paragraphs, multiple selection, verification boxes, pull-down, linear scale, grid of several options, among others.

2.2.5 Whiteboards and stickers

Comparison of **free** versions of whiteboards software

	Jamboard	Padlet	Pinup	Flinga	IDroo	Idea Boardz
Number of boards	unlimited	3	3	5	5	unlimited

	Jamboard	Padlet	Pinup	Flinga	IDroo	Idea Boardz
Participants	unlimited (preferably small)	unlimited	3 at the same time	unlimited	unlimited	unlimited
Stickers	yes	yes	yes	yes	no	yes
Handwriting and drawing	yes	yes	no	yes	yes	no
Uploading images or other media	yes	yes	yes	yes	no	no
Set background	yes	yes	yes, limited	no	yes, limited	no

Jamboard

Jamboard is a digital interactive whiteboard developed by Google to work with Google Workspace. Jamboard can be integrated to Google Meet and other Google services. The software is free of charge, and you can write, draw, post notes, import images and set background image. You can create as many pages on your boards as you need. It supports unlimited number of users, however, since everyone can interact with existing content and create new, it is recommended to have few participants at a time.

Padlet

Padlet is a real-time collaborative platform in which users can upload, organize and share content on virtual boards. Under free application you can create 3 boards using one of the template alignments: wall, canvas, shelf, stream, grid, timeline or map. Your padlet can be public or private, as well as you can decide if participants have a right to write or read only.
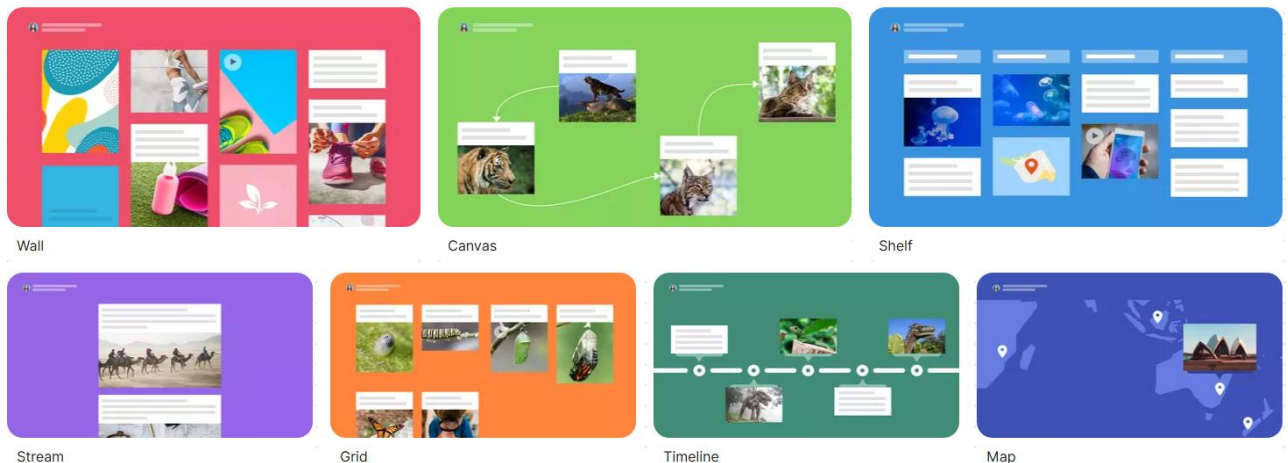
To create your first Padlet create an account and login at https://padlet.com/ . On the dashboard select Make a padlet and choose the preferable representation template. Start adding content by clicking pick + sign on the bottom right corner or by double clicking on screen.

How to configure the board?

1. Open settings menu and modify title and description. At the same page you can change wallpaper, color scheme and font.

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2. On the settings menu you can allow users to leave comments or reactions to notes.
3. When your board is ready to use choose Share. In the privacy section you can configure if visitors can read, write or edit others' posts.
4. Copy link, QR code or embed to your website.

A short video tutorial on how to use Padlet https://padlet.com/drjodietaylor/padlet101

Pinup

Pinup is quick and easy to take sticky notes and share with public. On this service you and your audience can post notes. images, various files and videos. In free version you can have up to 3 boards, however, the width and length of board are not limited. You can change the background to one of suggested options. The Pinup has a limitation on active users: only 3 people can write on stickers at a time, however, total number of users who access the board is not limited.

To start with the service, go to https://pinup.com/ (Registration is not required but recommended). an empty board is already created for you, set a title and share it with your audience. Useful features: arrange all pins on board or push everything down.

Flinga

Flinga is online collaborative board that has two options: **whiteboard and wall**. Whiteboard offers versatile visualization tools for collaborative knowledge building. The entire classroom can simultaneously participate in a new, easy and a fun way. With Wall it is possible to collect students' comments, questions and answers quickly and easily for all to see. With Flinga you can have 5 active sessions, if you reach the maximum limit, you can delete previous sessions.

How to create a board?

1. To create your first Flinga Whiteboard or Wall create an account and login at https://flinga.fi/ .
2. From Tools menu select if you want to create Whiteboard or Wall. Set the name of the session.
3. Open a settings menu (three stripes in top left corner) and copy link, access code or QR code to your board, that you can share with participants.
4. On the settings menu you can configure is participants can interact with all objects on the board or only those, that they have created.
5. To wright on the board use top right corner: select the color of the sticker, shape, type the text and press send.
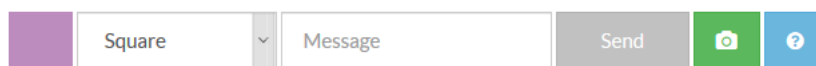
6. To draw on the whiteboard, select a pencil picture on the bottom left corner.

The above steps are describing the Whiteboard option. On the wall participant can put likes on other stickers.

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IDroo

IDroo is an online educational whiteboard for real time collaboration. With the free version of software, you can have 5 boards. IDroo works only as a whiteboard, thus participants can't place stickers, but they can write and draw. Under free application you can't upload images or documents to the board.

How to create a whiteboard?

1. To create your first Whiteboard on IDroo create an account and login at https://idroo.com/ .
2. Choose Create a new board from starting menu. The link for sharing will be immediately generated. You can change permissions for joining users to edit, view or no access.
3. From the top menu you can set the name of the board, and start drawing, typing, adding equations and different figures.

4. From the right menu you can activate chat and set a background to white, old paper or squared paper.

With the paid plan of IDroo you can import documents and images, have audio calls and manage the team.

Ideaboardz

Ideaboardz is simple fully free online collaborative tool. You can use this service even without registration. To create your first board go to https://ideaboardz.com/ and choose create my own IdeaBoard. Configure name, description and format. For the format you can choose one of pre-created templates: retrospective, star fish retrospective, six thinking hats, todos, prons and cons or create empty board with 1 to 10 sections. When you are ready press create. To add stickers to the board press on plus sign next to the write section. Other participants can upvote stickers (note, there is no limitation on the number of votes by one user on one sticker). You can copy link to the board in the browser.

Miro

Miro is online collaborative platform. Under free version of software participant can only view what is created but can't interact with the content or create new. With a free version you can create up to 3 boards using templates or blank file. Miro has a lot of templates for different spheres. Besides simple drawing and stickers, you can create mind maps, tables, pictures and charts. Miro can be integrated with Zoom, MS Teams, Google Calendar, Slack and many other Apps.

Fundamentals how to start with Miro.

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2.2.6 Other

Smule

Smule is the biggest interactive singing app available on the internet.

Possibilities of the application:

- Vast database of millions of popular songs with lyrics and music.
- Possibility to record song or share a live performance.
- Apart from singing solo, you can also sing a duet with a fellow Smule user.
- While singing, you can do real-time tunings like pitch correction or ambient modulation.
- Using the in-built effects, you can polish your vocals and sound like a complete professional.
- Apart from recording the vocals, you can also add it to a video, in short, make your own music video.
- The app also enables you to add visual effects along with multiple video filters to your music video.
- Not only that, but you can also share your video to any social platform and get discovered by users worldwide.

Kailo

Kailo is the world's largest platform for structuring student discussion and debate, mapping and debate site, specifically designed for classroom use. A valuable platform for students to learn about social and political issues while practicing digital citizenship and argumentation.

Pros	Cons
✓ Fosters a variety of useful participatory skills. ✓ More organized than a discussion board. ✓ Easy to filter individual student contributions.	✓ A dizzying amount of features, functionality, and menus. ✓ No rubrics or rubric feature.

Flipgrid

Flipgrid is a simple, free, and accessible **video discussion experience** for learners and families. Detailed manual is possible to download separately.

Pros	Cons
✓ Customizable video responses push students to plan their responses and speak thoughtfully. ✓ This accessible, approachable tool offers connection, multiple means of expression, and creativity to apply to almost any topic ✓ Suitable tool to practice pitches	✓ The social media-style features that make Flipgrid fun can also distract students from the purpose of the assignment.

✓ Engage students in Speaking activities ✓ Provides a wide variety of methods to share the activity (Google Classroom, Teams, etc) ✓ Design of activities is made easier, because you are able to add images, videos, documents, etc	

https://blog.flipgrid.com/gettingstarted - video tutorials

Wakelet

Wakelet- **Save, organize and present multimedia content** with your students, teachers and learning communities. Detailed manual is possible to download separately.

Pros	Cons
✓ Offers an intuitive way to curate media and make sense of topics by drawing from different sources, but teachers will want to carefully monitor classroom use ✓ It's easy to organize, annotate, and vary collections by uploading items in lots of different formats.	✓ The linear layout lacks excitement, and students are bound to come across inappropriate content in the public collections.

3. ASYNCHRONOUS TEACHING

In the module we focus on asynchronous teaching. The main reason for that is that most probably it is relatively new way to teach and to learn for most of us. And transformation from traditional class design to asynchronous one takes time, efforts and courage.

We briefly revisit the definitions that describe the asynchronous mode in comparison with traditional class design. And then we focus on possible challenges and problems that appear when we teach asynchronously. We provide basic recommendations and advice that hopefully save another hour of your work or improve the efficiency and learning experience of your students.

Again, **asynchronous instruction** is the course design when learner takes her/his own pace in approaching teaching materials and tasks. The interaction with the instructor (if any) happens through text messages, feedback and other sequential form of communication. Most of asynchronous teaching happens online, remotely.

Another reminder about what is **teacher-paced,** and **learner-paced** course: If the schedule of events of the learning is set up by the teacher, it is Teacher paced. If the learner approaches the course materials and completed the assignments at her/his convenient time, it is learner paced course.

Synchronous Teaching	Asynchronous Teaching
Dynamic	Flexible
Engaging, motivating	Learner paced
Deep dive with Master	Affordable
Less tech involved	Scalable
"Analog"	Generates data
Raising traditional soft skills	Hard to prepare, easy to teach

In the table we again collect the strongest features of synchronous and asynchronous teaching. This table can help to make the right choice: what type of class design be the best fit for the message I plan to deliver, for the skills I plan to raise, for the period of time I have available for preparation or for teaching, for the type of personality that my student has. We are sure, that the goal of course design is not "asynchronous class" the goal is maximal efficiency of learning and great learning experience. We anyway start planning of the course from Learning Objectives and Learning Outcomes and find the best teaching method to reach them. It is also a good idea to ask the audience before the course what type of teaching they would prefer.

3.1 Advantages of asynchronous teaching

Here we collected the unbeatable benefits of asynchronous class.

- Learners can be in different situations and conditions, different working schedules or simply different time zones - and asynchronous mode of teaching can be flexible and adaptive

- It is well known fact in sport that the efficiency of the same exercise is much higher if the trainee does it willingly, enthusiastically. We are not progressing fast when we are forced to do something. In the asynchronous mode the learner starts learning when she or he wants to.
- Asynchronous teaching typically engages wider spectrum of teaching tools and technologies. It makes the learning more engaging, more diverse. At the same time it does not require high speed internet.
- Pedagogically wise, asynchronous teach is more focused on mental reflection on the course materials. Learning is much more personal, individual mental effort at the most comfortable learner's pace.
- Another pedagogical benefit is that the learning can be easily made more distributed. We all know that it is better to learn something every day half an hour than one full day a month.
- Asynchronous teaching leaves much data, every learner's effort, any interaction with course material can be counted. These statistics can be definitely used for more objective assessments and grading. But much more: with the help of Artificial Intelligence, it can become the food for deeper analysis of, for example, the patterns of learning paths or prediction of learner's success.
- Asynchronous teaching is scalable, more reproducible and repeatable, it is easy to delegate course administration to any member of your team. The average number of learners in asynchronous class is in one-two POWERS higher comparing to synchronous class average.

3.2 Instruments of asynchronous teaching

The elements, or the instruments of teaching in asynchronous mode are not new to any of us, as we all have been using Internet for already decades. Nevertheless, they might require certain practice to be used in your course design. We briefly present here the basic toolkit of asynchronous course.

The contents of the course are in general delivered by videos, like one you are watching now. Many learners will listen to your lectures while driving a car, so the audio tracks can also be a very good alternative, especially when the visualization is not critical. And of cause old good textual materials.

The standard set of **assessment elements** includes Quizzes, Polls, Games and Assignments.

Quizzes are so nice and simple interactive tool that we often use them in face-to-face (or synchronous) teaching. The only problem with them is that the learner has to choose among the given options. And this is not always the best framework of assessment when a discussion or an answer to an open question is needed, when you want to follow the logic of the learner.

Polls are the primary from of quizzes with basically binary (YES or NO) answers that can give an immediate answer or feedback of the learner.

By Games we mostly mean any form of competitive learning engagement, when the results of the efforts are quantified. Any kinds of digital badges or progress dashboards also add to the gamification of learning that is considered to be a trend.

And classical assignments in which the learner delivers a report in the form of the text, drawing, a piece of code or anything can be of cause a very effective assessment exercise. But in contrast with the previous tools, it has to be more carefully designed in order to automate the evaluation process as much as possible. Unless we plan to bury ourselves in assessing hundreds of essays or project reports.

Almost all **communication tools** are used as delivery instruments: from classical e-mails to instant messengers. We recommend designing a communication platform or a workspace for the course rather than rely on regular e-mail service or even a chat channel. It can be a common access platform of Google or Youtube or a course workspace with discussion forums, chats, document exchange services such as Slack or Rocketchat. All learning platforms such as Moodle, edEx or CEPHEI have a built-in communication system. Any popular social networks such as Facebook can be also used for the same purpose. The latter has such an advantage that the teaching group communication can be easily open to the public.

3.2.1 Design of interactions
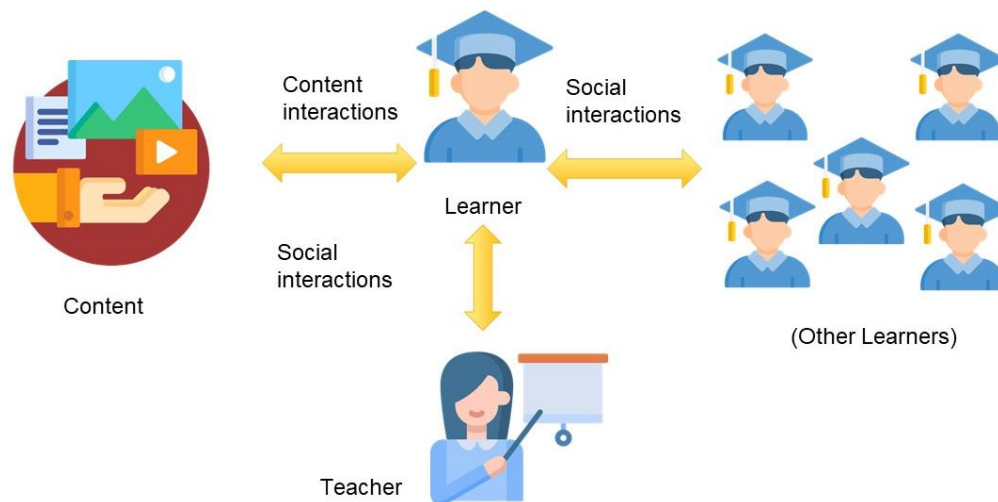
This figure represents the interactions scheme of the learner, who is in the center of the picture, with a) course materials b) the teacher and c) with other learners.

The most efforts of preparation of asynchronous class turn out to be the design of learning scenario, the interactions of the learner with course elements, the content. In contrast with traditional class, the instructor is not able to help the student directly when she or he is interacting with the course. That is why the student of asynchronous class feels lost and lonely very often. The interactions with the teacher help a lot, but most probably cannot be used too often if the number of learners is high (that is typical case for asynchronous teaching). We should turn lemon into lemonade and try to provoke conversations between the learners, build a friendly community around the goal to learn something interesting. Then the students can help each other, but most important, socialize themselves.

All in one: the design of asynchronous teaching is the design of interactions of the learner. Mostly with the course content. How to organize the learning content to make it easier for the student to digest it? I think this question has hundreds of years of history. We restrict our answer by several simple tips.

- Make your teaching materials talking to the learner, talking with the learner. Imitate a dialog, add provoking questions and intriguing stories, add drama to your teaching.
- Always share with the learner your own experience in understanding the concept. Reformulate classical statements in your own words and provoke the learner to do the same.
- Always tell and repeat how all the definitions and concepts relate to each other. Text design, Outlines, mind maps and other meta-design tools can help a lot here.
- Examples, examples, examples. As many as possible, from different fields and scales. The more examples you give the more chance that one will finally make that crystal clear picture for the learner, the insight, that "Aha!.." sound.
- We can orchestrate the social interactions in our course by adding compulsory Discussion boards and Feedback forms through the course, any other types of communication tools that provoke and support Question and Answer mode. Of cause, if the group is big enough and "synchronous enough" we should break out it from time to time to smaller teams for project work, giving more chances for the students to socialize themselves and to master their soft skills to succeed in teamwork which is, by the way, can also be done in asynchronous mode.

And once more: asynchronous course design is about the design of interactions of the learner with the contents, the teacher and other learners.

3.3 Challenges of asynchronous teaching

If you have decided to switch you course in the asynchronous mode, expect several problems. We don't mean to scare you but rather make prepared for the journey that, after all, will take you to another level of education professionalism.

The most painful thing is that asynchronous teaching **requires much preparation**, a lot of work with teaching materials before you open your class. But while spending long hours on your videos and quizzes remember that it all will pay back when you teach… or, more precisely, do not teach, because the teaching process does not need you anymore!

The feeling of isolation is what hits the learners as well as the teacher because they are not in the same class. Most of students complain that they feel lost in asynchronous class and quickly loose the motivation to continue. That is true that the average retention rate at asynchronous MOOC is less than 4%.

Indeed, it is **much harder to motivate** a student if you are not in contact with her or with him.

An answer to a question, help or feedback on the assignment can come, but it comes with a big delay.

Emotions greatly help to get a learner engaged and to memories the new information. But our palette of emotional support in communication becomes very poor. Tone modulations, gestures, dramatic pauses.. they all can make it to our videos only. While in the communication that happens in forums or chat channels we can use only smiles or emojis.

We have to raise new skills and tricks to keep the learner engaged through our texts and videos, how to turn our course into an exciting quest in which the participant is intrigued to turn a new page and see what it there.

Finally, the asynchronous course is not always easy to build into the existing university curricula management system. Your course is asynchronous, so it allows rolling deadline for enrolment and grading - but typical university system does not. Your course allows thousands of learners - typical university system does not. Your course works 24/7 - university system does not. When your course is ready you don't actually need to teach - but your university pays you for teaching hours…

Lots of challenges and they are going to be addressed one by one in the coming section.

3.3.1 Much preparation is needed

We can find and creatively use, tailor or adapt the available materials of others for your course. Use them, cite them, get a permission if necessary. We are not diving deep in this video to Intellectual Property Rights, but it is always a good idea to check twice if the using of the materials of others is legally and ethically clean. Read more about Creative Common License or Open Educational Resources if necessary.

Yes, any great work seems to be scaring to start. But try to create your course from just one module. Then add another.

Tame your perfection ambitions, develop what is called "Minimal Viable Product" first. Something that you already can proudly share with your colleagues and students, have a pilot teaching. Then based on the feedback and help develop The version Two. And so on. Use Generative design!

We are always impressed by how much good advice and help on course improvement can be obtained from the learners themselves. Use creativity of your students to help to develop elements of the course.

Finally, talk to your colleagues and find the soulmates in digital education, join the communities of practice with shared interest, discuss you problems and successes, new trends and technologies, get help and be helpful.

3.3.2 Isolation

Add as many as possible (asynchronous) collaborative sessions: discussion forums, group/project-based work, course chats, peer review sessions. Acknowledge collaboration efforts. Track silent learners - they might need your attention.

Gamify the course, show the progress, count all the efforts.

Add as much as possible your personality to your teaching materials. Students should know that behind all the materials there is a Person, who is very enthusiastic about her/his subject and wants the share the beauty of it. When you send notifications to the class, combine formal and personal messages, do it regularly.

Add synchronous session, maybe several sessions if your time permits. Typically, face-to-face or online sessions work best at the beginning of the course and in the mid-term, when the students need support and emotional uplift to make it to the finish line.

3.3.3 Delayed support

To address the trademark difficulties of asynchronous communication such as delayed support and answer consider the following while designing your course:

- Provide maximum materials and instructions how to go through the course, and video instructions are again the best. Use reliable fool-proof navigation as well as technologies, nobody should be lost in the course. The better we do it the less help we will need provide in the middle of the night to a discouraged and angry learner.
- Establish a clear schedule of communication, what are the days for help, Q&A sessions, what are formal an informal channel of communication.
- Delegate the communication and help support to your assistants, your team members, colleagues and volunteers.
- The longer we teach the bigger the database of standard questions and your answers to them. It is highly recommended to bear a Q&A database and permanently upgrade it. It can help to provide to the learners helpful Q&A chapter or even to train a teaching assisting bot to replace you one day.

3.3.4 Restricted palette of communication

We have to learn the new, digital domain of Emotional Wisdom. And this is the place where we might need some help from our learners: what is considered to be polite or impolite in chat communication, for example. How different is the perception of the text communication by the generation of millennials? Yes, the understanding of polite use of smiles and emojis is changing at the much higher rate we can afford. But the good message for older generation is that experiments show an interesting fact: if a person is emotionally wise in face-to-face communication, she or he is emotionally wise in digital communication, too.

So, we have to raise the soft skills among our students, those skills that can help them to progress as a team member or a person. We have to teach how to sound polite, inoffensive and constructive in e-mails, forum posts or even in chat messages. We have to teach how to provide positive, constructive feedback, argue to statement, not to person. We have to deliver the message that the electronic, not face-to-face, often anonymous communication is by no means an excuse for economizing the efforts to deliver our thoughts in understandable, readable and pleasant way, in e-mails, messages, texting and reporting.

3.3.5 Difficulties with university management

Finally, it is wise to foresee the administrative difficulties of integration of your course into the current contents of your university. Because, as we said, the chances are high that this innovative way of teaching is still an alien to the planet of your institution.

Share the best practice with colleagues and administration, demonstrate the benefits on advanced ways of teaching (accessibility and scaling of teaching), collect and share the student's feedback that is in general highly appreciates new forms of teaching.

Find support among colleagues and soulmates, form a club of enthusiasts of digital teaching, share resources, lessons learnt, skills and technologies.

Try to stay independent enough from the administration. Reduce the need in administration resources. Where there is a will there is a way, the internet is full of free or affordable instruments for course design and hosting. The development of the course and teaching it can be easily made real as a personal, private initiative.

Be patient and politically wise in introducing your asynchronous course, make sure that the organization is ready for it unless you position your course as personal business product.

3.4 Tools for asynchronous classroom

3.4.1 Screen casting

Comparison of **free** versions of software for screen casting. Screen casting and recording In Zoom, MS Teams, Skype and Prezi were reviewed at handout materials for module 2.2, thus, in this section we focus on other software.

	PowerPoint	Screencastify	Screencast-O-Matic	OBS	Camtasia
Ease of use	Easy	Easy	Easy	Difficult	Difficult
Length of recording in free version	unlimited	5 min	15 min	unlimited	unlimited
Video/Audio editing instruments	Yes, limited	Yes, limited	No	No	Yes
Webcam recording	Yes	Yes	Yes	Yes	Yes
Screen annotations	Yes	Yes	Yes	Yes	Yes

Power Point

PowerPoint 2013 introduced the ability to take screen recordings. You can record your computer screen and related audio. To record and listen to audio associated with your screen recording, you'll need a sound card, microphone, and speakers. Make sure there's enough disk space on your local drive to record and save your screen recording.

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Pros	Cons
✓ Familiar, easy to use instrument ✓ Possibility to embed recorded video to presentation or to save as separate file. ✓ Possible to choose capture area	✓ Limited instruments for video editing (possible to cut beginning and end of the vireo, to add bookmarks, insert captions)

Screencastify

Screencastify is a screen recording extension for Google Chrome. It offers solutions to create tutorial, product demo, and training videos. The application offers a free plan along with a subscription. This Chrome extension's free option, unlike some of the others on this list, lets teachers and students draw, erase, and put a spotlight on parts of the screen. These annotation tools are especially helpful to highlight important parts of videos or make explanations clearer. However, there's a catch: This free plan only allows for videos of five minutes or less. Teachers who plan on making short videos, though, may find it ideal. Paid plans release the five-minute constraint and provide many more video-editing features.

Pros	Cons
✓ Record the whole screen or a particular tab, ✓ The files get saved in Google Drive automatically ✓ Annotation tools and webcam recording ✓ Editing video tools ✓ The teachers can send a link to all the students, and the students can click on the link to record and submit their assignment.	✓ 5 min recording in free version ✓ Limited editing tools in free version

Screencast-O-Matic

Screencast-O-Matic is screen casting software that doubles as a video editor. It's a straightforward tool. It is possible to record, edit, and share via direct upload to YouTube, Dropbox, Google Drive, etc. Some of the useful features that come with this screencasting software are the green screen and stock music. While there is a free version available it's hardly usable for screencasting due to the time limits. It's the played version that makes this program worth mentioning.

Pros	Cons
✓ User-friendly interface ✓ Basic editing options ✓ Direct upload for sharing ✓ Green screen tool	✓ This is online recording application that calls for internet access if you want to work. Without internet access, you will not be able to record which can be inconvenient ✓ The free version of Screen O-Matic does not allow full-screen recording either which puts more limitations for

	those who are working on the free version.
	✓ In free version not possible to use a computer audio system for recording
	✓ Recording for longer than 15 minutes in free version
	✓ Limited number of editing tools in the free version

https://learn.screencastify.com/hc/en-us - Tutorials

OBS – Open Broadcast Software

OBS is one of the most popular open source screencasting solutions, allows not only record the screen but also to broadcast via YouTube. With powerful video screen capture capabilities, OBS ensures that your screencasts will be of the highest quality. The application has a powerful API that allows developers to create various plugins and scripts.

Pros	Cons
✓ Powerful customization and configuration options ✓ High Def recording ✓ Live screencast software ✓ Built-in equalizer and mixer ✓ Plugins available	✓ Interface can be difficult to deal with, not for the beginners.

Camtasia

Camtasia, created by TechSmith, the application is one of the most feature-rich screencast software out there that also includes a full-blown video editing software. It offers you all the standard recording options, so you can record your entire screen or a portion of the screen, record the system audio along with your microphone audio, and combine all these streams with the webcam feed. You can also pause and resume while recording; plus each of the streams is recorded as a separate track, so they can be edited separately and combined with flexibility.

Pros	Cons
✓ Simple user interface with all required tools and option in the tabs with flexible screen preview. ✓ Preloaded effects in the media, annotations, transitions, behaviors, animations, cursor effects, voice narrations, visuals effects and more made job done fast. ✓ Multiple tracks where media file can insert from import with option like hide or visible and lock options. ✓ Importing of media file simple and easy with flexible listing view of the many files.	✓ Launch of the software is more time-consuming and initialization of the software takes more time to operate. ✓ The user is required to pay for the upgrade each time separately irrespective of initial purchase.

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✓ Exporting of film can be directly uploaded to required platform or can save in the system	

3.4.2 Animated video

Comparison of **free** versions of software for creating animated video.

Animation software is used to create motion graphics on a single-frame basis. Individual frames are combined to create motion graphics used for video games and animated movies for learning purposes.

	Powtoon	Renderforest	Animaker
Number of created videos	100	unlimited	5
Duration of one recording	3 min	3 min	unlimited
Video quality	HD	360p	HD
Music tracks to add	Royalty-Free Music	Limited 200+	Free Track Bundle 100+

Powtoon

Powtoon is the leading visual communication platform that enables anyone to create professional-looking and engaging videos and presentations in minutes, without any design or technical skills.

Pros	Cons
✓ Easy to create and engaging visuals and out-of-the-ordinary animations ✓ Easy incorporation of recorded video from other software into Powtoon creations ✓ A broad and deep library of background music for different types of videos ✓ Multiple template and theme options for different types of videos	✓ Limitation of 90 seconds for imported video ✓ The free version has a watermark on the background ✓ Once the video was published, it now is in revision mode and editing options are very limited at this point

Renderforest

Renderforest Video is an online video and animation, logo, and website maker for creating intro videos, explainer animations, infographics, music visualizations and a lot more in several minutes. Simple monthly pricing depending on how many videos you need.

Pros	Cons
✓ An intuitive user interface allows to create animated videos in a few clicks	✓ Unlimited 360p video exports only ✓ Up to 3 -minute videos ✓ Limited number of music tracks ✓ Watermarks on everything

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✓ Their advanced AI does understand how to provide high-quality logo and graphics ✓ Access to 200k+ Stock videos		

Animaker

Animaker cloud-based animation and video maker for GIF, short video, and live video editing. It allows to create Professional Live and/or Animated videos in minutes. World's largest animated library.

Pros	Cons
✓ 6 styles of videos: 2D, 2.5D, infographics, handcraft, whiteboard, typography; ✓ horizontal and vertical video layouts; ✓ animated infographic maker with over 100 charts, 1000 icons, and 3000 maps; ✓ advanced features for animation such as record, multimove, curve, camera in and out, transition effects, enter/exit effects; ✓ a deck feature allowing you to use the animation as a video or an animated presentation; ✓ audio features: text-to-speech, background music tracks, sound effects, voice recording, plus the option to import your custom sounds; ✓ a library of pre-designed templates.	✓ Only 5 Downloads/mo (with watermark) ✓ The free version does not offer HD animation ✓ Available online only

3.4.3 Video editing

Comparison of **free** versions of software for video editing

	Windows video editor	iMovie	DaVinci Resolve	Final Cut Pro	Adobe Premiere Pro
Ease of learning	Easy	Easy	Difficult	Difficult	Difficult
Non-linear editing	no	yes	yes	yes	yes
Video Sharing integration	No	YouTube and Facebook	No	YouTube, Vimeo	YouTube, Vimeo

Windows video editor

Windows 10 includes Video Editor, a full-featured set of video creation and editing tools that lets you quickly edit a video or use it for story telling with music, text, motion, and 3D effects. Video Editor is the successor to Movie Maker on Windows 10, with a focus on easy-to-use creative tools that enable you to tell your story.

Pros	Cons
✓ Good, simple selection of editing tools ✓ Easy to use, clean and very simple interface ✓ Fun effects	✓ Limited functionality

https://education.microsoft.com/en-us/resource/6f52952d - Introduction to Video Editor (resources, videos and how-to)

iMovie

iMovie is a video-making software that helps browse clips and create videos. It is possible to utilize built-in templates to share custom trailers across various social media platforms and websites. The solution allows to add titles, music, cast names, and transition effects across visuals on a unified interface. iMovie enables to use customizable fonts, colors, gradients, patterns, and logos. It is also possible to select songs or include voice-overs for narration, trim clips, add photos, and apply filters to edit visuals.

iMovie lets apply split-screen, picture-in-picture, and green screen effects to built videos in 4K resolution on a centralized dashboard.

Pros	Cons
✓ Simplicity and elegance of interface ✓ Easy to use tools ✓ Quick edits to get raw video presentable fast. ✓ Titles are simple to apply. ✓ Editing out unwanted recordings is easy. ✓ Fast render ✓ Light software	✓ Limited functionality

DaVinci Resolve

DaVinci Resolve is a video editing software that helps collaborate on post-production processes, such as 8K editing, visual effects insertion, color correction, and audio editing for feature films, television shows, and commercials. The source tape tool lets staff members review, select, and add shots from multiple clips into a single tape.

DaVinci Resolve includes built-in tools, which allows to manage processes related to picture-in-picture effects, clip retiming, stabilization, and dynamic zooming. With the facial recognition module, it is possible automatically detect faces in video clips and create bins or folders based on specific individuals. It lets video editors copy and paste attributes, such as color grades, windows, plug-ins, and tracking effects across multiple nodes. It also enables

designers to organize grades by using gallery sorting, hover scrubbing, match reference wiping, and timeline wiping tools.

DaVinci lets collaborate on tasks remotely, access comments, and synchronize annotations via third-party integration with Frame.io. It also lets supervisors render, export, and share created video footages across external platforms, such as YouTube and Vimeo.

Pros	Cons
✓ User friendly interface ✓ Everything that is needed to make a film from sound editing to colour correcting, all the tools it provides are professional and easy to use ✓ Platform and format agnostic, possible to work on projects on Mac or PC ✓ Regular updates for new codecs and cameras. ✓ Editing in pretty much any format with no compatibility worries.	✓ Not for amateur users ✓ Audio mixing and mastering features are quite limited

Final cut Pro

https://www.apple.com/final-cut-pro/

Pros	Cons
✓ Friendly interface ✓ Feature-rich toolset which allows for incredible product manipulation ✓ Regular updates ✓ Fast technology - optimization helps with rendering and load times to help keep the project moving along ✓ Good choice of built in preset and templates ✓ Animation of text/ objects built-in feature	✓ Not for amateur users complex application ✓ There are limited export settings

Adobe Premiere Pro

https://www.adobe.com/products/premiere.html

It's the video editing program with user-friendly interface and best-in-class feature set.

Pros	Cons
✓ Fast rendering and ability to customize your layouts ✓ Compatible with After Effects, Photoshop, and Illustrator ✓ Custom keyboard shortcuts help easier editing	✓ Not for amateur users, complex application ✓ Price is high & comes with limited trial ✓ High system requirements for efficiency

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✓ Possible to place multiple video clips on the same video track ✓ Audio Editing, Voice over, Background music and Audio Effects options are provided ✓ VR video and VR audio editing options ✓ Multiple file format render support ✓ Marker option for adding clips. The ability to attach notes and place multiple Markers at the same time point ✓ Plugins and Libraries Support ✓ Motion Graphics & text options. ✓ Multiple Transitions and Effects already provided for ease of use	

3.4.4 Assessment centered tools for video

Comparison of **free** versions of software for classroom building

Videos engage students more than reading texts. Although having students analyze and reflect on videos should be balanced with textual analysis and interpretations, videos do have the added value of using the visual and auditory channels to help students retain more information so that they can be in a better position to deconstruct the messages encoded in the video, reflect on it, and discuss with peers.

However, like reading texts, especially long intricate texts, students need embedded formative feedback. Watching a 20-minute video for example might disengage a student, or might include more information than the student can retrieve. The best solution to help students think about the video they are watching is embedded questions and discussions.

Here are video tools that can help build activities or questions around videos students watch at home as part of a blended, online or flipped learning course/class.

	Edpuzzle	TedEd	H5P
Types of interactions possible to add to video	Voice over, quiz, discussion points	Questions, link to video answer, links,	Labels (Text, button), links, questions,
Possible to use links from	YouTube	YouTube	YouTube

Edpuzzle

Edpuzzle claims it is the easiest way to engage students with videos by picking a video, adding a magical touch and tracking students' understanding. Edpuzzle saves time and improves student learning by taking an already existing video on Youtube, Khan Academy, Crash Course etc. or uploading your own, by enabling self-paced learning with interactive lessons, adding one's voice and questions along the video, and by knowing if your students are watching your

videos, how many times and see the answers they give. Edpuzzle is also available as an Android and iOS app, and ass a Chrome extension, a Youtube extension.

Pros	Cons
✓ Edpuzzle is available on the app store and online, making it easily accessible to students in whatever their situation is. ✓ Videos can be taken from YouTube or directly uploaded ✓ Open ended questions or notes can be put into the videos at any point ✓ Students' viewing of the video can also be tracked	✓ Students might not actually be watching and comprehending the video ✓ Must have internet access – could cause problems for some students ✓ Does not give the option for group video access – just individual

https://youtu.be/8I0fV0djfJA - video tutorial

https://youtu.be/AtGg8fCM0JU - video tutorial

https://youtu.be/9aMXfBEKGkQ Creating Interactive Videos Using EDpuzzle

TedEd Lessons

TedEd Lessons was created to build lessons around TED videos, or any other video as well. The application helps to organize the following activities:

- Watch (student watches video.),
- Think (student answers multiple choice questions.),
- Dig Deeper (Student answers a subjective question or follows some additional resources.),
- Discuss (Students discuss the video with peers.).

This categorization is a great way for differentiating learning in terms of cognitive processes. The technical difference between TEDed lessons and Edupuzzle and H5P is that the questions in TEDed lessons are not embedded in the video. The student watches the whole video and answers the questions, although toggling between watching and answering questions is an option too, perhaps it could be a interesting option if students can choose whether to answer questions whilst watching or later.

The app helps to plan the lesson around the video guiding along the following stages: Introduction, Think, Dig Dipper, Discuss, Conclusion.

Pros	Cons
✓ With impressing animations, TED-Ed can take even sometimes-boring subjects and transform them into wildly engaging content. ✓ TED-Ed includes excellent, engaging videos and support for flipped-class lessons with an incredible community of thinkers and doers.	✓ Non-video lesson content quality varies, so students may need additional ways to demonstrate learning.

https://prezi.com/k82k44iulfuo/using-ted-ed-in-the-classroom/ - some recommendations for use.

https://youtu.be/1fL9YIxMB88 - How to use TED-ED - Ideas for the Flipped Classroom

H5P

H5P allows to create, share and reuse interactive content (video, presentations, branching scenarios and many other content types) in browser. It is an instrument of assessment; it will be discussed its interactive video feature. H5P Interactive video is an HTML5 based interactive video content type allowing users to add multiple choice and fill in the blank questions, pop-up text and other types of interactions to their videos using only a web browser. It is possible to make videos more engaging with H5P and interactive video on WordPress, Moodle and Drupal; and it lets track student performance

Interactive Video	Course Presentation	Branching Scenario
Create videos enriched with interactions	Create a presentation with interactive slides	Create dilemmas and self paced learning

https://youtu.be/MnvmPflxJj4 - H5P For Teachers: Creating Interactive Online Content for LMS Platforms

https://youtu.be/cXIPT3QdDTI - How to create H5P interactive video

https://www.youtube.com/watch?v=dHSRUqX4Lfo - Creating Interactive Content with H5P Tutorial

https://youtu.be/7Qyt_tW2oYQ - H5P - Building Content (Interactive Video)

3.4.5 Other

Perusall

Perusall is a collaborative e-book reader. The aim of the application is to change the nature of reading — from the traditional solitary experience to an engaging and collective one.

https://gking.harvard.edu/files/gking/files/ph.pdf - An Introduction to perusal

https://youtu.be/_PfAc0D2erk - - An Introduction to perusal

Wordwall

Wordwall can be used to create both interactive and printable activities such as quizzes, matching games, interactive wordsearches, interactive anagrams, and much more. Most of templates are available in both an interactive and a printable version. Interactives are played on any web-enabled device, like a computer, tablet, phone or interactive whiteboard. They can be played individually by students or be teacher-led with students taking turns at the front of

the class. Printables can printed out directly or downloaded as a PDF file. They can be used as a companion to the interactive or as stand-alone activities. Most of template are suitable for asynchronous classroom.

Google Classroom

Classroom is a free web-based platform that integrates your G Suite for Education account with all your G Suite services, including Google Docs, Gmail, and Google Calendar. Classroom saves time and paper, and makes it easy to create classes, distribute assignments, communicate, and stay organized.

https://classroom.google.com/

Pros	Cons
✓ Easy to use and accessible from all devices. ✓ Effective communication and sharing. ✓ Speeds up the assignment process ✓ Effective feedback ✓ No need for paper to print and distribute tasks ✓ Clean and user-friendly interface ✓ Great commenting system - learners can comment on specific locations within pictures for a variety of online courses.	✓ Difficult account management ✓ Limited integration options ✓ No automated updates earners will need to refresh regularly in order not to miss important announcements ✓ Learners cannot share their work with their peers, unless they become "owners" of a document, and even then they will need to approve sharing options ✓ Editing problems - When you create an assignment and you distribute it to learners, learners become "owners" of the document and they are allowed to edit it. That means that they can delete any part of the assignment they want, which could cause problems, even if it happens accidentally.

4. PUBLISHING, ADMINISTRATION, MARKETING

Are we the owners of the teaching materials we develop? Do I plan to teach the students of my school only or open the door of my class to the world? Is my topic as well of the way of my teaching so good that I can have hundreds or even thousands of learners?

We have to say it is too late to ask these questions when the course is ready. It can be really challenging to make the right choice of:

- the course contents - for example, do we need to meet any national or university's standards or make it as popular as possible.
- course design - for example, asynchronous or synchronous, teacher-paced or learner-paced,
- course quality - for example do we have to make high quality videos to win thousands of views or our learners are the prisoners who will watch whatever we bring because they badly need credits.

In this module we talk about your course as a product, a digital product. Which technologies and services support manufacturing of the product, its publishing, advertising and selling.

4.1 Key definitions

First, we discuss the basic tools that are used to bind together all your original videos, quizzes, texts, assessment tools. And then we need the tools to upload the course to the most appropriate and visible place, set up enrolment rules and success requirements. In other words, we need to code our course, to program a scenario of interactions of the learner with the course and its elements. And at the same time if you are like me, with almost zero knowledge about coding, we need to find an intuitively understandable technology, kind of Do-It-Yourself course constructor. We again start from definitions to be able to speak the same language, but this time the language is simple, we define Authoring Systems, Learning/Course Management Systems and Learning Platforms.

4.1.1 Authoring system

An authoring system helps to design the elements of the course, put them together. Let me compare it with any well-known document processor as MSWord which allows you to enrich your plain text by pictures, soundtracks, videos and even interactive elements. If you do not have a ready picture or video to embed, the program can have some basic tools to help you to draw or record one. Absolutely the same idea is behind your first experiment with crafting your homepage, a "document" that is published in Internet - there are special tools to help you with this (for example, Tilda or WordPress). If this "document" is your course, then the Document processor is the Authoring system, the program that helps you to become the Author.

Source: https://www.learnworlds.com/elearning-authoring-tools/
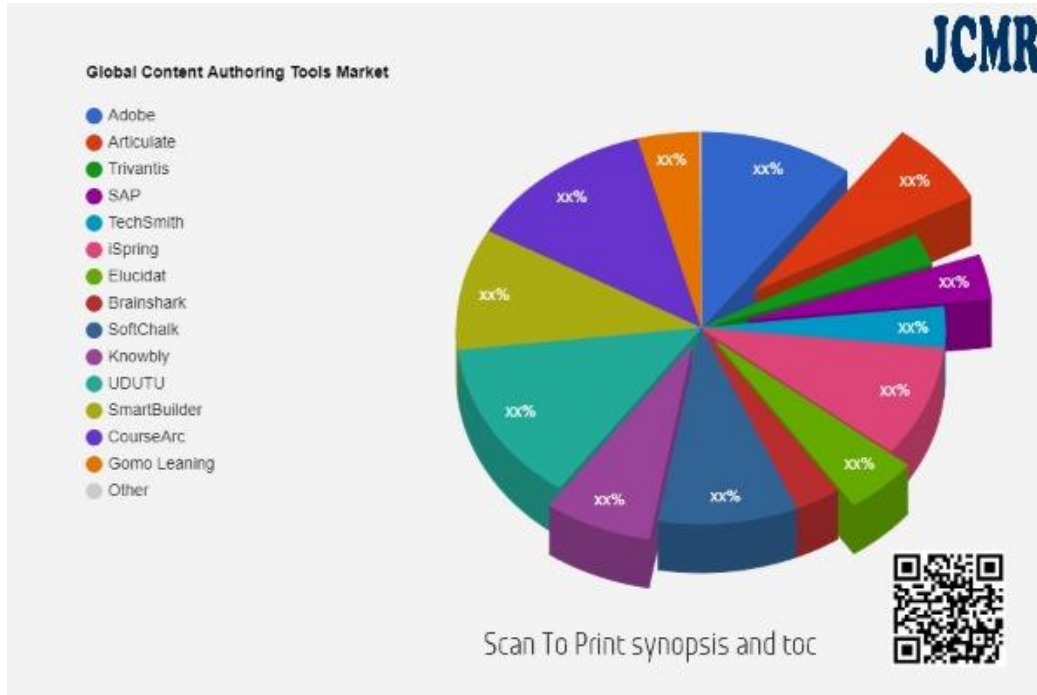
The Market of Authoring Tools is very dynamic and diverse, there is no dominating standard-setter. Our group has some experience with Adobe just because of University's subscription. But where there is a wish there is a way - you can try anything to put all the elements of your course together, even the Text processor would work - just go ahead! Thanks to the high competition most tools are available free in its basic functionality.

So, Authoring System is your "Word Processor" for Course design.

4.1.2 Learning Management System (LMS)

In Learning management or Course management systems the basic unit of operation is the Course. Although many advances Learning management system can are so powerful that they provide tools for course creation, the main functions of them are:

- to host the contents of the course, all those megabytes of videos and audios, to of course's elements
- to provide tools for enrolment, communication, reporting and certifying the learners.

LMS is a software, it is very often distributed as a software and chosen by in institution or an enterprise when it needs technological support to educational activities.

If we are allowed to use the following analogy: if "Authoring system" would be the Text Processor like MSWord then "Learning Management System" would be the "MS Office" which binds many contents production tools, sets up user account, enables communication and group work etc.

Many universities use Moodle, Canvas or Google Classroom as Learning Management systems so, the chances are very high that you already know much about them.

4.1.3 Learning Platform

Platform is a buzz word that we have to use when we need to sound wise. While it is not always explained how platform is different to the large-scale management system. Yes, Learning Management Systems and Learning Platforms overlap a lot, but there is one conceptual difference. While **LMS is course-centred, learning platform is learner-centred**. It means that the learner or the customer is in the focus of the platform and her or his learning path, learning progress as one or another course is taken. The platform is an integrated space for many players: learners, teachers, parents (if applicable), potential employers, administrators and other education-related entities.

It dictates the technological features of the Learning platform: is to be cloud based, with enabled services of adapting and self-development by the users, so called Open Application Programming Interface (API), include built-in databases, storage management and analytics tools, support peaceful coexistence of diverse learning and social applications.

Again, if the analogy with what we used to know can be considered: Learning platform is like an Operating system for our computer, we switch it on, log in with our username …. and find ourselves in the whole world of learning products, programs, communities and services.

To illustrate the difference between Learning Management System and Learning Platform we use a borrowed picture, where the existing products which we most probably know of have heart of, are clustered.

4.2 Intellectual Property

As we leave the safe harbor of small internal institutional audience and expose our courses to the public, it is important to consider **Intellectual Property rights**. We have to be even more careful when the courses we produce become a commercial product. It can be even in the case when your university sell some educational services and your course is part of it. Or when you bravely decide to sell your course yourself. Here are some basic tips to avoid two equally undesirable situations: when I turn out to have been using something that does not belong to you. Or when somebody starts using the materials that are …mine!.

First of all, each result of intellectual or artistic activity has **an author** and **the owner**. The authorship right appears immediately as soon as you created something. The same happens to copyright: in most countries copyright protection is obtained automatically without the need for registration. With the copyright we can define who may publish, copy and distribute a piece of writing, video or music.

The ownership of any product of creative mind means full legal control of the status of something. At this moment the things already might require some legal up skills, we also recommend you familiarize yourself with what means Creative Common (CC) License or Open Education Resource (OER). But let us keep it simple. When you borrow any piece of text, a drawing or a video to your course, make sure that it is OK with the owner of this material. The ownership is often indicated somewhere unless there is a clear declaration that this picture, for

example, is distributed freely. Any in any case it is ethically clean to provide the reference, or the source link to the original creative work that you cite, quote or copy.

License		Type of use	Symbols
Attribution (BY)	👤	You must credit the creator, the title and the license the work is under.	cc 👤 BY
Non Commercial (NC)	🚫$	The work cannot be used for commercial purposes.	cc 👤 🚫$ BY NC
No Derivatives (ND)	=	The work can only be used exactly how it is. The work cannot be adapted or modified in any way.	cc 👤 = BY ND
Share Alike (SA)	↻	Any new material produced using the work must be made available under the same license as the original work.	cc 👤 ↻ BY SA
Public Domain CC0		The copyright holder has voluntarily waived their rights and the work can be freely used	PUBLIC DOMAIN
Public Domain		The copyright of the work has expired and it is free of known copyright restrictions	PUBLIC DOMAIN

Source: https://mycourses.aalto.fi/mod/book/tool/print/index.php?id=593039&chapterid=4144

And how to protect your valuable piece of art, your video, text, your carefully crafted educational course from unauthorized copies? First of all, you have to check who is the owner of your course. Yes, if you are employed by an institution and teaching is our contractual responsibilities, chances are high that anything you produce belongs to your organization (although in the US and EU the ownership on intellectual property is often delegated to the author). The good message is that it becomes the headache of your university to protect you course legally. The bad message is that it substantially limits your freedom to publish your course independently, to teach the students from outside of your school and, of cause, to see your course as business product.

If you are a free artist or free educator, you can, of course, be free with choosing the way you protect your original educational materials. You can declare full copyright protection for any piece of your course, or, opposite, invite others to use and copy your materials, using it, for example, as marketing strategy. Note, that when you publish your materials on some services, you should select the license you want to use to protect them from copying.

And if you only find that somebody is using or even selling a piece of your course, your video or your picture without your permission… you can be really proud of yourself, you are doing great job! And after this moment of glory hire a lawyer and suit them.

4.3 Marketing and Sales

Have your ever thought about doing your business? For most of old schoolteachers, even an idea of selling something, especially selling the holy knowledge, the science, can be inappropriate. However, digitalization technologies make selling, buying and even bargaining so simple and invisible that nowadays we all, intentionally or not, every day are buying something, fighting to lower the price and even selling something online.

What if we anxiously consider our educational efforts as an individual business? The product seems to be very specific; would people buy it? How much people pay for digital courses? How to market my course, where to place the advertisement? How to protect the ownership? These questions also might require a separate course, and again, we will try to keep things simple and share just personal experience and generic ideas.

Yes, it is definitely a good idea to enter educational business. Surely, we all observe teaching services everywhere, everywhere literally. It is hard to scroll your news feed without bumping into several advertisements to finally learn how to play piano or to become the expert in artificial intelligence. Form microlearnings, when in 10 minutes you are taught how to cook a risotto to 120 credits master's degree program in rocket science. We, as university, are not any more a monopoly in educating of experts in science-intensive fields. And this is actually a scaring trend, we are challenged and have to stay competitive against much more dynamic, customer-oriented and powerful players such as consulting companies or corporate training centres.

It is true that the digital education market started to grow in the US a decade ago, it is around 25 billion US dollar now. It is needless to say how fast it has been upscaled in China, where the total volume digital education market was about 40 billion euro in 2020 with almost half

of billion online learners. Let us look up Europe now. The graph we found in the net shows the e-learning market is expected to enjoy double digit growth for several years to come, and we are talking of around 30 billion euro.

There is nothing good about pandemic situation, but we cannot help noticing what kind of catalyst it became for the digital education services. Even when we sooner or later return to face-to-face teaching, the digitalization is going to stay as an alternative or, better, synergetic platform to teach, and, obviously to make business.

4.3.1 Pricing models

Having been motivated by the perspective of growth of the market of digital teaching, we might give it a though to choose the strategy for pricing our course, how to sell it, at which moment to ask the learner to open her or his digital wallet?

There are four basic pricing schemes for most digital products, so the educational products follow the same rule:

- Free access to your course can be chosen if you plan to attract as many users as possible and find a way to monetize the benefits from hosting the crowd in one or another way. For example, by selling the advertisements in your course or the access to headhunters. Freemium scheme is very popular alternative when for example, basic level course is accessible for free while for the advanced level access a learner is supposed to pay.
- Basic on-off payment means that you sell a ticket to your course, so it becomes available for the ticket owner, once or forever.
- Subscriptions model implies that you setup a time period access to the community of learners, teachers and experts swarming around your course and of cause, the teaching resources.
- Premium model is used when you suggest to the learner a plan, an installment plan that is targeted at a certain exclusive goal, for example, degree certificate or even employment.

4.3.2 Marketplaces

Even if we designed an exceptionally good product, it does not advertise itself. It is a pain to observe that the webpage with your course does not have any traffic. People simply do not know that such a treasure exists! It is like trying to selling a good placing it in front of your house, if the street is not popular, nobody will know that the offer exists. It is much better idea to go with your good to the market. But you have to know where the city market is and be ready to pay to buy a marketplace.

Many of marketplaces offer free place to your course for a limited amount of learners or for limited amount of courses. In addition, some marketplaces can provide useful functions of administration of your teaching, advertising, financial operation support ect.

4.3.3 Sales funnel

It is convenient to see the interaction of your potential customers with your marketing materials as a funnel. Where everything starts from the awareness of a person about your product and

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ends with the purchase. It is called sales funnel in marketing. Understanding the model helps to create your own, to develop to marketing strategy and tactics.

Adapted creatively from
https://www.learnworlds.com/how-to-sell-online-courses/
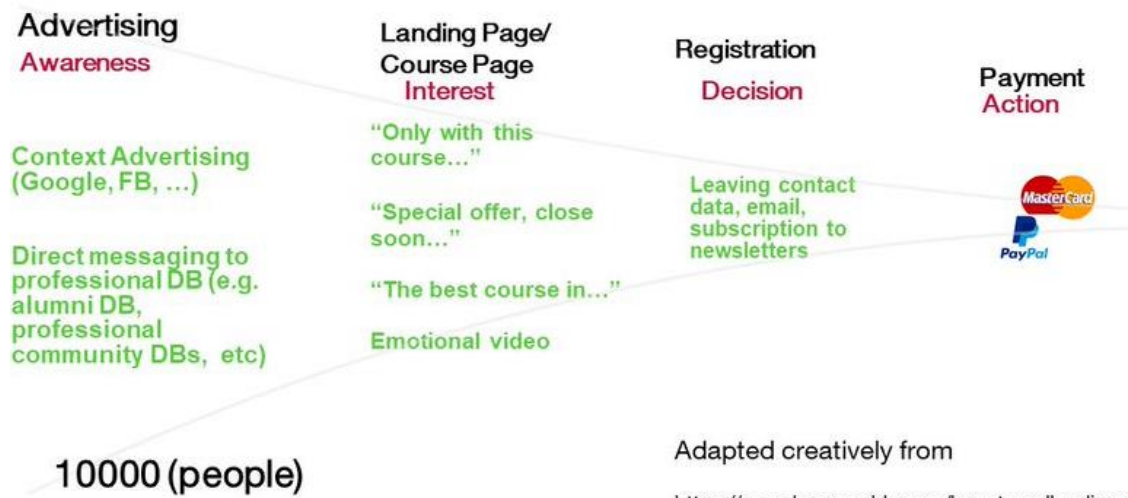
.At the **stage of advertising** there are several ways how to bring the traffic to the sales funnels.

- It can be natural or "organic" traffic from search engines,
- It can be paid traffic from ads, for example google contextual ad,
- It can be social media traffic, when you ask you FB friends to share the invitation of the public to your course,
- You can use email marketing and
- It can be a traffic coming from various websites mentioning you, your students or partners.

Landing page is preferably a separate page where the intrigued by your advertising person should be taken to. It has by all means to lead the potential customer to the decision to take the course, to register.

At the **registration stage** we typically do not collect money but collect user's data and contacts, that is by the way already a currency.

Finally, **payment action** crowns the whole your marketing efforts, congratulations! Notice that in general one sale comes from thousands of contacts, that is why it is called funnel. The higher the conversion rate, the smarter your marketing campaign.

That was it about publishing, administrating and selling your course. Just must know issues before you start planning your own business or even before your start the design of your course.

- We discussed which technologies you can find to support your course manufacturing (authoring systems) and publishing (learning management systems and platforms).
- We emphasised that any product, including the intangible creative products have the author and the owner. We have to borrow the results of the work of others with the permission and to protect our own results if necessary.
- We discussed the potential of the digital teaching as a business and sketched the milestones of marketing strategy and tactics in the form of sales funnel for your course.

4.4 Tools for publishing, marketing and sales

4.4.1 Examples of LMS (Learning Management System)

Thinkific

The most popular platform for creating your own school or academy. It has a free version with full capabilities. https://www.thinkific.com
Advantages:

- Free video hosting.
- Many options for how to present courses (disappearing videos, planned content).
- The ability to create coupons and discounts on your courses (in the paid version).
- Work with 100+ currencies.
- Integration with more than 1000 third-party services
- Possibility of gamification.
- The ability to conduct a survey whether students liked the course.
- Possibility to translate courses into different languages.

Disadvantages:

- There is no onboarding for those who want to create their own course.
- There is no way to run live workshops.
- There is no mobile application, although it is optimized for mobile browsers.
- English-speaking profile – it will be difficult if you do not know English.

Teachable

https://teachable.com . With free version it is possible to create courses for 10 students, but you have to pay a transaction fee of 1% + 10% for all your paid courses.

Advantages:

- Own affiliate program.
- Integration with Zapier, which increases the number of features tenfold.
- Optimization for various browsers, as well as mobile devices.
- Unlimited video hosting, unlimited number of students and courses.
- Possibility of translation into various languages, including Russian.
- You can segment students into groups and send them unique marketing materials and emails.
- There are many opportunities for the formation of your own pricing policy.
- Accept payments in 130+ currencies of the world and through various services.
- Built-in tools for creating course reports.

Disadvantages:

- English interface, no localization options.
- There is no built-in gamification capabilities.
- Only 6 native integrations.

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- It is not possible to issue certificates to students.
- There is no group management feature.
- No webinars, just the possibility to creating online lessons.

LearnWorlds

https://www.learnworlds.com has 30 days trial period.

Advantages:

- Offer beautiful page design for courses.
- Ability to create interactive online courses.
- Customization of languages of instruction.
- Built-in social network to create your own community.
- Analytics on student performance.
- Various gamification options.
- Ability to create your own application for online courses.
- Interactive e-books as one of the ways to teach students.
- Possibility to issue certificates to students.
- Ability to create coupons and discounts on your courses

Disadvantages:

- There aren't many possibilities in uploading content. For example, a photo may be cropped or scaled incorrectly.
- The interface of the service itself is in English, which is inconvenient for those who do not own it.
- Many are not happy with the fact that the service takes a percentage of sales, and not a certain price for the month.
- They claim to provide opportunities to create a mobile application. But in fact, this is just an adapted site for mobile devices, saved as an application in the AppStore or Google Play. A kind of substitution of concepts.

4.4.2 Examples of standalone platforms

Stepik

https://stepik.org/ specialized on IT-related courses. It has a free version with limited functionality.

Advantages:

- Customization for 8 languages of instruction.
- Free platform
- Multifunctional flexible educational platform, simple online constructor courses to study mathematics, computer science and other exact sciences.
- Created materials (courses or individual lessons), can be stored for self-service
- Training users, embed to other sites and Educational Platform.
- Possibility embeds interactive lessons, video fragments, to hold Olympiads and Contests.

Disadvantages: Possibility conducting the exam with verification of personality, issuance of the certificate are possible to use only in paid version.

Zenclass

https://zenclass.net/

Advantages:

- They promise to start training in 10 minutes without technical knowledge and programmers.
- Unlimited number of students, number of courses and place to store your data
- Optimization for mobile devices, it is planned to milk phones.
- Free online cashier.
- Super friendly support
- All white label courses, which is more profitable for the client to build their own brand and its development.

Disadvantages:

- Few withdrawal options. For individuals only Yandex.Money.
- The designer is still in the testing stage, there may be problems with downloading files and the stability of the system.

4.4.3 Course marketplaces for MOOCs

Distinctive features of MOOC are:

- Openness – MOOCs are available via the Internet 24x7x365 without any restrictions;
- Multimedia – MOOCs use audio, video (including interactive), 3Dworlds and many other modern technologies;
- Interactivity – MOOCs ensure the interaction of students with the content, their communication with the teacher (tutor) and with each other;
- Free/shareware training (some providers charge only for the certificate).

Examples of course marketplaces:

- https://www.edx.org/
- https://www.coursera.org/
- https://www.cephei.eu/
- https://www.futurelearn.com/
- https://stepik.org/
- https://www.udemy.com
- https://www.skillshare.com/

4.4.4 Examples of content management systems (CMS)

Content management systems (CMS) - it is the instrument that helps to structure content (texts, videos, audios and so on) on a e-learning site.

	Pricing	Advantages	Disadvantages
https://wordpress.org/	$14.99	User-Friendly CMS Availability of more than 45,000 plugins for all sort of functionality SEO-Friendly Responsive Websites Open-Source Community, this may save a lot of time and cost.	Customization is nit possible without coding skills Vulnerability & Data Security due to an open-source programme approach Frequent Updates, all the plugin needs to be updated manually all the time
https://webflow.com/	16$	loads of features provide everything you need, including: an overall website builder; templates; content management system; ecommerce and marketing tools; and more. Specifically, the design tools are very powerful and rival what you can do with code wide range of plans means a lot of customer choice secure host easy to use, relative to powerful features great performance good customer support	limited code customization plan variation may be confusing more of a learning curve because of the many powerful features Traffic limits on some plans
https://www.squarespace.com/	18$ 14-day trial period	WYSIWYG Editor: possible to customize the templates without having the minimum technical knowledge good customer support Mobile-Friendly Site Easy For Search Engine Optimization Squarespace looks after all the technical aspects of the site	limited number of templates Limited Functionalities: cannot install plugins A Little Difficult Editor
https://www.wix.com/	14$	upgraded design templates The interface is intuitive and useful wix takes care of your site security without compromising speed.	The starter plan doesn't remove ads from your site There are no unlimited plans Drag and drop designs can limit your creativity The App store on Wix doesn't really offer apps SEO can be problematic

4.4.5 Email and marketing automation platforms

	Pricing	Main Advantages	Conversion Optimization Tools	Additional Marketing Tools
https://mailchimp.com/	Free – 10$+/ month	85+ templates 16 integrations Advanced Segmentation Comparative Reports Multivariate Testing	Tracking Software A/B tests Multivariate Testing	Auto Social Media Posts Remarketing ads Landing Pages
https://convertkit.com/	24$/ month	3 templates 7 integrations Easy-to-embed, customizable opt-in forms Drag-and-drop sequence builder	Advanced reports Google Analytics integration	Surveys & Quizzes
https://www.activecampaign.com/	14 days trial, 9$+/ month	100+ templates 16 integrations Dynamic, customized lead scoring Unlimited, flexible segmentation	Site & Event Tracking Geo Tracking A/B tests	Auto Social Media Posts SMS

	Pricing	Main Advantages	Conversion Optimization Tools	Additional Marketing Tools
https://www.sendinblue.com	Free - $25+/month	200+ templates 13 integrations	Send time optimization Real-time reports Clickers engagement map Openers & clickers world map Dynamic lists management	CRM Platform Online Chat SMS & Social Media Posts Landing Page Builder Full GDPR Compliance Free Account (up to 300 emails/day)

4.4.6 Other

Zapier

https://zapier.com/ - is an online platform that helps you automate workflows by connecting your apps and services you use. This allows you to automate tasks without having to build this integration yourself.

To give an example, Zapier can automatically send out a custom tweet right after you've published a post. The custom part meaning that you set up once what these automatic tweets will look like and what they will contain. But with over 2000+ destinations other than Twitter, Zapier can handle lots of automatic tasks for different platforms or destinations.

Other example is Zapier can give to know if someone fills out your form—whether it's student's feedback, a survey answer, or something else, the app will notify about it.

Power Automate

https://powerautomate.microsoft.com/en-us/ - integrated with Microsoft solutions, that streamline repetitive tasks and paperless processes.

Power Automate:

- Helps educators save time, especially when it comes to trudging through the same repetitive tasks day after day (to give assignments and tests, set up reminders for some events and actions).
- Assists educators as they program manual processes into logical workflows that utilize their favorite applications and services.
- Supports educators as they build intelligent solutions and scenarios that boost their productivity and efficiency.

More info in free course: https://education.microsoft.com/en-us/course/02c53b0c/overview - Use Power Automate to increase productivity course

REFERENCES

Khan A.I., Kaliteevskii V., Shnai I., Chechurin L. (2020) Analysis of Students' Performance in an Online Discussion Forum: A Social Network Approach. In: Arseniev D., Overmeyer L., Kälviäinen H., Katalinić B. (eds) Cyber-Physical Systems and Control. CPS&C 2019. Lecture Notes in Networks and Systems, vol 95. Springer, Cham. https://doi.org/10.1007/978-3-030-34983-7_66

eLearning Industry. 2022. (The Right) Learning Modalities To Deliver Digital Learning: Part 1. [online] Available at: https://elearningindustry.com/asynchronous-and-synchronous-modalities-deliver-digital-learning

Raouna, K., 2022. *The 10 Best eLearning Authoring Tools: Review & Comparison*. [online] Learnworlds. Available at: https://www.learnworlds.com/elearning-authoring-tools/

Hill, P., 2022. *What is a Learning Platform?*. [online] e-Literate. Available at: https://eliterate.us/what-is-a-learning-platform/

ColorWhistle. 2022. *Top 6 Online Learning Platforms in the World - ColorWhistle*. [online] Available at: https://colorwhistle.com/top-online-learning-platforms/

Prnewswire.com. 2022. *E-learning Market in Europe-2020, by Product, End-User and Geographic Landscape / Technavio*. [online] Available at: https://www.prnewswire.com/news-releases/e-learning-market-in-europe-2020-by-product-end-user-and-geographic-landscape--technavio-301284063.html

Quinn, J., Mceachen, J., Fullan, M., Mag Gardner and Drummy, M. (2020).*Dive into deep learning: tools for engagement*. Thousand Oaks, California: Corwin, A Sage Company. (https://deep-learning.global/deep-learning-book/)

ADDIE Model (n.d.) Retrieved April 10, 2019, from InstructionalDesign.org website: https://www.instructionaldesign.org/models/addie/

Armstrong, P. (n.d.). Bloom's Taxonomy. Retrieved August 3, 2018, from Vanderbilt Center for Teaching website: https://cft.vanderbilt.edu/guides-subpages/blooms-taxonomy/

Carmichael, M., Rei, A., & Karpicke, J. (2018). Assessing the Impaceof Educational Video on Student Engagement, Critical Thinking and Learning: The Current State of Play [A Sage White Paper]. Purdue University.

Case Studies. (n.d.). Retrieved November 27, 2018, from https://cft.vanderbilt.edu/guides-sub-pages/case-studies/

Ertelt, A. (2007). On-screen videos as an effective learning tool. The effect of instructional design variants and practice on learning achievements, retention, transfer, and motivation. (Doctoral dissertation), Albert-LudwigsUniversität Freiburg, Germany

Van der Meij, H. & van der Meij, J. (2016). The effects of reviews in video tutorials. Journal of Computer Assisted Learning

Fell Kurban, C. (2018). Designing effective, contemporary assessment on a flipped educational sciences course. Interactive Learning Environments. https://doi.org/10.1080/10494820.2018.1522650

Performance Tasks: What are they? (n.d.). Retrieved February 20, 2019, from Mr. Mihalik's Website website: http://www.ehsmihalik.com/performancetasks.html

Interactive Design Foundation. (n.d.). Retrieved May 9, 2021, from www.interactiondesign.org

Şahin, M., & Fell Kurban, C. (2019). The New University Model: Flipping Higher Ed –An Insanely Simple Guide (First Edition). Irvine, CA: FL Global Publishing.

https://www.mooc.org/   -is an extension of edX.org, a leader in online courses.

https://iite.unesco.org/publications/   -UNESCO Institute for Information Technologies in Education.

https://usdla.org/higher-education/   -The United States Distance Learning Association was the first nonprofit distance learning association in the United States to support distance learning research, development and praxis across the complete arena of education, training and communications.

http://www.openuniversity.edu/   -The world's leading distance-learning provider

RECOMMENDED MATERIALS

Free Course of Open University (AU?) "Take you teaching online" https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=77528&section=1.2

Excellent video, interviews on how teachers motivate and engage their students https://www.youtube.com/watch?v=DvJuzE-g7OM

Baker, A. (2016). Active Learning with Interactive Videos: Creating Student-Guided Learning Materials. Journal of Library & Information Services in Distance Learning, 1–9. JOUR. Retreived from: http://doi.org/10.1080/1533290X.2016.1206776

Herreid, C., & Schiller, N. (2013). Case Studies and the Flipped Classroom. Journal of College Science Teaching, 42(5), 62-66. Retrieved from http://www.jstor.org/stable/43631584

Fulton, K. (2012). Upside down and inside out: Flip Your Classroom to Improve Student Learning. Learning & Leading with Technology, v39 n8 p12-17 Jun-Jul.. Retrieved from http://eric.ed.gov/?id=EJ982840.
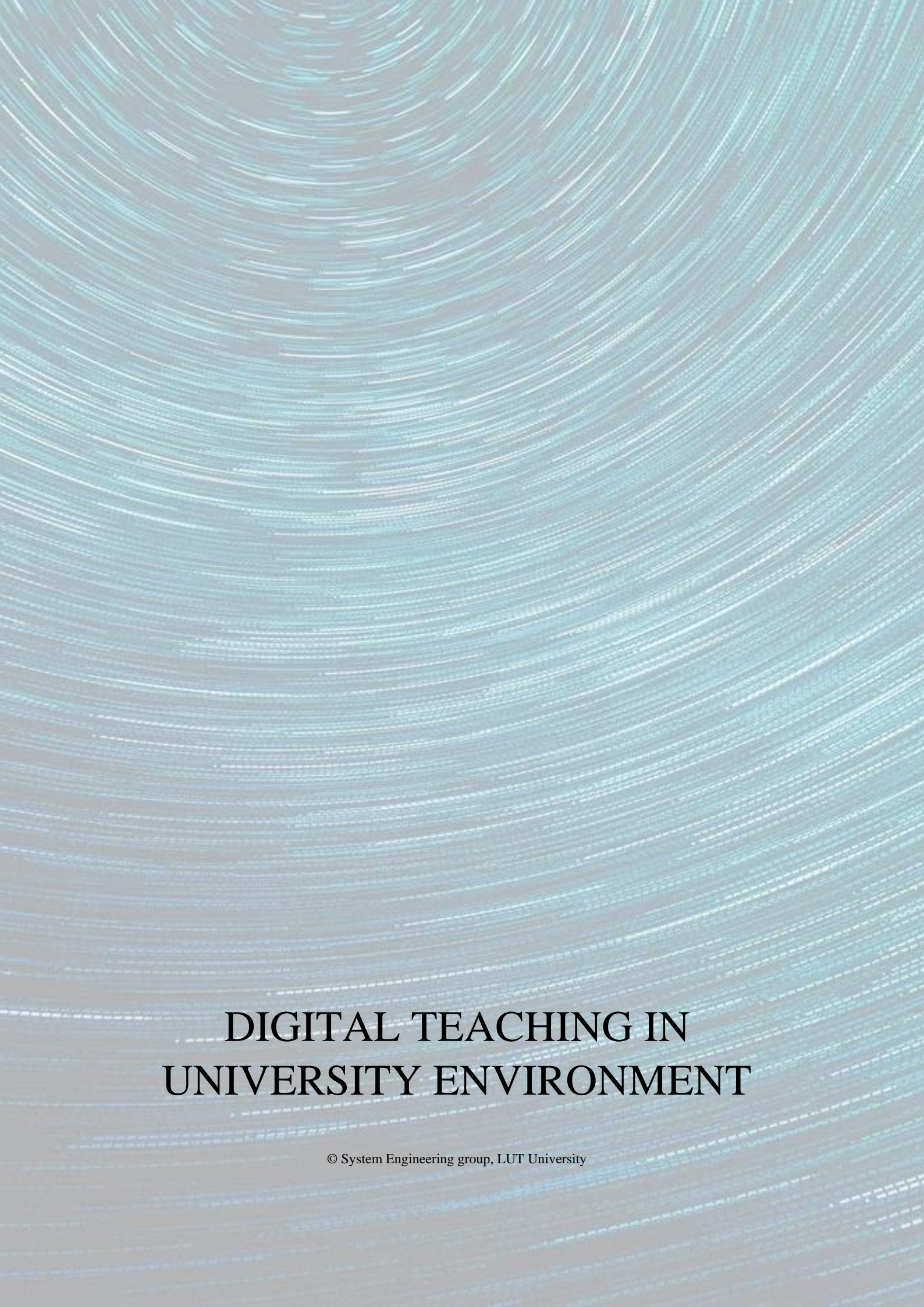
Mullen, R. & Wedwick, L. (2008). Avoiding the Digital Abyss: Getting Started in the Classroom with YouTube, Digital Stories, and Blogs. The Clearing House: A Journal Of Educational Strategies, Issues And Ideas, Vol. 82 , Iss. 2,2008. Retrieved from http://www.tandfonline.com/doi/abs/10.3200/TCHS.82.2.66-69.

Flipped instruction with PowerPoint Recorder (Free certification) https://education.microsoft.com/en-us/course/8ebc6daf/overview

Flip your classroom with Prezi Video (Free certification) https://education.microsoft.com/en-us/course/e2b0958d/overview

Welcome to blended, personalized learning with Buncee(Free certification) https://education.microsoft.com/en-us/course/1d31d252/overview

https://learn.flglobal.org/bundles/levels1and2english -Flipped Learning 3.0 Level -I & II Certification Subscription Bundle ($205.00 / year)

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