VLE teaching/learning and assessment methods analysis report

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1. PROJECT OVERVIEW

The European Education Area is based on the Digital Education Action Plan. The EU pays greater attention each year to the development of the information society, which is inseparable from the changes taking place in higher education. The European Commission (EC) encourages the use of opportunities provided by technologies, open education resources and virtual learning environments.

The EC's educational policy documents emphasize the importance of youth mobility, and there is growing talk of validating virtual mobility, which would allow learning outcomes to be recognized not only in physical academic environments. Most students are not mobile internationally due to various social, organizational, administrative, financial and/or physical barriers. Moreover, having a VLE[1] in place is crucial in the event of a crisis. Due to recent developments arising from the COVID-19 pandemic, business and education was forced to move to online platforms; however, it will take time to revert to classroom-based learning even after the restrictions are lifted and thus, the importance of quality distance learning is undeniable.

Teachers today face challenges in selecting the most appropriate technologies, and the application of unfamiliar tools is a concern. However, even the best-designed learning course will not work if the learner does not seek to make progress, so the learner's self-control and motivation, which are often lacking, are essential for learning in the virtual environment. Therefore, in the virtual learning environment (VLE), it is important for the teacher to be able to select the most appropriate study and assessment methods (ensuring academic integrity) and to provide the necessary support system in order to guide the learning in the right direction. Thus, there is a need for a methodology whereby teachers could effectively choose the appropriate tools and methods for virtual studies, as well as provide information in an inclusive and understandable way. **To date, there is no generalized methodology to ensure the quality of a virtual course, so that studies are conducted in an engaging and motivating way.** There is also no confidence in the fairness and reliability of the assessments received. The solution to this problem is extremely relevant for the entire higher education sector.

The aim of the project "Quality of Virtual Studies" (2020-1-LT01-KA226-HE-094740) is to increase the quality of teaching/learning in VLE and the study process by creating preconditions for the recognition of results attained through virtual mobility. The project is coordinated by Kaunas University of Applied Sciences (Lithuania) and implemented together with four partners: Savonia University of Applied Sciences (Finland), School of Coding Limited (UK), Francisco de Vitoria University (Spain), Zagreb School of Business (Croatia).

This project will attempt to solve the issues raised above by improving the quality of virtual studies, creating a teaching/learning methodology and implementing technological and pedagogical innovations (teachers' didactics, digital competencies, gamification of the study process), which will increase access to education and learners' motivation. The project aims to educate staff about pedagogical and technological innovations (strengthening digital literacy competencies among academic staff) and to spread these good practices for cohesion in Europe. Teachers with a deeper understanding of virtual learning and pedagogical and technological innovations will be able to use this information in their subjects, thus ensuring high quality education, student motivation and academic integrity. Higher Education Institutions (HEI) will be able to verify the quality of virtual

[1] Virtual Learning Environment.

mobility and ensure that educational outcomes are recognized by developing their internationalization at home (virtual student and teacher mobility, inter-institutional studies, mobility windows).

The project aim is pursued through three objectives: 1) creating the methodology for teaching/learning in VLE; 2) improving competencies of academic staff; 3) pilot testing of the teaching/learning methodology developed. Three intellectual outputs will be developed through the project activities: 1) a VLE teaching/learning and assessment method analysis report; 2) VLE teaching/learning methodology; 3) VLE methodology application practice report.

The purpose of the VLE teaching/learning and assessment method analysis report2 is to investigate the status of virtual learning environments (VLEs) and related areas at institutional, national, and international levels in order to develop the VLE teaching/learning and assessment methodology. The analysis covers scientific literature, legal documents and best practices. The results presented in the analysis report provide a comprehensive body of scientific and practical knowledge. The analysis was conducted in three areas:

1. VLE teaching/learning and assessment methods;
2. Plagiarism prevention and academic ethics assurance in the VLE;
3. VLE tools designed to promote student support and motivation (gamification of the study process).

The VLE teaching/learning and assessment methods are analyzed by examining the following: international best practices and innovation found in the scientific literature, documented regulations on the application of VLE teaching/learning methods at national level (project partner countries), documented regulations on VLE teaching/learning and assessment methods at institutional level and the use of VMA teaching/learning and assessment methods applied in the institutions (case study of the institutions, providing descriptions of the methods and processes used, good practices and problematics).

The processes and tools of plagiarism prevention and academic ethics assurance in VLE are analyzed by investigating the international best practices and innovations found in the scientific literature, national experiences (in project partner countries) in documented regulations on plagiarism prevention, academic ethics and intellectual property assurance processes and tools in VLE, institutional experience in documented regulations on plagiarism prevention, academic ethics and intellectual property assurance processes and tools, and the institutions' best practices and problematics.

The analysis of VLE tools to promote student support and motivation is carried out by examining the following: international best practices and analysis of scientific literature to acquire knowledge and evaluate the tools used in VLE to promote student motivation, best practices and issues of the VLE tools used by project participants in their institutions for promoting student support and motivation (methods and processes of study process gamification).

[2] Also referred to as Intellectual Output 1 (or IO1).

2. IO1 TEAM MEMBERS

The report's author team comprises specialists in international and European projects, online teaching and learning, and EdTech tools that facilitate the educational relationship.

Francisco de Vitoria University was the institution in charge of leading, coordinating, developing and supervising the work.

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3. PREVIOUS CONSIDERATIONS

As stated in the project presentation, three areas were to be analyzed:

1. VLE teaching/learning and assessment methods;
2. Plagiarism prevention and academic ethics assurance in the VLE;
3. VLE tools designed to promote student support and motivation (e.g., gamification of the study process).

The first category contains both teaching/learning and assessment. Although it is true that they are two moments of the educational process that should no longer be differentiated from each other, for an adequate analysis it was decided to split them during the research in order to converge again in the writing of the final report. Likewise, it was decided not to limit the question only to assessment, but also to include evaluation, with the moments of qualification and accreditation of knowledge.

Although the distinction between formative assessment and summative assessment could have been considered, assimilating the latter to Evaluation, the working group preferred to establish this distinction clearly from the beginning, considering assessment as the process that seeks to improve the quality of future performance and evaluation as determining the quality of present performance.

Another aspect to be taken into account when reading the report refers to the amount and type of data collected. Consolidated and systematized data were not obtained for all the established indicators, although it was decided to include them because they are usually considered at congresses and in research papers on best educational practices. It is as important to know the differences and similarities between institutions and countries as it is to discern which data that could be relevant but are not being adequately analyzed in Higher Education Institutions.

Finally, it is worth mentioning that three universities have participated in this study, representing the more academic side, as well as a business school considering professional aspects of the trainees and a programming school, whose focus is on learning by doing. This has enriched the results and conclusions obtained.

4. WORK PLAN AND RESEARCH METHODOLOGY DESIGN

IO1 was carried out over 5 months. The research method was based on studies, literature, legal documents and article reviews and also on the case study of the analysis of best practices at the 5 institutions. In the present Erasmus+ Project, this is considered of greatest value for study and comparison, finding similarities and differences between the 5 countries involved.

This information reveals an actual, rather than a theoretical, situation, as is the case in much scientific literature. It describes the reality experienced by educational institutions, on which to build the real foundations for the development of a methodology that favours the mobility of students and teachers between countries of the European Union.

The work plan presented was divided into 3 main phases. A first one of research and analysis, a second one of documentation, and a final phase of report preparation.

In order to make the work as practical as possible, once it had been decided to split the first area into two (teaching/learning and assessment/evaluation), the work was approached initially from an institutional and national perspective, starting out with the best practices and legal documents. This was followed by a review of the national scientific literature and national legal documents, and finally, the international scientific literature was reviewed and best international practices and the international legal framework were analysed.

Templates[3] and work guides were used for all deliverables in order to standardize the collection of information and facilitate subsequent analysis, shared in Google Drive, as a collaborative online space in which all members could access, consult, upload and update their respective documents.

During the information gathering and documentation process, several Zoom meetings were held to clarify doubts and make suggestions that could enrich the project. Equally necessary and effective was the contact by email, as well as the work carried out by Kaunas University, as the global coordinator of the Quality of Virtual Studies (QVS) project.

The entire work plan can be seen in detail in the Illustration 1 below.

[3] See Annexes 2 and 3.

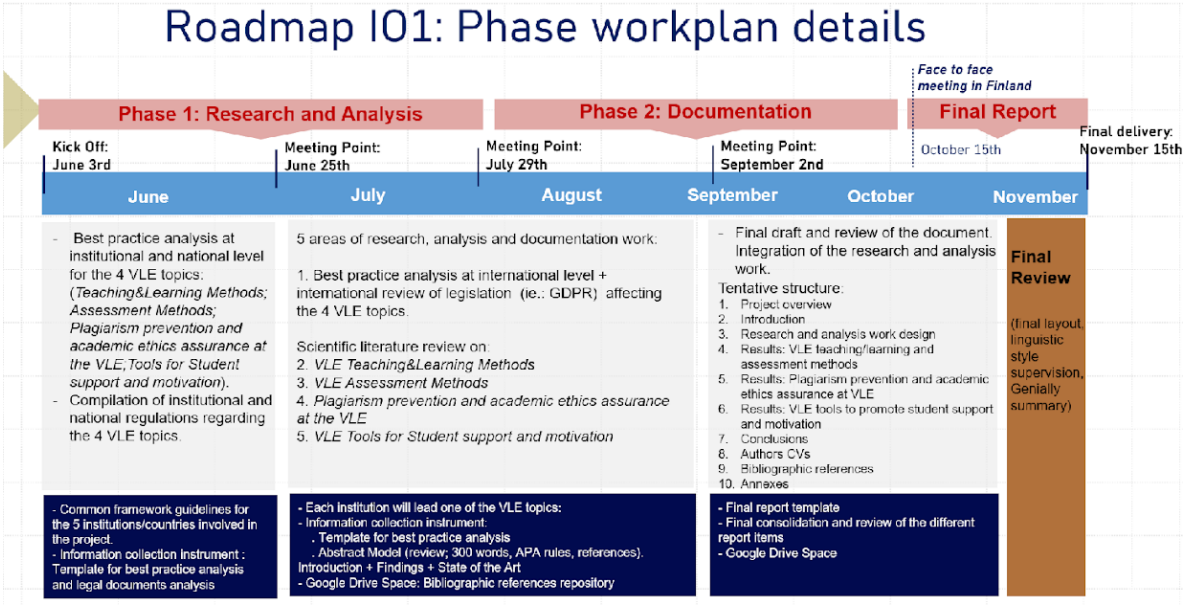

Illustration 1. Roadmap of Intellectual Output 1 - Quality of Virtual Studies

Throughout the course of the work, small adjustments were made to the initial schedule. A follow-up table[4] was made to track the inputs needed for the final report.

The face-to-face meeting in Finland, at the University of Savonia, made it possible to reach a consensus on the final decisions to be taken in order to finalize the report.

The following table summarizes the total amount of work performed, best practice sheets completed, analysis of legal documents, and the number of scientific articles reviewed, with more than 100 inputs of information.

	Institutional	National	International	TOTAL
Best Practices	35	23	6	64
Legal Documents	8	22	2	32
Scientific Literature	_	15	17	32
	43	60	25	**128**

Table 1. Recapitulation of data collection[1]

[4] See Annex 1.

The greatest weight is found, as can be seen in the table above, on institutional and national experiences, on the one hand, and on best practices and literature review, on the other.

Erasmus+ projects provide an excellent opportunity for knowledge sharing, getting to know each other better and building collaborative relationships, while at the same time enhancing the alignment and unification of policies, procedures and best practices. Therefore, the most important thing in this project is to start from the experiences of the different institutions, representing 3 different educational models (higher education -universities-, a business school, and a school of coding), 5 cultures/countries (Croatia, Finland, Lithuania, Spain and United Kingdom) and a range of expertise in different areas of knowledge (from medicine and law to programming or leadership and management). This was to be the starting point of the QVS project team: our own experience, enriched with scientific literature and the different regulations that govern online and hybrid education, offering the best of each country.

The 128 inputs were analysed by the research and workgroup team with a qualitative analysis, although a more quantitative approach was sometimes possible, analysing the main Key Performance Indicators (KPI). For each of the 3 areas (VLE teaching/learning and assessment methods; Plagiarism prevention and academic ethics assurance at the VLE; VLE tools designed to promote student support and motivation (gamification of the study process), a synthesis of the scientific literature and legal documents reviewed is presented in the state of the art of each topic, and best practices are discussed in depth, highlighting the main insights, in order to arrive, finally, at some general conclusions.

Ten measurement indicators were used for institutional best practices, while for national and international best practices, as with the analysis of legal documents, 2 general and descriptive KPIs were chosen, in addition to the name of the practice or document, its author or the person/institution applying it and the corresponding description.

- Teaching mode (binary)
- Study area (descriptive)
- Number of students (quantitative)
- Number of professors/lecturers (quantitative)
- Learning outcomes (descriptive)
- Technologies used (descriptive)
- Student evaluation (descriptive)
- Legal considerations (descriptive)
- Scalability (binary and descriptive)
- Others (descriptive)

The final results and insights included in this document are also visually summarized in a Genially presentation.

5. RESULTS OF VLE TEACHING/LEARNING AND ASSESSMENT AND EVALUATION METHODS

The main findings on teaching and learning, assessment and evaluation (T&L and A&E) arise from establishing the framework and the state of the art of the issue, as well as the analysis of institutional, national and international best practices.

All 3 areas of analysis in the report are highly relevant, but this section is crucial.

Although the process is broken down into a lengthy title, it is important to point out that educational institutions and teachers increasingly accept and internalize that the assessment (and evaluation) process is an inseparable part of the teaching and learning process. Moreover, academic conversations focus on learning, with teaching and assessment being the means to that greater and ultimate end: student learning and growth.

State of the Art

It is fair to say that there has been a before and after as a result of the global pandemic caused by COVID-19. While there was already widespread implementation before, with **steady growth data for online education** (Chen et al, 2018), there has been a boom in the aftermath. If there were already international, national and institutional regulations and guidelines in place that regulated and ensured the quality of this type of education, now even more have been published. In some countries, such as Finland, online education is considered a part of the general system, but in other countries such as Spain or Lithuania there is mandatory legislation referring specifically to online and hybrid teaching modes and procedures.

During the period of confinement much of online education has been applied incorrectly or inefficiently, which has led to doubts - especially among educational institutions and teachers more accustomed to face-to-face teaching - about the real and notably better possibilities of online education, provided it is applied in a professional manner.

Another interesting finding in this Erasmus+ Project refers to the fact that in countries as Lithuania, the review of national scientific articles in the area of virtual T&L and A&E methods has showed that most of the research done in Lithuania focused on the basic issues of applying virtual learning (advantages and disadvantages of online learning, students' approach and needs in virtual learning, digital teaching competencies of university lecturers). Articles focusing on specific T&L and A&E methods in virtual learning are lacking.

Although all 5 countries (through their respective institutions) have legal documents and make use of scientific literature, a closer look shows that **the internal formulations are very particular**, which should be taken into account when preparing this type of report aimed, among other objectives, at promoting the virtual mobility of students between countries.

Before delving into the issues more directly related to the quality of teaching and learning in the virtual scenario, it is worth reviewing the **two main legal frameworks** that govern online performance[5]. The first one is an overall and mandatory regulation: the **General Data Protection Regulation** (GDPR, European Union, 2016), and the second one refers to **strategic quality guidelines for online** learning (ENQA, 2018). Furthermore, while it does not refer specifically to online learning, the European directive about accessibility to websites and mobile applications of public sector bodies should also be considered (EU, 2016).

At the start of every academic year, new students generate vast amounts of data at schools and universities. This adds to the mountains of data these organizations already deal with as data owners (Microsoft, 2016).

Organizations, even those outside the European Union (EU), are accountable for all their data under a new EU regulation, the GDPR. This regulation is designed to protect all EU citizens' data privacy and to harmonize all data privacy laws across Europe. The GDPR creates a uniform European legal framework, giving subjects who reside in Europe rights over this data.

The GDPR affects the data that educational institutions have, how they use it, where it is stored, and how long it can be stored for. An educational institution's journey can mirror a student's learning journey, marked by milestones that are recorded and evaluated at every stage. Sometimes the data generated will stay the same for years, while at other times it will change rapidly as students and staff move through the institution.

Educational objectives and pedagogical models are often included in institutional strategies. In the e-learning context (ENQA, 2018), it is appropriate to **consider innovation strategies, rapid iterative review and connections between research and pedagogy and/or learning design** (which requires knowledge of the latest innovations in order to select the most appropriate means for achieving learning objectives).

Institutional policies for e-learning may also contain essential elements of quality, which include:

- institutional support;
- course development;
- teaching and learning;
- course structure;
- student support;
- faculty support with compulsory e-learning training for new staff members;
- technological infrastructures;
- student assessment (learner authentication, work authorship and examination security) and certification;
- and electronic security measures.

The institution may also define policies to grant proper access and ensure participation for those students affected by disabilities, illness and other mitigating circumstances.

Apart from establishing connections between research and pedagogy, it is necessary to go even further. Boulton et al. (2018), in their study, looked at the relationship between **student engagement (VLE usage) and learning outcomes (module grades)** at a bricks-and-mortar university in the UK. The author found a wide range of relationships between grades and use of the VLE, with variations for high-/low-performing students and between disciplines. This contrasts with online-only and distance-

[5] Intellectual property and protection of personal image must also be considered. Intellectual property is included in the plagiarism and academic integrity section.

learning contexts, for which VLE usage has been shown to be more strongly and consistently linked to achievement. In these cases, **strong relationships are found in an environment where the VLE is the main point of interaction between students and instructors**. In a brick-and-mortar university, this is not the case, with the majority of teaching conducted face-to-face through lectures and seminars, and self-study involving 'offline' interactions such as visiting the library or working with peers.

Across all programmes, the authors found that high VLE usage in a module is associated with high grades, but it does not follow that low VLE usage is necessarily associated with low grades. In fact, it appears that the majority of students do not engage with VLE very much and still get good grades. This suggests that these students are engaging with learning in ways that do not involve the VLE and which are not captured by our focus here on VLE usage.

In the research (Boulton et al, 2018), the authors found that levels of engagement with the VLE vary depending on the course/discipline the student was studying. **Biological and Medical Sciences** students need to log on each week to see what their practical sessions involve and complete tests that count towards their final grade, thus their VLE usage is directly linked to their assessment and outcome as a result. However**, English students** are more likely to get the assessment information they need and complete it offline, with fewer assessments involving the VLE compared to the numerous practical assessments in Biological and Medical Sciences. Thus, the authors find that VLE usage will likely be less closely related to academic outcomes in English. The authors find the same thing for **Mathematics students**, who are likely to get worksheets that require pen and paper, with only a few for each module, so there is little need for them to spend a lot of time in VLE. The same is true of Economics. The extra information available to students on the VLE Politics pages appeared to be a very useful resource and thus students who read about the subject more were likely to get higher grades, which might indicate that reading is strongly related to their outcomes.

There are many **challenges** teachers face in **digitizing and adapting learning material** for virtual mobility studies in higher education. Šadauskas et al. (2017) presented research with a case study methodology in which 19 international teachers developed 6 virtual mobility courses. The research was carried out in the context of implementing the Erasmus+ project "Opening universities for virtual mobility". The authors of the research note that **curricula** used in the traditional classroom **cannot be applied directly to virtual learning without adaptation.** When applying virtual learning, teachers should not use slides or videos that are shown during physical classes. All material should be digitalized and **redesigned for virtual learning**. According to the authors, it is important to keep in mind that **"not only reading material should be digitized for virtual curriculum, but also tasks, assignments, and collaborative work have to be transformed from the auditorium mode into online learning mode" (p.248).** In order to achieve active student participation during online courses it is recommended to organize assignments and tasks in **small groups** in order to encourage a **collaborative style** of working between the students. The authors suggest that presentations of group work should be **planned every few weeks** in order to assure active student participation in the online learning process.

One of the most important steps in redesigning curricula into online mode is **defining the learning outcomes** (Šadauskas et al., 2017). The results of the empirical research show that the greatest challenges related to **"digitalizing" learning outcomes** faced by teachers are the following: finding ways of **measuring** learning outcomes and **ensuring consistency** of learning outcomes within the module. The authors state that **"although teachers faced some challenges designing a curriculum for virtual mobility they still integrated most of the learning organization methods for students learning" (p. 252).**

The most popular learning organization methods that have been applied during online learning are: **critical thinking development activities, practical application of knowledge, discussions, search** for and analysis of new resources, **creative work, interactive learning activities, group work, individual work** and **presentation of information**.

If this was already the case prior to the pandemic, the emergency shift to remote teaching has only accentuated both its lights and shadows. Paney (2021) provides an overview of the advantages and disadvantages of online teaching in higher education during the COVID-19 pandemic. Online classes have shown that Croatia has quickly adapted to the new situation, but the problem is that only the channel of communication has changed, while the content of classes has remained unchanged. **An online environment can be stimulating for independent students while, for others who need professional help, support and supervision, this can be challenging**.

The observed advantages of online teaching are the following:

- perception of online teaching as a part of lifelong learning,
- high availability of online teaching materials,
- suitability of attending classes with regard to place and time,
- removing unnecessary barriers, supporting social inclusion,
- current feedback and
- clear and predefined schedule (cf. 2021, 98, 99).

At the same time, certain shortcomings of online teaching were noticed:

- lack of social contacts
- preventing interaction between students and teachers
- reduced knowledge about course participants
- instability of the internet connection, inadequate technology
- variability of platforms by teachers (cf. 2021, 100, 101)

The Agency for Science and Higher Education (ASHE) presented the results of the research "Challenges in Higher Education during the COVID-19 Pandemic and Social Isolation: Experiences and Needs of Higher Education Staff and Students" at a webinar held on Wednesday, 30 September 2020. Bezjak et al. (2020) conducted research with the aim of better understanding the impact of extraordinary circumstances such as pandemics and social isolation on the learning and teaching experience. Data were collected in June and July 2020 using an online questionnaire, and students and staff of higher education institutions from all over Croatia participated. Through thematic units (technological conditions of studying in an online environment under extraordinary circumstances, **quality of online teaching performance, quality of student support, assessment, student workload and socio-psychological aspects of teaching in an online environment**) the challenges of studying and working under such extraordinary circumstances are presented.

The majority of students who participated in the survey (42%) were very dissatisfied or dissatisfied with access to library materials during extraordinary situations, while the majority of higher education staff (51%) were satisfied and very satisfied.

Most students (82%) and the majority of Higher Education Institution (HEI) employees (86%) expressed satisfaction (satisfied and very satisfied) with their own level of digital competencies.

Half of the students (50%) thought that **the quality of online teaching performance through lectures was much worse or worse than before quarantine**, and 38% of HEI employees assess the quality as the same as before quarantine.

The majority of students (57%) as well as the majority of HEI staff (54%) believe that the **quality of online teaching performance through practical and field teaching is much worse or worse than before quarantine.**

42% of students as well as 44% of HEI staff believe that the ability of teachers to interact with students in a virtual environment is much worse or worse than before quarantine.

46% of HEI staff believe that the teaching load was higher or much higher than before quarantine, 27% thought it was the same, while 19% said it was lower or much lower than before quarantine.

36% of students believe that the quality of support provided to students is the same as before the quarantine, while 44% of HEI employees estimate that the quality of support did not differ compared to the previous period.

Half of the students (50%) answered that they did not know about the possibility of using psychological counselling for students while at home offered by the higher education institution.

34% of students answered that grading showed successful mastery of the material to a lesser extent (much less and less) while studying in a virtual environment; 46% of HEI employees, on the other hand, believe that learning outcomes have been achieved to the same extent as before.

Slightly more than half of the students who participated in the research (56%) believe that the **workload** of students in the online environment under extraordinary circumstances **was higher** and much higher than before quarantine, while 38% of HEI staff believe that students were burdened to the same extent as in the previous period.

Half of the students (50%) answered that during their studies in a virtual environment, feelings of anxiety and/or depression occurred more and much more than before quarantine; the same is considered by the majority of HEI employees (44%).

About half of the students (51%) believe that the **level of motivation for student obligations was much lower and lower than before quarantine**, while the majority of HEI staff (45%) stated that the level of motivation was the same as before quarantine.

The needs expressed by students and staff of higher education institutions (Bezjak et al., 2020) relate to **stable internet connections, appropriate computer and additional equipment, providing access to electronic literature, better organization of online exams and prevention of unethical behaviour**, the possibility of conducting part of the teaching (especially practical parts, laboratory exercises, etc.) live, evaluation of increased teaching load, development of uniform instructions for conducting online teaching, psychological counselling services, additional training for teachers on the available forms of online communication, reviewing the effects of distance learning on students, etc.

Further studies were conducted to discern the effectiveness (and quality) of online learning. One research project (Usart, 2020) on the different modalities began by measuring the **differences between online and hybrid educational programmes**, as opposed to face-to-face ones that did not use these technologies.

Six meta-analyses and one systematic review describe this part of the evidence. **The mixed or hybrid modality** (one that combines face-to-face and distance learning) provides the most evidence, although some studies focused on fully online programmes provide the author with some lessons applicable in the current context of the pandemic.

The findings of the meta-analyses and reviews suggest **overall effectiveness in terms of learning under the mixed mode as compared with the face-to-face mode**. The great variability of results, however, indicates that this effectiveness **depends on the context and the way in which the model is applied**: the introduction of the mixed modality requires a rethinking of the **instructional design**, as well as an investment in additional time and effort towards a more active and student-centred approach. **Mixed mode enhances learning outcomes**, combining the benefits of the face-to-face mode and the online mode. As an example, it allows materials to include more authentic and varied instructional skills, as well as innovative learning activities.

This modality, however, also combines the disadvantages of both: the students tend to have more difficulty with **time management, self-regulation** of learning or the **complexity of tasks**.

The effectiveness of the mixed mode is also influenced by the extent to which the activity is **synchronized**. These activities offer high spontaneity, allow a sense of cohesion among students and promote **collaboration**, but at the same time, in some cases students feel pressured to respond without having **time to reflect** or indicate that they have more technical problems than when the activity is asynchronous. Asynchronous design offers the most flexibility in terms of location and time, and in addition, allows for more reflective student involvement.

With the increase of online learning there is a growing need for guidance in terms of pedagogical scripting that addresses the unique challenges of delivering STEM instruction online (Chen et al., 2018). Pedagogical scripting should follow the **Universal Design for Learning (UDL) principles**.

In 2016 the University of Central Florida examined the effective elements for online courses (Chen et al., 2018). 537 students from 15 online STEM courses answered the survey. The results indicated that **students' perceptions of learning and satisfaction were correlated with the efficacy of pedagogical elements, such as active learning activities, interactive engagement and robust assessment.**

Active learning activities consist in engaging students with **real-life problems,** and they benefit from the use of a variety of different kinds of resources, simulation learning, case studies, videos and demonstrations. Active learners expect online and face-to-face opportunities to collaborate with others, such as peers and teaching assistants. Teachers should be clear, concise and consistent when it comes to communicating instructions, assignments, assessment, due dates and other practices of the Moodle course.

One dominant topic in recent decades has been **assessment**. Formative assessment entails gaining, refocusing, and extending students' attention during lectures. This is because lectures are a predominant pedagogical approach in STEM education. Student responses show that course-related videos helped students to understand the content better than having just a text representation. The course teacher should **provide timely feedback and grade information**. Teachers should also include a variety of additional course components (--) which benefit all students, not just students with disabilities supporting the inclusion of the UDL (Universal Design for Learning) principle. **Accessibility** benefits all students.

Two universities in Finland developed a research-based instructional strategy considering social integration (integration and accessibility) and **the primetime learning model,** and piloted it in two physics courses in 2016-2017 (Koskinen et al., 2018). The model includes **social integration, versatile assessment and active learning components** that are carried out in a four-phase process as follows (Figure 1):

1. Principles: students study the topic independently with help of textbooks, videos etc. following the **flipped classroom principles**.
2. Practice: Students meet in **small groups** to complete research-based assignments.
3. Problems: Students solve **real-life problems** by utilizing principles learned during the course. Teachers are available via a "hotline".
4. Primetime: **Student groups meet** privately **with the teacher** to go through any remaining questions students have on the topic.

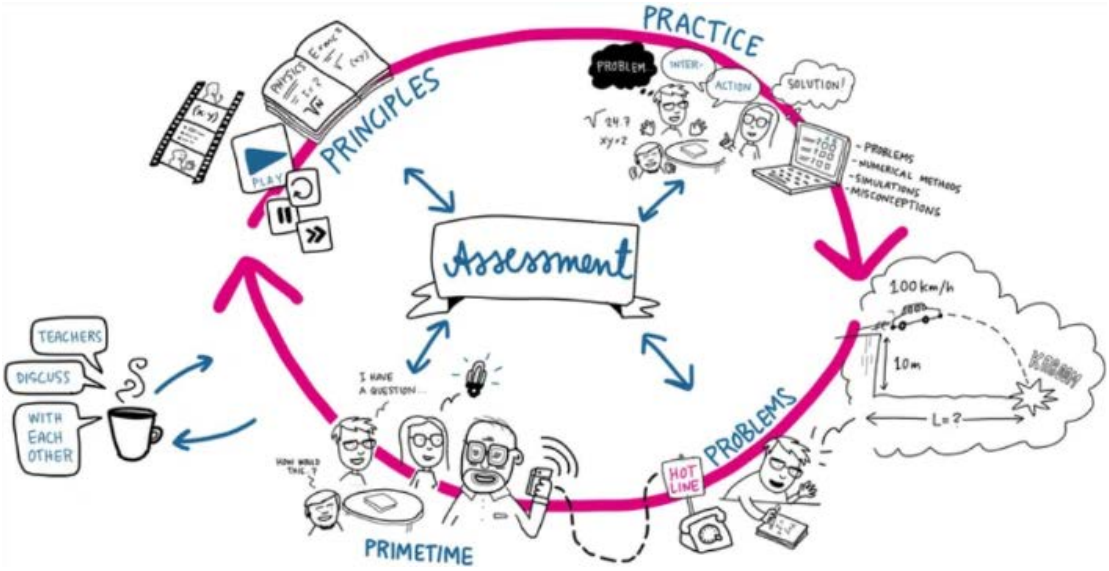

Figure SEQ Figure * ARABIC 1: Primetime learning model

By developing the primetime model, the researchers aimed for a learning model that, in addition to solid learning outcomes, would improve **student retention, promote research-based teaching practices, and provide a positive learning experience**. The model was based on **collaborative** and technology-enhanced learning**, formative assessment without a final exam** and **close student-teacher interaction** in student-teacher meetings.

The pilot courses had 72 (2016) and 77 (2017) active students and they were divided into groups of five students. The pilot courses were compared with the courses held in 2014 and 2015 by the same teachers, with the same content and a similar number of students on each course. The pilot observed persistent student activity, improved retention, and **good learning outcomes**, which were measured by how well the students learned the topics under study, often reported as gains in pre- and post-tests. The research results indicate that students should avoid **passive lecture-type teaching and favour active learning methods by actively interacting with fellow students and the material at hand**.

The pilot had three research questions: 1. Did the students follow the process rigorously? 2. Was assessment robust and functional? 3. Did the model give a positive learning experience?

To answer the research questions many elements were measured and analysed: the number of solutions submitted, assessment and an analysis of the students' learning outcomes, as well as students' opinions. The results show that the primetime learning model was able to improve retention and prolong student activity whereas, earlier, student activity declined during the course. The common perception for the cause of the decline was that students started to wait for the exam. Improved retention was caused by social integration through group meetings, formative assessment or structured study processes that balanced the study habits. Primetime model assessments supported the study process. Students were more active throughout the course than before, while learning outcomes increased and the **failure rate decreased from 10% to 5%.** The model also improved retention and levelled the workload. The assessment was unambiguous, encouraging and **less stressful than exams**. Finally, students claimed the primetime model **promoted new friendships**,

appropriate responsibility for one's studies and groups that **provided a sense of belonging.** Thus, the model supported **social integration**.

Assessment is at the heart of the model. Treagust (2006) suggests that teachers should assess students' learning in many ways and teachers need to have the right tools to make the assessment appropriate and effective. **Assessment is a tool to improve teaching and to support and maintain students' learning**.

Research data from over three decades has shown that the majority of students come to class with pre-knowledge or pre-conceived beliefs about the subject matter (Treagust, 2006). If such pre-knowledge or beliefs are not questioned by the teacher in the results, misunderstandings become integrated into students' cognitive structure and interfere with subsequent learning.

From many points of view it is recommended that **alternative forms of assessment are needed** that allow thinking to be assessed rather than the possession of information. For example, tasks that require students to read, write, and solve problems are genuine. **Effective diagnostic formative assessment methods** should provide valid measures of what students know and offer an opportunity for students and teachers to be involved in discussions about the work being assessed.

For example, a two-tier multiple-choice assessment method supports learning of meaning among students. Students are required to answer a question that is followed by another question related to the first one. The test requires students to justify their choice of option by giving a reason. The process also tests higher level abilities.

Multiple-choice diagnostics can also be used to encourage students to question and understand concepts and find different options or explanations, rather than the student learning to remember things for the test.

The assessment method guides the student's way of studying. Formative assessment enables the teacher to support learning and broaden students' understanding (Treagust, 2006).

More recent studies, such as of Popta et al. (2017), find that **peer** feedback plays an even **more important role in online learning than in face-to-face learning**. Continuous feedback is very important for staying connected in an online course and completing it. Peer feedback is a two-way process, but most studies have focused on the benefits only from the receiver´s perspective, not the potential benefits for the feedback provider. Providing online peer feedback is explored as a learning activity in higher education.

The article is based on a study that aimed to get answers to the following questions:

1. What are the learning benefits for students who provide online peer feedback?
2. Which cognitive processes does a student use in providing online peer feedback?
3. What factors (student and context) are related to the process of providing online peer feedback? The research method: studies, literature, and article review.

According to the article by Popta et al. (2017), providing online peer feedback **develops high-level learning skills**. It gives students **more critical insights** and **activates processes of reflection**. The benefit came from reading many peers' work and obtaining critical insight from others' work during the feedback process. Students mentioned that they compared their own work with peers' work and were more aware of their advantages and weaknesses than in situations with conventional teacher

evaluation. It was found that online peer feedback helps students to evaluate, monitor, and regulate their own learning. Students learn to reflect, become more critical, and may even improve their own product. Most of the benefits the authors found in their research were related to higher-level cognition or metacognition. Providing peer feedback has a positive effect on students' metacognitive skills.

The researchers found that students use different cognitive processes when they are asked to provide online peer feedback. Students compare and question ideas, evaluate, suggest modifications and reflect, plan, and regulate their own thinking. They think critically, connect to new knowledge, explain, and take different perspectives. Using specific cognitive processes will help students to realize learning benefits.

When providing online peer feedback, students review the work of their peers. Before they can review the work of their peers, they make their own product based on the same assignment. By being challenged to provide specific elements in their peer feedback, they will use different cognitive processes. These elements are an evaluative judgement, a suggestion for improvement, and an explanation. In providing peer feedback, students interact with subject content, process, think, compare, take different perspectives, and create new knowledge. When giving an explanation, students monitor, evaluate, and rehearse their own understanding.

The study (Popta et al., 2017) focused on providing peer feedback in an online environment. It can be argued that the model also applies to giving peer feedback in an offline environment. The findings and the model are more tied to the fact that the feedback is written than to the fact that it is a web-enhanced process. The cognitive processes that are required to evaluate, suggest, explain and reason are not limited to the online component of the environment.

Another significant question that worries faculty at present has to do with the **attention issue** (Lang, 2021). We tend to think about the problem of distraction in the classroom as a modern one. Educators might battle digital devices for students' attention, but our literary and philosophical heritage testifies to a robust tradition of people who have lamented their inability to pay attention in contexts that demanded it, from work and school to spiritual practice and relationships. It has never been easy to sustain our attention. Despite this, many educators act as if attention is the norm and distraction is a falling away from that norm, a characteristic of poor (or bored) students. Instructors often take on the role of stern preceptors who admonish their students to pay attention through warnings and exhortations or punishments and rewards. The mistake all along has been to assume students should pay attention, and to reproach them when they don't. Lang (2021) declares that, instead, we have to shift our thinking to recognize that ***attention is an achievement*, not a given.** Everyone struggles with attention at times, and of course many students find paying attention particularly challenging, including some who might struggle with attention-deficit disorders. Helping those students might require extra effort from instructors, perhaps in conjunction with campus accessibility offices. Developing attention norms may be the key, as Lang proposes. Just as behavioral norms influence student participation in discussions, **attention norms condition how students attend to the course content and to one another in the classroom.**

If guidelines and recommendations are to be found in the assessment area, then we can find regulations (at a national or institutional level) in the area of evaluation. Sometimes both are connected and integrated, as seen in some institutional legal documents. The Evaluation Regulations at Francisco de Vitoria University state:

- "Evaluation of the students' learning process is an unquestionable need and inherent to every formative process. Among its numerous functions we find the summative evaluation (to reflect the final result of a formative process), the formative-forming evaluation, the diagnostic evaluation, the predictive evaluation, the orienting evaluation and the control

evaluation (assuring ongoing follow-up of students, to guarantee that degrees and diplomas are issued based on a set of data that is as objective and accurate possible),

- There is no doubt that the main function of evaluation should be formative-forming, aimed at improving the students' learning process as it progresses. This **formative-forming evaluation does not exclude the rest of the evaluation functions**.
- The evaluation must serve the purpose of a continuous student self-knowledge, **making them aware of their achievements and their deficiencies, their successes and failures**. In this way, evaluation can stimulate students' effort and the desire to improve and excel, as well as fostering their righteousness and responsibility."

To make strategic guidelines for **high-quality online courses**, the study by Allison et al. (2018) recommends that educational institutions should:

- provide physical, blended and online learning **opportunities in parallel,** so that the needs of different groups of students are taken into account.
- invest in ensuring that **teachers have sufficient skills and support for pedagogical planning and the use of online tools**.
- provide **special support for online learners**.
- involve **staff** in **decision-making** regarding digital teaching.
- **create an internal culture** that encourages the generation of pedagogical innovations.
- make virtual teaching and learning a **clear strategic priority** so that the change becomes lasting.
- leverage **third-party software** strategically.
- make **use** of different **analytics** to obtain data-based information for the future use of teaching solutions.

In their report, Sclater et al. (2016) include evidence about the usage of different **learning analytics** tools at various leading universities in the USA, UK and Australia that provide online courses. Their user experience studies indicate that data-driven approaches, such as learning analytics systems, **can be used to predict student success and support students through interventions**. This means that learning analytics systems can act as tools for quality assurance and improvement. Analytics can give universities insights into ways to improve their processes.

The use of virtual learning environments provides higher education institutions a chance to **collect and analyse learning data like never before.** Every step in learning management systems is recorded and can be used to measure learning activities. It is also possible to build support systems around the data collected, e.g. to improve the retention rates on courses.

It is not enough for universities to merely collect the learning data (Guzmán-Valenzuela et al., 2021), but **the data also need to be put to use**. The main findings of the research gathered indicate that learning analytics can help identify students at risk of dropping out of the course. At some universities the learning analytics tools send reports by email to the student and/or programme adviser containing the student's analytics data, for example. The programme adviser can then, if needed, intervene to provide additional support for the student.

Some tools offer a dashboard that can provide students with valuable information on their own progress. **Learners seem to perform better, and their motivation increases when they receive data on their learning**. This gives them a feeling of being in control of their own learning.

Moreover, learning analytics can be used **to personalize learning to meet students' specific needs**.

Best Practices Analysis

From the analysis of the 29 best practices at institutional, national and international level, an initial natural classification emerges:

- Active learning (38%)
- Assessment and evaluation (25%)
- Platforms (17%)
- Quality criteria (10%)
- Trends (10%)

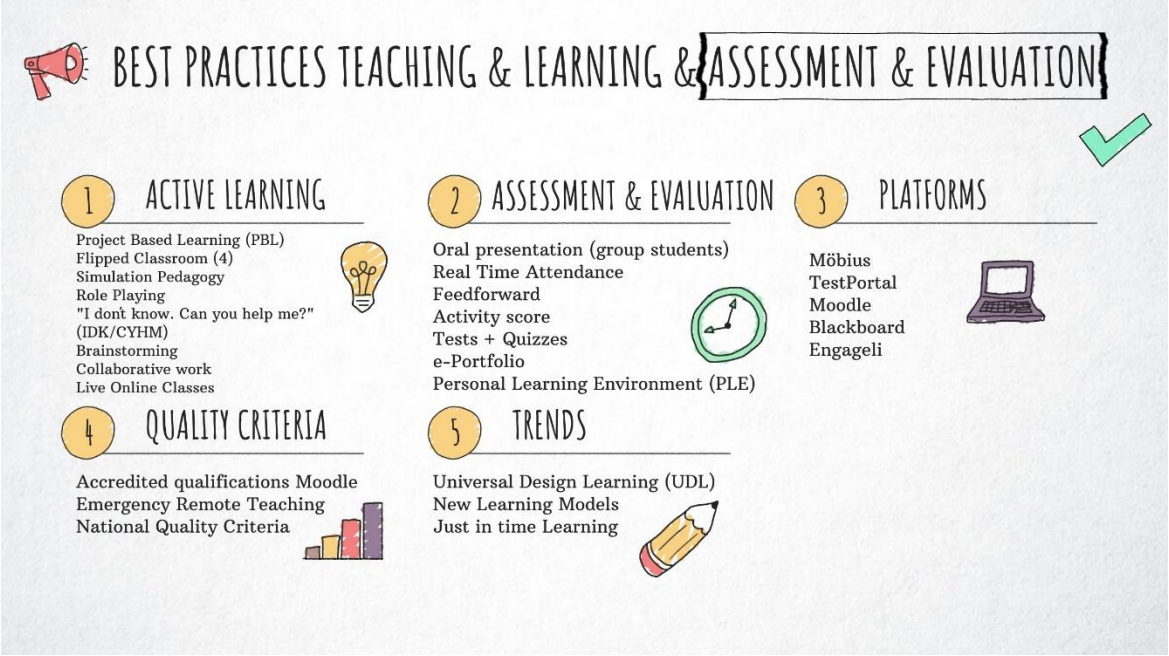

Illustration 2. Map of Best Practices in Teaching/Learning and Assessment/Evaluation

This classification arises naturally because, beyond the templates and instructions for filling them in, there was only a general indication to complete one or two of each of the 3 areas (teaching and learning being one of them). However, this is the area with the largest number of examples proposed by the different institutions, both internally and nationally. There were no specific guidelines to contribute more examples of teaching/learning than of assessment/evaluation, or about the degree of implementation and consolidation of these good practices, which should be the first big question of any study: what is understood by good/best practices? Is this something widely established among teachers and students? Is it something new that comes to improve previous practices? What kind of recognition has it received, for it to be considered a best practice and in what forums and contexts?

This was not the aim of the work, but it served to map the reality and its composition within a limited research time, in order to be able to work towards Intellectual Output 2.

In this mapping of reality**, 63% of the best practices** provided are exactly what is requested in the title: examples of **teaching and learning and assessment and evaluation.**

The remaining **37%** include good practices related to **other issues** such as platforms, quality criteria and new trends.

In the first case, even though one of the indicators included in the files referred to the technologies used, 5 platforms were presented as best practices of teaching/learning and assessment/evaluation.

There may be several reasons for this. On the one hand, because of the importance and prominence that technologies have gained, displacing to some extent the methodologies they are supposed to serve; and, on the other hand, the fragile border in many cases between methodology and technology. It is not in vain that a commonly used term is "EdTech". In the second case, as far as quality criteria are concerned, in the face of the ebb and flow of initiatives, several institutions, even at the national level in countries such as Finland or Croatia, have certainly made an effort to clarify the quality criteria for e-learning.

Finally, as for the new formulas, it is clear that the pandemic context has propelled the emergence of new ways of learning in the virtual context and that everything is accelerating at a dizzying pace. This fact has not gone unnoticed in the present study.

The following is a detailed analysis of each of the experiences provided in each of the sections.

A. ACTIVE LEARNING

Table 2 shows the results of the indicators of each of the cards. It should be noted that the Flipped Classroom methodology has been presented by 4 of the institutions, which shows its broad implementation.

	PBL	Flipped Classroom	Simulation Pedagogy	IDK-CYHM
TEACHING MODE	Hybrid	Online; Hybrid	Online; Hybrid	Online; Hybrid
STUDY AREA	Law; Business; Business Analytics	Medicine [PBL+FC]	Health; IT	Medicine
N. STUDENTS	100%	80%	600 (Health) 20 (IT) [400 simulations simultaneously]	20%
N. TEACHERS	14	No data	30% all teachers 100% Health teachers 2 IT teachers	No data
LEARNING OUTCOMES	1. Increase connection with curriculum 2. Enhance learning Experience 3. Expand knowledge further form subject topics	1. Stimulates to study theory carefully, stimulates their individual work 2. Activate students 3. Helps lecturer to show how theory can be applied in the professional practice	1. Apply theoretical know-how 2. Interact with others in real life situations 3. Problem solving, decision-making 4. Cooperation in a workgroup	1. Stimulates students´activity in the lecture 2. Help students to engage in the topic
TECHNOLOGIES USED	LMS (Canvas) + Kahoot	LMS (Moodle) + Videoconference (Google Meet)	VR Environments Siemens Team Center Simulink Videoconference (Zoom) + Presemo	LMS (Moodle) + Paper data bases
STUDENT EVALUATION	Student surveys + In-depth interviews + Survey questionnaires	No data [Student surveys]	Course feedback forms	No data
LEGAL CONSIDERATIONS	None	None	Copyright with videotaping	None
SCALABILITY	Yes	Yes	Yes	Yes
OTHERS	Design Thinking and Coaching	Not massive use. Be selective with topics (easy applied to real life situations)	Teachers shoud go through a short simulation pedagogy training. Simulation scripts needed before starting the exercise.	Persuade students lecturer do not know the anwser and really needs help

	Role Playing	Brainstorming	Brainstorming	Live OL Classes
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online; Hybrid	Online; Hybrid
STUDY AREA		Medicine	Health Sciencies	Social Sciences; Technical Sciences
N. STUDENTS		35%	35	92%
N. TEACHERS		No data	8%	84%
LEARNING OUTCOMES	1. Increases students´activity during online lectures 2. Facilitates interaction among students 3. Helps to demonstrate how theory can be applied in practice	1. Helps to creat "open speaking" lecture culture 2. Stimulates student to follow the lecture	1. Increase participation 2. Monitor real time attendance 3. Drive committment	1. Encourage individual and group interaction of all students in teaching 2. Ensure student involvement during online teaching 3. Give instant feedback on the work 4. Monitor student work in real time 5. Encourage problem solving and critical thinking 6. Explore student´s focus on the topic
TECHNOLOGIES USED		Videoconference (Google Meet) + Jamboard	Videoconference (Blackboard Collaborate) + Suite Microsoft	Videoconference (Zoom), breakout rooms
STUDENT EVALUATION		No data	Student surveys + In-depth interviews + Survey questionnaires	Student surveys + In-depth interviews + Survey questionnaires
LEGAL CONSIDERATIONS		None	Check identity	None
SCALABILITY		Yes	Yes	Yes
OTHERS		Apply from the beginning of the lecture, during all course. Not in the middle or in the end	Decide the composition of groups previously (defined or random)	Most used method to teach during the pandemic (millions of "zoom meetings")

Table 2. Key Performance Indicators in Active Learning
(*Best Practices in Teaching/Learning and Assessment/Evaluation*)

Within this section we can also distinguish between examples that refer to:

- Prior preparation of the subject to be seen in class **(Flipped Classroom) -36.4%-;**
- **Keeping the student's attention** (such as "I don't know. Can you help me" -IDK-CYHM-, Brainstorming and Live Online Classes), with an important level of interaction between teacher and student, or between students **-27.2%-;**
- **Simulation of real situations** (Role Playing, Simulation Pedagogy) **-18.2%-;**
- **Collaborative work** (Project Based Learning -PBL-, Collaborative work)**-18.2%-**

A.1. Teaching mode

In all the practices presented, the two modalities - 100% online and hybrid - appear as enablers of the aforementioned methodology. Only in Project Based Learning is it indicated that it was only applied in the hybrid modality.

It appears that the methodologies can be deployed in either of the two virtual modalities without major considerations in their specific implementation.

A.2. Study Area

There is no area of knowledge that cannot be deployed in the online environment. From Medicine to Engineering, Health Sciences, Business, Law or Programming.

There was no specific indication of any attempt to incorporate this issue, and naturally, once again, the study revealed that all academic areas can develop the virtual modality.

A.3./A.4. Number of students and number of teachers

These are two of the most basic and general KPIs of Learning Analytics.

These two indicators have been grouped together in the analysis. Upon review, the exact number provided is not as revealing because, with the exception of one institution (Savonia), the rest do not monitor the extent of their best practices.

Another interesting reading is that some measure this figure in percentages and others in numbers. Some only provide data on that best practice, but are unable to go beyond that and its projection in the rest of the institution. Some manage informal data, while only one uses formal data.

A.5. Learning Outcomes

By taking the literal descriptions of the learning outcomes, a simple graphic representation shows that a student-centred ethos underlies them. The unifying verbs are "Stimulate", "Help", "Increase", "Encourage" and "Apply". **Facilitate, Enhance and Apply** would summarize the teacher's formative purposes.

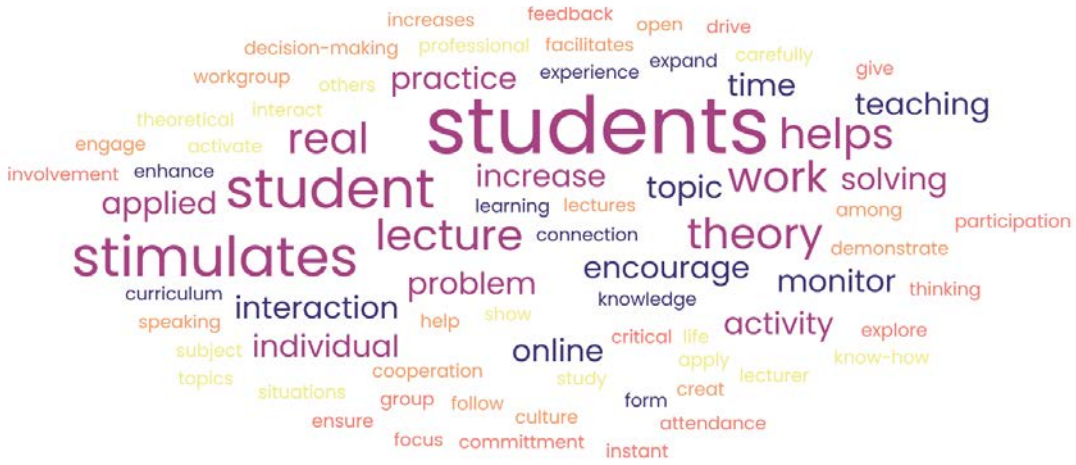

Image 1. Word cloud of Learning Outcomes in Active Learning
(*Best Practices in Teaching/Learning and Assessment/Evaluation*)

If, in addition to these verbs, we were to analyze what they are mainly trying to facilitate, we would find 4 main categories, as shown in Illustration 3:

1. Interact with others in real life situations.
2. Increase connection with curriculum.

3. Activate problem-solving.
4. Encourage decision-making.

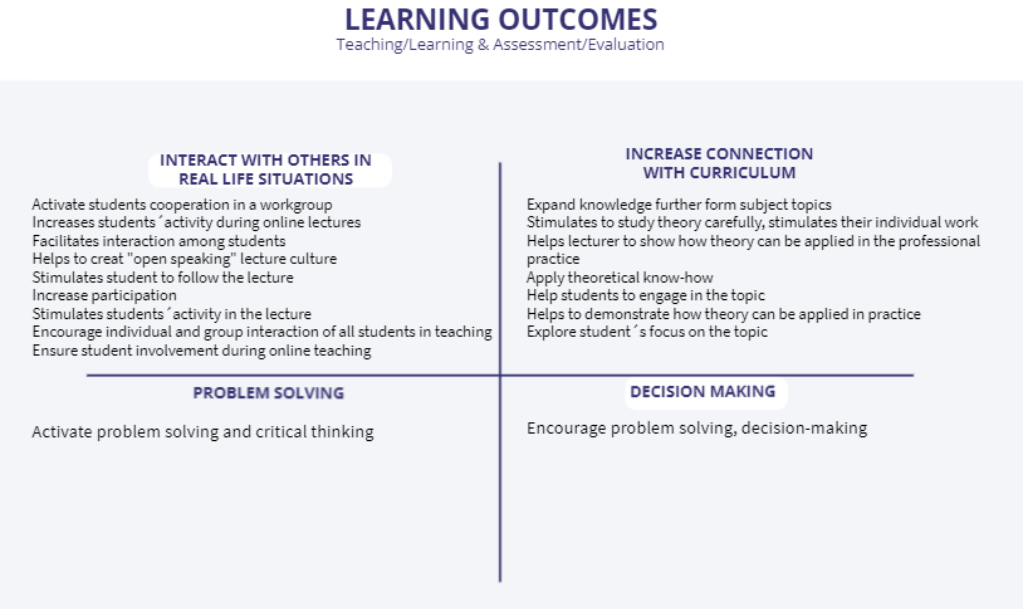

Illustration 3. Map of Learning Outcomes in Active Learning (*Teaching/Learning and Assessment/Evaluation*)

The first two have traditionally been worked on in Higher Education, especially the one referring to the connection with the curricular itineraries, and the other, related to active teaching and learning methodologies, which have been greatly enhanced in the virtual environment. The last two are beginning to emerge as formative purposes that must also be worked on in students' learning in order to make it as practical as possible (or what is known today as "learning by doing", which requires the development of these skills).

A.6. Technologies used

LMS and videoconferencing tools are the main protagonists of this section. In any case, there are two considerations. One is that only one technology is rarely used. Normally, two or more are combined. Collaborative work tools such as the Microsoft suite are often used in conjunction with communication tools such as Jamboard. In addition, new technologies are appearing strongly in the online scenario such as Virtual Reality or specific software (virtual laboratories) for simulation.

A.7. Student evaluation

Most of the best practices provided by the institutions collect the opinion of their students regarding the application of these practices, either through quality questionnaires or in-depth interviews carried out by the institutions or by the teachers themselves via small questionnaires during their classes that allow them to take the temperature of the progress of their class.

A.8. Legal considerations

The lack of specific considerations in the legal framework (either through recommendations or national or international legislation) stands out. There is no reference to the General Data Protection

Regulation (GDPR), but merely one consideration to verify the identity of the students and another regarding the protection of intellectual property.

Although the number of initiatives is representative and not exhaustive, the lack of emphasis is striking. This may well be due to the small number of cases analyzed, to the fact that the deployment of a methodology is not directly associated with its legal dimension, to the lack of specific regulations developed in each institution, or to the non-existence of a shared cultural legal framework.

A.9./A.10. Scalability and Others

All best practices are considered scalable. In terms of recommendations for scalability, rather than tips for scalability, advice is given on how to implement the initiative correctly for it to be successful, regardless of the number of students targeted.

B. ASSESSMENT AND EVALUATION

The 7 best institutional, national and international practices about this topic are summarized in Table 3.

	Oral presentation (group students)	Real Time Attendance	Feedforward	Activity Score
TEACHING MODE	Online; Hybrid	Hybrid	Hybrid	Online; Hybrid
STUDY AREA	Medicine	Social Sciences (Law-Taxes-)	Education Sciences (Psychology of Education)	
N. STUDENTS	About 90%	56	140	
N. TEACHERS	Non official data	15%	1	
LEARNING OUTCOMES	1. Allows to look more deeply into students gained knowledge, skills and competencies 2. Creates conditions for students´non formal communication	1. Register student class attendance 2. Know individual performance 3. ollow-up student evolution 4. Helps to clarify concepts	1. Students reflect about their learning process 2. Decision making on real life situations 3. Identifies different situations 4. Evaluate adavantages and disadvantages 5. Re-learn about his/her own mistakes 6. Work in teams	1. Lecturer collects information about students´activity 2. Students become more actively involved in tasks 3. Students absorb better knowledge
TECHNOLOGIES USED	LMS (CanvaVideconference (Google Meet) + MS Powerpoints) + Kahoot	Videoconference (BB Collaborate) + Socrative	LMS (Canvas; Speedgrader// Moodle; Opengrader) + MS Teams	LMS
STUDENT EVALUATION	None	Student surveys + In-depth interviews + Survey questionnaires	Student surveys + In-depth interviews + Survey questionnaires	
LEGAL CONSIDERATIONS	None	None	Copyright with videotaping	
SCALABILITY	Yes	Yes	Yes	
OTHERS	Design Thinking and Coaching	Not massive use. Be selective with topics (easy applied to real life situations)	Teachers shoud go through a short simulation pedagogy training. Simulation scripts needed before starting the exercise.	Persuade students lecturer do not know the anwser and really needs help

	Test&Quizzes	Test&Quizzes	PLE
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online
STUDY AREA	Social Sciences; Humanities; Medicine	Medicine	Health; International Business
N. STUDENTS	About 70%		1500 (25% of all students)
N. TEACHERS	Non official data		80 (30% of teachers)
LEARNING OUTCOMES	1. Excels theoretical knowledge 2. Automatically feedback for students 3. Stimulates student to listen theoretical material 4. Helps to revise and highlight 5. Easy to use and adequate for formal and non formal assessment	1. Stimulates student to take charge of his/her own learning process 2. Allows student to integrate previous knowledge 3. Allows for performance-based evaluation 4. Self-evaluation of the institutional curricular structure, the clarity of the competencies and the quality of the evidence it can demand students	1. Makes students´ learning process and outcomes visible 2. Helps and links the reflection between theory and clinical experience 3. The reflection takes a physical form in PLE
TECHNOLOGIES USED	LMS (Moodle); Kahoot! Or PPT with questions		Blog platforms (wordpress, blogger, wix, etc.) + Content creation tools (screen-cast-omatic, mindoo, prezi, goggle, infogram, canva, storybird, etc.)
STUDENT EVALUATION	Surveys		Course feedback forms
LEGAL CONSIDERATIONS	None		GDPR
SCALABILITY	Yes	Medium	Medium
OTHERS	Plan enough time for answering	Planning, design and revision of portfolios	Challenging during first year for students

Table 3. Key Performance Indicators in Assessment & Evaluation
(*Best Practices in Teaching/Learning and Assessment/Evaluation*)

All the conclusions of Section A, referring to active learning, are applicable in this section. Special mention is made of the Learning Outcomes and Scalability sections because they present some specific differences. In the point referring to legal considerations, the GDPR is mentioned. Not until a specific Evaluation phase, where the word "Personal" is specifically mentioned, is this reference explicitly made.

B.5. Learning Outcomes

If we look at the word cloud that appears with the literal descriptions of the learning outcomes, again the “Student” is at the center, but new verbs and other concepts stand out. "Stimulate" and "Help" remain as the main verbs, reinforcing the facilitator role of the teacher, and a new one appears: **"Allow",** together with **"Reflection process"** and "Knowledge", beyond the theoretical contents. It seems that, once the teacher has activated the student and has facilitated his commitment to the subject, he “transfers” the learning and reflection process to the student, which will lead the latter to acquire real knowledge and not just a sum of theoretical contents.

Image 3. Word Cloud of Learning Outcomes in Assessment & Evaluation
(*Best Practices in Teaching/Learning and Assessment/Evaluation*)

Another term that appears in this section is **"Competencies"**. The lectures given, however much they have tried to activate the student, must be translated into the acquisition of competencies, as stated in the Bologna Process.

51% percent of the learning outcomes focus on students' **evolution and performance**, on their progress; and the other 49% focus on the **reflection process** necessary for effective learning to take place, beyond students' performance.

LEARNING OUTCOMES

Teaching/Learning & Assessment/Evaluation

FOLLOW-UP STUDENT EVOLUTION

Allows for performance-based evaluation
Know individual performance
Work in teams
Lecturer collects information about students´activity
Register student class attendance
Automatically feedback for students
Stimulates student to listen theoretical material
Helps to clarify concepts
Helps to revise and highlight
Creates conditions for students´non formal communication
Makes students´ learning process and outcomes visible
Easy to use and adequate for formal and non formal assessment
Self-evaluation of the institutional curricular structure, the clarity of the competencies and the quality of the evidence it can demand students

STUDENT REFLECTION ON THEIR LEARNING PROCESS

Allows to look more deeply into students gained knowledge, skills and competencies
Re-learn about his/her own mistakes
Students absorb better knowledge
Excels theoretical knowledge
Stimulates student to take charge of his/her own learning process
Students become more actively involved in tasks
Allows student to integrate previous knowledge
Decision making on real life situations
Identifies different situations
Evaluate adavantages and disadvantages
Helps and links the reflection between theory and clinical experience
The reflection takes a physical form in PLE

Illustration 4. Map of Learning Outcomes in Assessment & Evaluation
(*Teaching/Learning and Assessment/Evaluation*)

B.9./B10. Scalability and Others

In this case, scalability becomes more complex, since it is not "only" a matter of activating and energizing, but generally requires greater dedication by the teacher.

Four issues should be considered, as recommended by experts:

- **Planning** the activities in detail.
- Careful **selection** of the topic.
- Adequate **establishment** of evaluation criteria.
- The **accompaniment** of the student's reflection process.

C. PLATFORMS

Of the 5 platforms considered as best practices in teaching/learning, there are 2 Learning Management Systems (Moodle and Blackboard), with their classic functionalities, while the other 3 represent the evaluation tool through tests (and not only evaluation but also being able to attend to the personalized performance of the students), in the first case; the second tool incorporates a practical and concrete need in disciplines that use mathematical language so that it can be deployed in the virtual scenario and, finally, a third tool seeks, among other differential issues, community learning.

	Möbius	TestPortal	Moodle	Blackboard	Engageli
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online; Classroom based	Online	Online; Classroom based
STUDY AREA	STEM	Social Sciences; Technical Sciences	Digital skills; Coding; Computer Science courses; IT; Digital Marketing and entrepreneurship	Faculty of Arts; Humanities and Culture	All
N. STUDENTS	100% engineering 1st and 2nd year students 15% of all students	16	5000	31	10000
N. TEACHERS	4%	12	124	31	
LEARNING OUTCOMES	1. Apply mathematical principles trough individual problem-solving 2. Learn to use mathematical visualisations (graphs and charts)	1. Ensure the maximun involvement of each stakeholder in the class 2. Ensure attendance 3. Compare student success at the individual and group level 4. Provide current information to students and lecturers on the achieved outcomes	1. Customize the look and feel 2. Custom build features 3. Familiar for most people 4. Easy integration with Google Meet, Google Drive, Youtube, Vimeo, Onedrive, etc.	1. All the features (test, quizzes, materials, videos, discussion boards, etc.) 2. Guidelines booklet 3. User friendly design 4. Access by app	1. Drive active learning 2. Build community 3. Data-driven insights optimize learner experiences in real-time
TECHNOLOGIES USED	Möbius software + LMS (Moodle)	LMS (Edunet) + Videoconference (Zoom) + Testing Tool (TestPortal)	Moodle	Blackboard	LMS (any, Moodle) + Engageli (easy to integrate)
STUDENT EVALUATION	Course feedback forms	Focus Groups		Interview	
LEGAL CONSIDERATIONS	GDPR	None	GDPR	Communications Act	
SCALABILITY	Medium	Yes	Yes	Yes	Difficult
OTHERS	Recommended to create a network of teachers Focus on creating few courses Purchase ready-made teaching packages trough Maple	None	None	84% of teachers use it regularly. 81% believes it is essential. 87% of students believe BB helps them in their learning. 97% use it regularly. 90% use it on computer.	Requires a specific training for teachers

Table 4. Key Performance Indicators in Platforms
(*Best Practices in Teaching/Learning and Assessment/Evaluation*)

In this section, we will zoom in on the scalability of the proposals, along with legal considerations. In this case, due to the lack of uniformity in the objectives of each platform, it does not make sense to analyse the common areas in the learning outcomes.

C.8. Legal considerations

As can be seen, the GDPR is constantly mentioned in this section, in addition to other related regulations such as the Communications Act.

It seems that educational institutions are very aware of the fact that all IT tools must be compliant with respect to the **personal data** of the stakeholders, students, teachers and staff accessing and acting within these platforms.

In one of the studies presented, it is interesting to see that 81% of teachers and 87% of students consider the use of LMS as basic for the teaching and learning process. With this attitude and beliefs, and with adequate training, learning can experience a boost.

C.9./C.10. Scalability and Others

As platforms designed for scalability, the educational institutions participating in the study require **adequate training** of teachers (and students) to be defined, for proper use and exploitation of all the possibilities of these platforms.

Generating a network of teachers in which they can learn from and share with each other is also recommended.

D. QUALITY CRITERIA

Another category that emerges naturally from the overall best practices presented has to do with the quality criteria that should govern e-learning.

Although the European Network for Quality Assurance in Higher Education (ENQA) had already established numerous indicators, guidelines and quality standards for e-learning, the so-called "Emergency Remote Teaching" has accelerated the process of re-qualification of this type of teaching modality. This has materialized in development and specification for the situation in each country, as in the case of Finland and Croatia, and some institutions have also developed certifications that accredit the training of their teachers in the use of LMS (Moodle, in this case).

Since the digital competencies of teachers are one of the focuses of the QVS Project, it seems that this issue was destined to flourish, as was the case.

	Emergency Remote Teaching	National Criteria	Accredited Qualifications Levels
TEACHING MODE	Onnline	Online; Hybrid; Classroom based	Online; Classroom based
STUDY AREA	Different colleges students		Digital skills; Coding; Computer Science courses; IT; Digital Marketing and entrepreneurship
N. STUDENTS	2685		5000
N. TEACHERS	109		124
LEARNING OUTCOMES	Online teaching methods can be implemented. Mobile teaching and inmersive (AR & VR) approaches are seen to be more useful.	Croatian and finish ministries of education have created quelity criteria for online education as well for online evaluation. The main purpose is: 1. Ensure technical infraestructure 2. Train teachers (digital competencies) 3. Ensure digital education content production 4. Define communication channels and decision making 5. Define educational scenarios and its respective processes The quality criteria touches the areas of: 1. Pedagogical solutions 2. Setting learning objectives 3. Assignments 4. Contents and materials 5. Tools 6. Interaction 7. Guidance and feedback 8. Usability and visuals 9. Support services 10. Assessment	1. Develop digital skills in teachers 2. Train and certificate level of competency 3. Foster master use of Moodle
TECHNOLOGIES USED	LMS (Moodle, Canvas, etc.) + Group Work (Teams, Google Classrooms)		LMS (Canvas; Speedgrader// Moodle; Opengrader) + MS Teams
STUDENT EVALUATION	None		
LEGAL CONSIDERATIONS	None		None
SCALABILITY			Yes
OTHERS	66.7% of teachers said they got IT skill training. 25% said the got time to learn new digital technology.		None

Table 5. Key Performance Quality Criteria
(*Best Practices in Teaching/Learning and Assessment/Evaluation*)

E. TRENDS

Finally, probably in relation to the era of creation and disruption that has been taking place since 2020, other types of initiatives that are beginning to gain strength in e-learning have been incorporated. From **Universal Design** Learning (UDL), which has been around for a long time but whose **inclusive approach** and focus on facilitating accessibility to education give it special prominence, to initiatives such as IDEO University School 42, which transcend formal education and address the specific needs of both society and individuals and pay special attention to the concept of **reskilling and upskilling**.

	Universal Design Learning	New Learning Models	Just in Time Learning
TEACHING MODE	Online; Hybrid; Classroom based	Online; Hybrid; Classroom based	Online; Hybrid
STUDY AREA		Coding (learn to learn)	Design
N. STUDENTS			
N. TEACHERS			
LEARNING OUTCOMES	1. Remove barriers to access 2. Increase the level of inclusion and participation of all users	1. 3 years of project based learning 2. Videogame-based with 21 levels 3. The student choose freely his/her path 4. Strong collaboration between students 5. Foster creativity 6. Encourage effort, self-improvement and teamwork	1. Ideas put in action 2. Effective in teaching in a way digestible and practical 3. Empower individuals, teams and organizations to become more resilient, adaptable and innovative
TECHNOLOGIES USED		Own software for levels and challenges + Slack for communication	
STUDENT EVALUATION		None	
LEGAL CONSIDERATIONS		None	
SCALABILITY	Medium		Yes
OTHERS	Planification, design and execution		Methodology See-reflect-Try-Share

Table 6. Key Performance Trends
(*Best Practices in Teaching/Learning and Assessment/Evaluation*)

Insights

For online education to become consolidated **the results demonstrated prior to this time in the** COVID-19 **pandemic must be repositioned and made tangible**. During the period of confinement, much of the online experience was applied incorrectly or inefficiently.

The existing **regulations vary widely** and with different degrees of regulation among countries. In some countries a single type of education is considered, with distinct nuances, while in others this type of education is regulated separately. Some countries are guided by recommendations and others by mandatory legislation. In some, the new reality is being regulated, and in others, continuity has been given to what has already been achieved.

Also, more practical and concrete research at the national level should be done to incorporate local contexts into the global unit.

The main **regulations come from the GDPR and the ENQA guidelines**. These are very much taken into account when analysing platforms, mainly, but also the accreditation of students' knowledge, while they do not seem to be so prevalent in the teaching activity. One of the star topics at present is student assessment (learner authentication, work authorship and examination security) and certification.

Research indicates that in any model, attention must be paid to the differences between **disciplines**.

All studies and best practices indicate the challenge and the need to address the digitizing and adapting learning material for virtual mobility studies in higher education. This means **digitizing "everything**", not just the materials, as commonly understood, and the 100% online model must be distinguished from the Hybrid one.

It is necessary to **digitize**:

- The **curriculum**, with a universal, inclusive and accessible design (**UDL**).
- The **learning outcomes**, to be solid and consistent in VLE.
- Tasks and assignments, with **formative and peer assessment** and a very deep **real life connection** and **encouragement of decision-making**.
- **Collaborative work**, in small teams, building a sense of belonging and community, with periodic group presentations, activating **problem solving**.

Active learning is what is needed and best fits the VLE for the following reasons:

- The **action verbs** found in best practices and research studies: Facilitate, Enhance, Apply and Allow.
- **Organization methods**: critical thinking development activities, practical application of knowledge, discussions, search for and analysis of new resources, creative work, interactive learning activities, group work, individual work, presentation of information.
- **Flipped classroom** is the most widely implemented methodology. Simulation pedagogy is also quite widespread.
- **Keeping the students' attention** is something that teachers/lecturers must work on, considering the socio-psychological aspects of teaching in an online environment. In this modality students tend to have more difficulty with time management, self-regulation of learning or the complexity of tasks.

- The effectiveness of the mixed mode is also influenced by the **extent to which the activity is synchronized**. The more sync it is, the better the sense of interaction. The more async, the greater the reflection process.
- **Legal considerations**: these must be considered in teaching methods, and not only in assessment or Ed-Tech tools.
- New and **disruptive** ways of **e-learning** are emerging and should be taken into account (experiential learning, just in time learning, etc.).

Assessment and evaluation might be connected and integrated; activities must be planned in detail, with a careful **selection** of the topic, adequate **establishment** of evaluation criteria and the **accompaniment** of the students' reflection process, and performance, competencies and reflection on the own learning process are requirements of the best e-learning implementation.

Educational institutions have to focus their efforts on:

- investing in ensuring that **teachers have sufficient skills and support for pedagogical planning and the use of online tools**.
- providing **special support for online learners**.
- **creating an internal and strategic culture.**
- leveraging **third-party software** strategically.
- making **use** of different **analytics** to obtain data-based information for the future use of teaching solutions. Learning analytics help identify students at risk, increase motivation (dashboards for students) and personalize learning.
- assuring the **scalability of the models** with the use of tools recommended for them, both in pedagogical and technological aspects.

6. RESULTS OF PLAGIARISM PREVENTION AND ACADEMIC ETHICS ASSURANCE IN VLE

State of the Art

Plagiarism is a complex phenomenon with a growing presence in academia (Boillos-Pereira, 2020). Writing an academic text requires the use of other people's ideas, data, etc., and the risk that these sources are not correctly referenced or that the ideas are reflected without due recognition to their authors is high.

Alarming numbers published in academic journals and the media produce **the perception that plagiarism is a widespread and urgent problem** (e.g., Briggs, 2009; Chai, 2010; Cfr. Kier, 2014).

Katavićet et al. (2016) state that the online environment creates more opportunities for academic dishonesty than the real-life environment. They warn that **the lack of a culture of academic integrity in the educational community** is a problem. The authors state that the perception of the quality of online teaching differs between teachers and students - **students are much more optimistic**. Huotari et al. (2016) find the same statement. Their study showed that Finnish **students experienced plagiarism as a minor problem**.

Kier (2014) found in his study that only a minority was able to rewrite a phrase properly in their own words. A more diverse sample of university students also had difficulty recognizing plagiarised passages from multiple-choice options. **The poor ability of students to identify plagiarised passages may suggest a poor understanding of the concept**. Students may benefit from training to improve their understanding of plagiarism.

Katavićet et al. (2016) also warn of conflicting research on whether students are more dishonest in the online environment (cf. Hudgins and Orellana, 2009 vs. Harman, Lambrinos, Buffolino, 2019 according to Katavić, Budimir Šoško, Kopecki, 2016, 3).

But, for example, in countries such as Lithuania, this is not so obvious. Šarlauskienė & Stabingis (2014) point out that research on plagiarism prevention and academic ethics in Lithuanian higher education institutions is being conducted in Lithuania (26 articles were found on this topic). However, Lithuania has not done any research and there are no published research results on the prevention of plagiarism and academic ethics in the remote, hybrid or blended learning context.

The good news is, the situation is not as bad as it may appear. A 2002 study by Grijalva, Kerkvliet, and Nowell found that **"academic dishonesty in a single online class is no more prevalent than in traditional classrooms"** (Paullet, Chawdhry, Douglas & Pinchot, 2016, pg. 46; Cf. Cornelius, 2021).

However, the actual prevalence of plagiarism is unknown, as most data come from self-reports (Dee & Jacob, 2012; Walker, 2010; Cf. Kier, 2014). If students do not fully understand what constitutes

plagiarism, the accuracy of self-reports is questionable, even if students are being truthful. Although several recent studies have examined plagiarism (Dee & Jacob, 2012; Holt, 2012; Kirsch & Bradley, 2012; Cf. Kier, 2014), more needs to be known about actual student behaviour as well as their understanding. It is also necessary to distinguish between deliberate plagiarism, carried out with full knowledge of its severity, and unconscious plagiarism, which occurs due to lack of knowledge of the use of sources (Boillos-Pereira, 2020).

Sorea et al. (2021) indicate that, with regard to the COVID-19 pandemic, the significance of internet learning has expanded. The internet is easy to use. So opportunities to copy ready-made answers increase. Plagiarism, i.e. copying texts without giving credit to the source or author, also increased. The authors assert that the materials that are available on sites offering access to such pools provide correct and complete solutions for the didactical requirements of the examination topics, and some of them are endorsed or elaborated by academic staff. They give the example of Romania. Here, either high school or graduation level topics are already known by students. There are readymade solutions available on the internet. The students reach this solution by giving a small amount of money or uploading some papers. Thus, the internet increases plagiarism.

Petrak & Bartolac (2014) point out that the issue of studying academic integrity in Croatia is relatively neglected. This makes it impossible to raise awareness of the problem or to talk openly about it. Previous research (cf. Burns et al. 2007) shows that students do not consider behaviour that contradicts academic integrity to be problematic because they do not know what is disputable in such behaviour at all. The rates vary widely in the Croatian academic space - those who cheat are perceived as successful in society (cf. Šimić Šašin, Klarin, 2008, according to the authors, 2014). A clearly defined stimulating environment with clearly prescribed rules is also important for raising awareness among students. The results showed that a large proportion of students (90%) actively participate in academic dishonesty (they practice it directly) or passively (participate in this process). The reasons for this are: **poor supervision, poor exam organization, and fear of poor grades** (cf. 2014, 109). Teachers are considered to be the most responsible persons - not setting clear rules is actually participating in unethical behavior (approving tacit abuse). The authors are embarrassed by this situation and point out that it is a behavior that is inherited from high school and brought to higher education. Too high a rate indicates the need to change the communication strategy and take responsibility for the development of academic integrity.

Ireland & Byrne (2015) state **"It appears that as educationalists, plagiarism education is not merely a matter of what students need to learn, but also what they need to unlearn and, at some level, an attitude adjustment".**

Although the offenders have become quite creative in their endeavours, **prevention remains the best defense** (Cornelius, 2021). Boillos-Pereira (2020) suggests the creation of a taxonomy of cases of unconscious plagiarism. The results obtained will be key when designing proposals for training students in academic writing.

Cornelius (2021) recommends following certain steps:

- First, start by **creating a culture of integrity**. Many institutions have students review the school's Honour Code and sign a "pledge." It follows the similar rule that locked doors are for honest people, but it also serves as a good reminder of the possible consequences, which often is enough to keep many students from breaking the rules.
- Second, **do not set rules that you have no way to enforce**, e.g. forbidding the use of books, notes, or other resources. Instead, ask questions that will not be evident in the resources, such

as items where students have to analyze, evaluate, and think critically about the content. Essay questions, case study analysis, fill in the blanks, sequencing questions, and hot spot questions are difficult to look up. It also helps to set a time limit for the test so that Googling answers becomes impossible.

- Third, make **every assessment different**. Scramble questions and create multiple versions of the same test (deep enough test banks). If everyone finishes the exam with an essay question, create three different questions and have one randomly assigned to each exam.

Katavićet et al. (2016) make several suggestions on how to prevent anti-academic behavior: a) by adopting **clear policies,** b) by strengthening **interaction**, c) by continuously **modifying the online tasks** given to students (cf. 2016, 4). A great responsibility for establishing the policy of academic integrity lies with the educational institution, and this should be built into the syllabus of each course. Online teaching has advantages, but interaction is key to ensuring collaborative learning.

According to the survey by Huorari et al. (2016), plagiarism prevention systems help teachers with their work by identifying and preventing plagiarism as well as **helping students pay attention to the skills of scientific writing**. Also, students found (Huorari et al., 2016) that the system helps them to learn the principles of scientific writing, while increasing the atmosphere of fear and control at the same time. The researchers found that there is a need to train teachers to better guide students in scientific writing. The plagiarism identification system was presented to students as a tool of supervision, causing negative emotions. **Some students were allowed to practice returning materials** to the system, which may have contributed to alleviating negative thoughts. They were also offered support materials with **examples of different writing strategies** and plagiarism types, as well as **guidance on good referencing practices**. The researchers noted that when the system is used in guidance and, for example, the teacher and the student go through the feedback report together, it has a positive impact on learning.

For Šarlauskienė & Stabingis (2014), the problem could be solved by clarifying these issues in **internal regulations**. If it is difficult to prepare clear university level regulations, it is worth contemplating preparation of regulations at faculty level, which could take into consideration the specifics of each educational itinerary and/or a particular school's curriculum:

- **Understanding** the negative impact of plagiarism on competencies and abilities to solve various problems and challenges by themselves might be an additional argument for motivating students to avoid plagiarism.
- The **atmosphere of trust** among students and teachers could enable more time and effort to be spent in solving other study quality problems.
- It is worth adopting **software tools** that can automatically compare work submitted with documents stored on open access websites or databases, assigning someone to be responsible for regularly updating a special list of website addresses and databases containing documents that students tend to plagiarise, and also establishing collaboration with other HEIs at national and international levels.
- Most students would like to have more advice and **guidance** on aspects of academic writing.
- They would also benefit by having access to **clear policies** and guidance about penalties and consequences for academic misconduct.

With regard to internal regulations, the Lithuanian university (Kaunas University of Applied Sciences) represents an example of comprehensive work in this field. The application of the provisions on academic ethics and plagiarism prevention is directly related to the development of academic integrity and information literacy in the institution. Educational provisions and measures in this area

are described in the description of the plagiarism prevention system of Kaunas University of Applied Sciences. This is encouraged in conjunction with other relevant documents:

- Description of the Plagiarism Prevention System,
- Study Procedure and
- Description of the Study Achievement Assessment Procedure.

Ireland & Byrne (2015) describe a brief effort that aimed to employ three technologies to help students learn about plagiarism and obtain insight into their perceptions of plagiarism. A student response system, a social network, and online quizzes given via a virtual learning environment were among the technologies deployed.

- **Student Response Systems** (SRS): The lecturer provides a monologue to a large group of students.
- **Social networking**: The Internet is seen as a source of information only. However, with the advent of new technologies, it is also used for social purposes. The advantages of this technology for education extend beyond their popularity amongst young people. They are, for the most part, free and easy to use. Here the author talks about the Blackboard course that was created, entitled **Academic Matters**.
- **Virtual Learning Environments (VLE)**: VLE are used as ideal experiential learning spaces because they allow students to learn collaboratively and develop interpersonal and communication skills, social learning skills, self- and group evaluation skills, reflection skills, and self-directed learning skills. It is an environment that can be accessed independently, and it also allows students to manage their own learning through decisions about pace, time, and task order. The author notes that the quiz tools within VLEs can be an effective way to provide instantaneous feedback, enabling students to develop skills, knowledge, and awareness.

As a summary of all the above, the solutions proposed by the specialized literature concerned with the problem of plagiarism can be grouped into five categories (Sorea et al., 2021): better trained students, more involved teachers, the use of anti-plagiarism software, clear anti-plagiarism policies, and ethical education of youths.

1. Better trained students:

The author asserts that, to achieve this, we need to improve the education in academic writing and plagiarism, and also that students want theoretical as well as practical knowledge about it. According to the author, we must teach our students how to write in an academic manner. By giving training about plagiarism, we can reduce plagiarism. The author talks about training, noting that, after several weeks of training, plagiarism and writing problems are cut in half.

2. More involved teachers:

The author states that it is the teachers' job to explain to students the rules of academic writing. Teachers must also tell their students how to manage pressure when writing their papers. If the discussions with students focus only on plagiarism, then their capacity to access academic writing is reduced. The author also asks how teachers can reduce the tendency of plagiarism. For this purpose, students should be guided in planning their tasks and managing their resources, and they should be encouraged to write, despite fear of accidental plagiarism. For this purpose, students can use online resources without fear but they must be supported to write their papers correctly from an academic point of view.

3. Anti-plagiarism software:

The author indicates that the Internet also provides tools for detecting unethical academic practices. We can use software from the internet which can detect plagiarism. The author says that we can use text verification software. This helps both teachers and students with plagiarism and academic writing. It is essential to use plagiarism software when checking students' papers. The internet can be used as a didactic instrument because of the accessibility of the resources it hosts. It motivates students to correctly use resources, incentivizes teachers to correctly teach the rules of academic writing, and dissuades dishonest students from trying to gain undeserved advantages.

4. Clear anti-plagiarism policies:

The author suggests that the solution to plagiarism is to focus on clarifying the anti-plagiarism rules and renouncing the tolerant attitude towards them. It is necessary to formulate and strictly respect a policy on academic integrity. There must be Codes of Honour, a moral code and an online textbook accessible on university websites. It is proposed that a handbook written by the COPE (the Committee on Publication Ethics) should be published and available online. There should be strict enforcement of penalties for plagiarism. Universities should support reporting on plagiarism, as clemency towards it is not useful and should be replaced by innovative and authentic research.

5. Ethical education of youths:

Although it is proper and appropriate to create guidelines of scholarly text composition, secondary school students must also understand that literary theft is a moral issue. They should know why literary theft consumes - and even annihilates - the ethical tissue of culture and society. The authors show that it is the vital assignment of both the educational framework and society everywhere to teach adolescents profound quality issues and morals when they are young. Since secondary school students learn from their educators, scholastic uprightness ought to be pivotal in their conduct.

The study by Sorea et al. (2021) proposes that Turnitin is the best plagiarism detection tool at the moment. But it is not the best solution against plagiarism. It is best suited for textual plagiarism. But it fails in paraphrasing, translations, expressing ideas, or presenting research results. To detect cross-language plagiarism, we should use fuzzy semantic-based model software. The internet causes plagiarism, but it also has various solutions for preventing it.

Best Practices Analysis

Ensuring academic integrity is only one of the standards for evaluating the quality of online study programmes and plagiarism prevention is just one of the tools that help achieve this.

The analysis of best practices reveals a weight of **almost 70% for prevention tools**, especially ones that verify the degree of authorship of a work, with Turnitin being the big winner over others such as PlagScan or SafeAssign. The other **30% is made up of quality policies and** guidelines that preserve academic integrity. However, this is not exactly the case, since the best practices presented on tools are always accompanied by some pedagogical use that upholds integrity, or they are completed with ethical guidelines and disciplinary regulations.

In any case, it is revealing to note the great prominence of tools over initiatives that seek to educate and raise awareness among the student population (Lithuania is committed to this issue in breadth and depth, as we can see in Image 4). There are many initiatives that have been proposed, but tools still have a very predominant weight. This can be explained by the fact that the digital environment requires from the teacher a capacity that **only technology can reach in a massive and reliable way,**

considering that the results must **always be interpreted by the teachers** and that, for this, they need scales and guides, as well as workshops to know how to use the tools appropriately.

Image 4. Map of Best Practices in Plagiarism Prevention & Ethics Assurance

It is striking that guaranteeing a student's identity only appears in 1 best practice even though it is one of the key quality issues required from international associations such as ENQA.

Perhaps the GDPR issue has something to do with this, since it is a rather restrictive regulation that, for example, was even taken to court during the confinement stage by groups of students who claimed that their right to privacy and the protection of their biometric data was violated when they were given exams conducted with proctoring. In all cases, the courts ruled in favour of the educational institutions, although on the basis of the exceptional and emergency criteria that the health situation demanded. Today this is being regulated and settled, with European Union countries reaching disparate decisions relating to the GDPR and national data protection agencies.

Another reason for this "poor" representation of proctoring may be that, if the evaluation is designed properly, teachers can get to know each of their students perfectly through training activities (synchronous and asynchronous), as well as with learning analytics.

This is sustainable for small groups of students, but for larger groups it becomes more complicated, although it would still be possible with well-designed evaluation activities.

The following analysis is simpler than in the previous section on Teaching/Learning & Assessment/Evaluation, focusing mainly on the most significant aspects of best practices, learning outcomes or features of the tools, as well as legal aspects.

It must be noted that, as was the case in the previous section, the best practices in this section are also lacking official and systematic collection of student feedback about them (how they feel, what they see useful and bolstering, what barriers or difficulties they find, etc.).

A. TOOLS

Turnitin, as shown in Table 7, is the most commonly cited tool, both in institutional and national best practices. This software is easily installed in Moodle (and other LMS) and provides reports that are easy for teachers to interpret. Some faculty training is needed and must be accompanied by scale of percentages interpretation guides.

It works not only as a plagiarism prevention tool, but also as a **training, learning and reflective tool.** The student becomes more aware and conscious about the topic of ethics in a very autonomous way. And lecturers can visualize assessment criteria and apply it in a sort of joint venture with other teachers, acting as a faculty community.

	Verification of all written study papers using literature sources and feedback with the Turnitin tool (x7)	Plagiarism Prevention System implemented and improved at KUAS using IT Tools (Moodle, Turnitin, Dspace)	Using the scale of evaluation criteria of written papers with the Turnitin tool
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online; Hybrid
STUDY AREA	All areas	All areas	All areas
N. STUDENTS	100%	100%	100%
N. TEACHERS	100%	100%	100%
LEARNING OUTCOMES	1. Uphold and level up academic integrity 2. Ensure quality assessment, campus-wide 3. Streamline manual grading processes 4. Foster original thinking 5. Consistent & fair feedback, every time	1. Uphold and level up academic integrity 2. Ensure quality assessment, campus-wide 3. Streamline manual grading processes 4. Foster original thinking 5. Consistent & fair feedback, every time	1. Provide useful feedback to the student. 2. Encourage lectures to use the institutional recommended scale of evaluation 3. Visualize assessment criteria in terms of scores. The student can easily understand the shortcomings of the paper and the evaluation criteria 4. Can be applied in both individual subjects and modules 5. Several lecturers of the module can evaluate the assessment areas assigned to them and obtain an automatically calculated assessment result
TECHNOLOGIES USED	Turnitin	LMS (Moodle, Turnitin, Dspace)	Turnitin
STUDENT EVALUATION	Non official data		
LEGAL CONSIDERATIONS	Code of Ethics (Zagreb Business School) + Evaluation internal regulations + Academic Misconduct Policies and Guidances + Student Contract (Savonia) for using learning materials National Data Protection Acts (according GDPR)	Code of Academic Ethics + Law on Cpyright and Related Rights + Guidelines for the Assessment of Compliance with Research Ethics + Ensuring Academic Ethics by Organizing Studies Remotely	Non specific regulations linked, just internal procedures
SCALABILITY	Yes Scalability in user number and prices	Yes Scalability in user number and prices	Yes Scalability in user number and prices
OTHERS	Plugin in Moodle Courses (in any LMS)	Internal procedures might be written and disseminate (Plagiarism Prevention Procedures of Final Theses, Author Declaration, Learning Agreement, Rules of Procedure, etc.)	None

	PlagScan + Ethics Guidebook	SafeAssign + Academic Discipline Policy	Proctoring
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online
STUDY AREA			All areas, mainly Medicine
N. STUDENTS	100%	100%	3000
N. TEACHERS	100%	100%	No data
LEARNING OUTCOMES	1. Uphold and level up academic integrity 2. Ensure quality assessment, campus-wide 3. Streamline manual grading processes 4. Foster original thinking 5. Consistent & fair feedback, every time	1. Uphold and level up academic integrity 2. Ensure quality assessment, campus-wide 3. Streamline manual grading processes 4. Foster original thinking 5. Consistent & fair feedback, every time	ANECA (National Spanish Agency for Assessment and academic Quality Accreditation) requirements: R1: Initial identity fraud detection (biometric analysis) R2: Identity fraud detection during the exam (biometric analysis) R3: Detection of different elements other than the ones required for the exam (books, additional screens, information sources, digital devices…) R4: Detection of additional persons in the room different from the student R5: Detection of audio /sound alterations R6: Auto-recording system and continuity of service guarantee during the exam (to avoid connectivity failures when performing the exam). R7: 360º Vision
TECHNOLOGIES USED	PlagScan	Safe Assign	Respondus Lockdown Browser
STUDENT EVALUATION			Non official data
LEGAL CONSIDERATIONS	Institutional Code of Ethics + Evaluation internal regulations + Academic Misconduct Policies and Guidances + Quality Assurance agencies for accreditation procedures	Evaluation internal regulations + Academic Misconduct Policies and Guidances	ANECA regulation (National Spanish Agency for Assessment and academic Quality Accreditation) + AEPD regulation (National Spanish Data Protection Agency) + Evaluation internal regulations
SCALABILITY	Yes	Yes Scalability in user number and prices	Yes Autonomous system without human supervision Scalability in user number and prices
OTHERS	Workshops with students for prepararion for writing final papers	Institution may have fixed rules that tell how much is a valid match percentage of the text	Proctoring Guides. information and protocols in the LMS to help teachers in the proctoring tool implementation. Covering: 1. Exam protocol with Respondus in the LMS platform (Canvas); 2. FAQs about exams with Respondus in the LMS platform (Canvas); 3. How to integrate the LockDown Browser to the navigation bar of the Subject; 4. How to design an exam with LockDown Browser; 5. How to conduct an exam in remote mode with LockDown Browser; 6. How to review exams with LockDown Browser; 7. How to conduct an exam in the LMS platform (Canvas) with Respondus.

Table 7. Key Performance Indicators in Tools
(Plagiarism Prevention & Ethics Assurance)

Legal documents and regulations (institutional, national or international) are highly relevant in this section. As was found in relation to platforms (EdTech) in the T&L&A&E section, the legal considerations are well known by educational institutions. Some of the most cited ones are:

- Code of Ethics
- Internal Evaluation Policy
- Misconduct Policies
- Guidance & Procedures
- Student Contracts
- Learning Agreements
- Law on Copyright and Related Rights

Finally, in some cases it is indicated that two anti-plagiarism tools are used in the same institution. It is possible that one is made available to students for their own training and improvement of their academic writing (perhaps the cheapest software in terms of licensing); while the other one, which is more comprehensive and easier for professors to interpret (and probably more expensive), is provided to faculty.

B. POLICIES

As shown in Table 8, national policies are zooming in on this issue, given that it is critical for universities and educational institutions to accredit the quality of their certifications, and cheating and similar practices cannot be afforded.

Lithuania and Australia have best practices in place that could be shared with the Higher Education community.[6]

	Development of academic integrity and information literacy	National Regulation and Evaluation of Higher Education Activities (The Center for Quality Assessment in Higher Education)	National Aspect of Academic Ethics and Plagiarism Prevention (Lithuania)
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online; Hybrid
STUDY AREA	All areas	All areas	All areas
RESULTS	1. Academic and information literacy, plagiarism prevention trainings and seminars are held in the traditional contact way or interactively via Google Meet or Zoom 2. Ongoing consultations are offered 3. Information tools and methodological publications used 4. Discussions are being conducted by the academic community to develop intolerance of academic dishonesty, and the results of plagiarism prevention monitoring research are being publicized. All members of the academic community are encouraged to speak openly and publicly about violations of academic ethics.	Promote quality in higher education	1. Interest in the tendencies of acaddemic ethics and procedures 2. Provides information, analytical reviews, consultations, recommenda-tions, guidelines 3. Organizes seminars 4. Implement projects

[6] It is necessary to consider that these are best practices in the scope of the analysis rather than scientific research, which would need further documents and experiences to reach general conclusions. These are 2 countries that can act as a reference to guide the initiatives of other Higher Education Institutions.

	Education of Academic Ethics and Plagiarism Prevention (Lithuanian Research)	Dissemination of publishing ethics (The Association of Lithuanian Serials)	Academic Integrity Best Practice Principles
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online; Hybrid
STUDY AREA	All areas	All areas	All areas
RESULTS	1. Aims to develop the understanding and academic literacy of Lithuanian academic community in the areas of academic integrity, intellectual property, copyright, plagiarism prevention, proper use of scientific resources, academic publishing, open access and other related areas 2. Develop this literacy of the faculty community by participating in projects, preparing and providing learning materials, trainings and seminars 3. Opencourses on training modules for independent learning in a virtual environment	1. Strengthen the ethical principles of publishing scientific journals 2. Consult the members of the association and acquaint them with the international standards of publishing scientific journals 3. Participate in their development	The primary focus of these Principles is the needs of and requirements for coursework students in Australian universities. The Principles also cover, to some extent, postgraduate research students, though the latter are also subject to the Australian Code for Responsible Conduct of Research. Students in Australian universities come from a diverse range of backgrounds with varying levels of academic preparedness. These Principles seek to provide a baseline from which the academic integrity of all students can be encouraged, supported and enhanced. The Principles draw upon the findings and recommendations from a number of Office for Learning and Teaching projects on academic integrity and complement existing legal requirements through outlining commonly identified good practices for students, staff and university management.

Table 8. Key Performance Indicators in Policies
(Plagiarism Prevention & Ethics Assurance)

Insights

The mere fact that this area has been incorporated with its own identity within the present Erasmus+ KA2 project already reveals the relevance and **impact** it is having at European, and also worldwide, level. Digital platforms, and the exponential growth that has been prompted by COVID-19 have accentuated this issue.

The scientific literature reveals certain studies that identify bad practices in this regard, while others that indicate that they are no worse in the online scenario than in face-to-face situations, and still others show that it is not always bad faith but ignorance and a **lack of academic culture** at fault

In general, there is a poor understanding of the concept.

Academic institutions have **invested heavily in tools,** with Turnitin being considered the one of highest quality, although it is the most expensive on the market. In addition to the use of this type of tools, ethical codes and internal regulations have been developed to penalise inappropriate use of the contents in the evaluation. The main documents that institutions tend to have and disseminate are:

- Code of Ethics
- Internal Evaluation Policy
- Misconduct Policies
- Guidance & Procedures

- Student Contracts
- Learning Agreements

The latter two, **Student Contracts and Learning Agreements,** are initiatives by Savonia University of Applied Sciences and Kaunas University of Applied Sciences that must be shared as "innovative" (in the sense of adding a different value) best practices in the context of this project.

Proctoring is not as widespread as the use of tools like Turnitin but perhaps it should be considered because it is no longer merely a matter of copying work, but the trend is that some students order and pay for original work.

In addition to disciplinary tools and policies, academic organizations should put greater effort into **developing an academic ethics culture.** This can be done through (among many other possible initiatives):

- Student courses such as Academic Matters.
- Workshops for students.
- Access to the tool for students to check and adjust their work (leading to implicit learning). A cheaper tool can be made available to them, as some institutions do, while a higher quality one is offered to the faculty.
- Teacher training: both in terms of plagiarism control and the design of training activities in order to be able to verify the identity of each student based on his or her digital footprint and behaviour. Teachers should know how to identify their students well.
- Development of guidelines and scales that help teachers and students to share and accept the scores achieved.

7. RESULTS OF VLE TOOLS TO PROMOTE STUDENT SUPPORT AND MOTIVATION

State of the Art

It could be asserted that the digital age has introduced many new foundations and principles into education. The reality, however, is different. Pedagogical principles that have supported classical education for decades, and even centuries, are still present in the digital age. That is, they are not new, even though they may appear to be so. They were established in the past, are solid and have, for a long time, helped to provide quality to different educational proposals (García-Aretio, 2016).

This author indicates that individualization and socialization must be guiding principles in any educational proposal, at all levels of the system and within any formative modality.

Lakkala & Lipponen (2004) state that the challenges of e-learning have begun to be recognized and identified. Merely distributing learning materials for students to read is not quality teaching, but rather e-learning environments should be built to support participation in shared learning. A high quality online course is clearly scheduled and proceeds in a logical order. Courses focus on making high quality learning materials and consider the involvement of students in teacher-led learning discussions or workshops, for example.

Studies related to e-learning guidance have been based on **interaction**. Research has focused on online interaction and how it can be supported and activated. It is noteworthy that in e-learning, interaction is only one of numerous elements.

Other elements of e-learning that authors have researched include the **structure and progress** of the course, the tools used, the guidance given by the teacher in different situations and the cooperation of the students. The pedagogical approach creates structures for implementing e-learning and **supports teaching methods and working methods.** The structures of the learning environment must be built on the basis of learning objectives, in which case the starting point of teaching is high quality learning and teaching methods that develop the student's thinking, rather than what technology can achieve.

In addition to technological solutions, a successful online course also has a **social infrastructure to support student activities** and interaction through a model of exploratory learning. Social infrastructure defines the learning culture and practices of the course. Epistemological infrastructure defines the learning culture and how new knowledge is used. Cognitive infrastructure defines what kind of metacognitive skills (knowledge building) students need to improve through studying to reach the learning goals (Lakkala & Lipponen, 2004).

As a reaction to the COVID-19 emergency, numerous nations throughout the world shut schools, universities and colleges to block the spread of infection and went to online teaching. As indicated by information from UNESCO, the peak in school closures was registered toward the start of April 2020,

when around 1.6 billion students were affected across 194 nations, representing over 90% of absolute selected students (OECD, 2020). Compared with the option of no tutoring, VLE tutoring has been a significant instrument for supporting the advancement of abilities during school closures. That being said, there are still worries that VLE learning might have been a problematic substitute for vis-à-vis guidance, particularly in light of the overall lack of a general framework (equipment and programming) and the absence of satisfactory readiness among educators and secondary school students to cope with the novel demands that internet learning presents.

The study says that students' connection to the internet was the first problem, and the second problem was that certain students were not able to receive a sufficient number of hours of instruction. The OECD study (2020) says that a positive learning attitude can improve performance at school and help students keep their motivation when schools are closed. Developing strong attitudes towards learning can help students overcome some of the potential challenges posed by online learning such as remaining focused during online classes or maintaining sufficient motivation. They are also crucial in supporting students in using information and communications technology effectively and making the most of new technologies for learning. Positive attitudes towards learning, self-regulation, and **intrinsic motivation to learn** play an important role in improving performance at school in general, but perhaps this is especially important should online learning continue.

In their study, Nevenka & Borna (2021) found that as many as 85% of students rated the transformation to e-learning during the COVID-19 learning period as very poor. The reasons were as follows: poor communication between teachers and students, **students' workload, unclear expectations, complex working conditions** (cf. 2021, 2833). It was also confirmed that there is a difference between students and teachers in the use of online platforms for monitoring teaching, which negatively affects the satisfaction of the student population (89%). The conclusion states that all these parameters must be taken into account when preparing teaching content for teaching in an online environment.

Virtual environments make **interaction** (in cooperative based learning, collaborative work and among student peers) more **immediate, easy and frequent.** The socialization that the network promotes, as we find in social networks, positions this principle as a fundamental support mechanism in distance education. If the subject matter is sometimes boring, video games, gamification, can be used to make the scope of a given application more attractive by taking advantage of the human predisposition to participate in **competitive and playful activities.** With these games it is easier to guide certain interests, as they are more relaxed than other activities and also represent a first-rate motivational element. If the educational purposes are well adjusted, they can provide interesting learning outcomes (García-Aretio, 2016).

Hamill (2020) says that in Ireland major and significant changes have occurred in teaching and learning practices during the COVID-19 pandemic. The senior administration provides modules and materials to staff as they adjust their current assets for a web-based learning mode. As a result, academic faculty are prepared to adapt their classes for use in a blended or hybrid learning model, with some students attending class within the college while others simultaneously attend remotely online.

Specifically, the development of web-based or **virtual community building** (VCoPs) plays a huge and important role in improving assistance during the current COVID-19 pandemic. The author suggests various components:

1. **Discussion forums:**

   The Blackboard discussion forum successfully engages participants through discussion threads to develop a supportive CoP, enabling participants to share frustrations and exchange good practices amongst peers. It also provides round-the-clock access, affording staff the freedom to engage in discussions.

2. **Lecture Capture:**

   Here instructors can record teaching and learning strategies. Students can learn by listening to a small chunk of recordings. It helps them to engage with the curriculum.

3. **Webinars:**

   Webinars can be used as synchronous learning methods for remote learners. The AP team launched them in June 2020. Here they provided a series of embedded webinar workshops used for active learning, live polling, discussion and monitoring student performance. The author says that technical and pedagogical challenges do exist when implementing this approach overall, in relation to broadband connectivity and provision of a more inclusive education for those students with disabilities. But through the webinar approaches, they were able to clarify and amplify these challenges with participants.

Gamification procedures have been investigated to change learning and instructing in a VLE to make it seriously captivating and engaging for students to utilize (Nadeem, 2020). Instructors are utilizing more innovation-based techniques, figuring out how to build student commitment and inspiration.

There is an **interest in planning new instruction frameworks** that help to learn and inform new measures. Virtual learning is becoming well known among students and scholars especially in advanced education foundations. It tends to be viewed as an advancement in training when contrasted with face-to-face learning. VLEs have opened up new sentiments and thoughts on giving a vivid learning experience. Common strategies for cooperation in a Virtual Learning Environment include the utilization of the internet, email, or video conferencing. Numerous studies show how intelligent commitment is best upheld by games in a virtual learning climate.

Nadeem (2020) has found that opportunities for VLEs to help with learning have been demonstrated in the long term and are becoming significant. In the UK, more than 95% of advanced education establishments utilize VLEs. Instructors are executing better approaches to advance learning conditions that help cooperation, inspiration, and commitment.

The genuine strength of gamification is its **ideal capacity to change human conduct**. Gamification is established in hypotheses associated with human brain science identified with behaviourism. A conduct change should be possible when an upgrade is available.

Gamification in instruction is yet another idea, and there is extremely little research on it, as Nadeem (2020) points out. It is as yet in a testing stage. Gamification is the idea of executing gaming components in a non-gaming climate. The author describes various elements & features of gamification:

- **Avatars**

  Avatars represent the user's identity in the virtual environment. They may be a copy of human or even non-human identities, where a user can project their aspirations and desires onto a virtual character. A creator can give its own voice to avatars.

- **Quests (challenges)**

  The quest means engaging with a story. Quests give a purpose to the gamified VLE and help to encourage critical thinking skills in students. Quests in VLE can be used to collaborate, to encourage teamwork and collaboration between peers. Users can receive rewards, all of which can be used to boost engagement and motivation.

- **Badges & Rewards**

  Users can earn badges and rewards in a VLE to indicate students' performance. By getting the rewards and badges, students can improve their self-confidence and reputation. The badges and rewards show student progress and achievements.

And Nadeem (2020) also suggests some examples of Design Tools:

- **Kahoot**

  This is a free online tool that is used to create active participation in the classroom. Kahoot! (https://kahoot.com/) is a free platform that allows academics to create quizzes, questionnaires and discussion while receiving feedback from students in real time.

- **Moodle**

  This is a platform that is designed to facilitate academics the ability to accommodate students' participation. It provides gamified learning by giving access to course materials, online discussions and collecting assignments. It also uses game elements such as badges, leader boards, chat rooms and discussion forums.

- **Mentimeter**

  This is an interactive web tool that facilitates interactive learning. It has more than 30 million users in over 120 countries. It is used for designing interactive and engaging presentations, surveys, quizzes, and word clouds. It can give instant feedback to users. The users are kept anonymous on the system, which encourages active participation and high motivation, thus helping shy students to participate more in class.

An **enhanced learning experience**, instant feedback and an improved learning environment are some benefits of gamification in VLE (Nadeem, 2020).

One of the most important papers of the last two years on virtual learning in Lithuania is the study by Professor Aleksandras Targamadze, who works at Kaunas University of Technology, "Virtual Learning. Theory and Practice" (Kaunas, 2020: ISBN 978-609-454-491-1).

In the study, the author presents the essence, goals, methods, techniques, technological solutions and personal experience of virtual learning. The author bases his study on a potential forecast for the future of virtual learning. According to him, the current psychosocial problems of virtual learning (lack of motivation, the need for live interaction, insufficient variety of methods, non-modern presentation of learning materials) will be transformed in the near future into completely different forms of learner engagement. Research into the possibilities of using **holographic technologies** for visualisation is currently accelerating. For example, Microsoft's projected operating system (**Windows Holographic**) envisages a connection between virtual and real spaces through holographs, which would essentially

amount to the concept of augmented reality. Spatial 3D images and real images of people will allow communication problems to be solved, creating the impression of real communication.

According to Targamadzė (2020), by 2025 the software market will be dominated by products that allow the user to use the **most interactive and playful content**. The phenomenon of the "gamer" is a symbol of the modern technological age. The education sector is losing out in this competitive battle, but will have to change its approach to meet the changing needs of consumers. Inertia and ignorance of the possibilities within the education sector create a vacuum of backwardness that needs to be changed as soon as possible with the realisation that the current education system and the next generations will simply no longer talk to each other, not only in virtual learning, but also in real life contact.

The author points out that in order for virtual learning to effectively reach the younger generation of learners, it is necessary to talk to them in ways that they can relate to, rather than merely placing boring and abundant theoretical material in virtual learning environments. **The social networking model of communication, the maximum gamification of learning material, the use of video game formats, interactivity and the use of applications motivate and stimulate learning users**.

An active and interactive virtual lecture is shown in Figure 2 (Targamadzė, 2020).

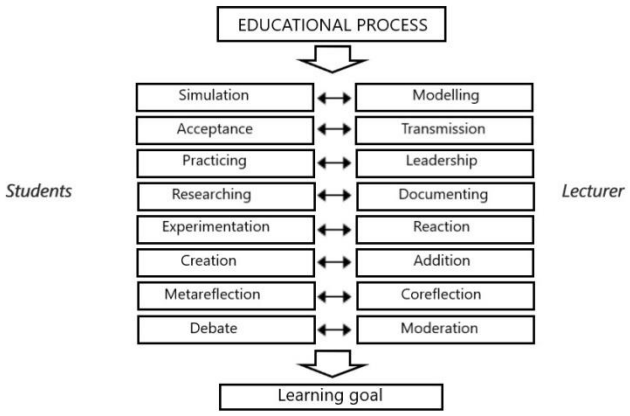

Figure 2. An active and interactive virtual lecture.

The author also points out that **the greatest motivator and activator in virtual learning is the teacher.** If the person who teaches virtual learning is disliked, imposed and perceived as unprogressive, it is hard to believe that students listening to such person's lectures will be properly motivated to learn. Today's methodologies often use the 'flipped classroom' approach, the main aim of which is to create space for learners to achieve results for themselves, but in the context of virtual learning this approach should also be understood as a kind of transformation of the teacher into the role of his/her students.

The COVID-19 pandemic has expanded the notion of virtual learning, but it has also created a deeply flawed and demotivating aspect of virtual learning, in which the lecturer sees his/her work in the virtual environment as a monologue, and the students, in turn, see their work as passive listening to this monologue (Targamadzė, 2020).

Darby (2021) indicates that many students and faculty today are relatively inexperienced in online learning environments, especially considering that we've taught and learned in physical classrooms for years. And yet the demand for online classes continues to grow. Students who would otherwise be unable to attend college due to work and family obligations now have a way to pursue credentials and improve their lives.

The flexibility afforded by online classes makes it easier for more people to earn a higher education than if the only option were to take classes on campus. We can improve our online teaching so that students have a rich and rewarding learning experience. The approach that James M. Lang outlined in Small Teaching Online: Applying Learning Science in Online Classes (2019; Cf. Darby, 2019), which presents minor modifications to our classes to produce major learning gains, explores **eight practical, evidence-based strategies** that lecturers can apply in online classes—approaches that are neither overwhelming nor time-consuming, and techniques that won't place an undue burden in terms of time. These strategies are organized according to **four guiding principles** that are especially relevant for online classes:

- Tomorrow
- Next week
- Next month
- Next year

Consider making just one change to the way you set up or teach your online course.

Online courses have higher attrition rates than in-person classes. For students who are still developing time management and organization skills, the flexibility afforded by this format provides too much leeway. Help students develop these attributes and make steady progress in the courses with activities such as these proposed by Darby (2021):

1. **Assign a goals contract.** Have students sign a syllabus agreement that includes statements indicating that they understand course policies, their responsibilities as learners, and so on. Add a second component to prompt them to think through important related issues. Ask students to identify two goals for their learning in class, one action they will take to help them reach their goals (intentionally schedule time for coursework, for example), one challenge they anticipate, and one strategy they might use if that challenge arises.
2. **Nudge selected students.** On day three of your accelerated online course, email each student who has not yet logged into class, encouraging them to do so. Alternatively, after the first exam, email each student who earned less than 70 percent, recommending online tutoring or similar support. Be strategic about your communication; give a little extra attention to those students who could use some additional help.
3. **Help students make connections.** As an expert in your discipline, you know exactly how concepts relate to and build on one another. Your students don't have that expertise. We can help them learn new material more effectively by helping them connect and organize new information for themselves.

4. **Activate prior knowledge.** When we relate new information to what we already know, we retain it more deeply and can recall it more easily than when we learn new information with no context to guide our understanding.
5. **Create module pre-tests** that ask students what they already know about that module's topic or help them think about their previous experience with these ideas. Pre-tests can be upgraded; set them as conditional release (most learning management systems allow you to do this) so that submitting the completed questionnaire unlocks the rest of the module's content.
6. **Provide the framework.** Give students a skeletal outline or partial slides to take notes on while watching a mini-lecture video or doing the reading. Have them upload their document or a photo of it for points. Helping students organize new ideas helps novice learners retain information and begin to make connections between concepts.
7. **Making small adjustments** such as these can bring about big improvements in student engagement and learning in online courses.

The author suggests not to try all of these at once; rather, pick one, try it, refine it, then add another.

Germain & Kerr (2008) noticed many instructors were becoming aware of the importance of addressing the notions of **multiculturalism and interculturalism** in the design of online courses and selection of technological tools for developing these courses and training programs (Dunn & Marinetti, 2002; McGee, 2002; Moore, Shattuck & Al-Harthi, 2006; Cf. Germain & Kerr 2008). Kim and Bonk (2002) observed a difference in the communicational behaviours of Western and Asian students, with the former being more direct, explicit and expressive. The authors also remarked that these differences in communication styles had a significant impact on collaboration behaviours during online learning activities.

An examination of Kramsch & Thorne's study (2001; Cf. Germain & Kerr, 2008) indicates that students would have been better prepared to deal with 'global communicative practices' if they had received training in intercultural communication skills, allowing them to critically analyse and appropriately interpret the differences in cultural communication genres they were faced with during their online discussions.

This raises the issue that participants of an online multicultural community have to develop - more than just linguistic proficiency and accuracy to transmit one's culture - strong intercultural communicative skills to negotiate an emerging cyberculture. To paraphrase Byram (2000, Cf. Germain & Kerr, 2008), developing intercultural competence would mean developing an attitude of curiosity and openness, acquiring knowledge of societal and individual interaction, and developing skills to critically interpret new cultural knowledge.

Best Practices Analysis

Getting all your students **focused and engaged** during classes is a huge challenge nowadays. Attention span is decreasing, so we have to come up with new activity ideas and solutions to make the learning process easy and fast to adapt to. In a world of distractions and interruptions, the most experienced and accomplished e-learning developers know this. Storytelling savvy, blended with instructional design and deployment know-how, are the proverbial keys to success.

Expertly crafted and custom e-learning experiences paired with engaging, interactive content are the hallmarks of the finest online courses. There is simply no substitute when it comes to creating custom instructional content or training with the highest degree of learning, retention, and application potential in a digital age.

It is possible to produce high calibre virtual learning experiences and successful online programmes with excellent student support and motivation (SSM).

Escape Room (as a method) and **Interactive tools** are the "flipped classroom" and "Turnitin" of this section, as appears in Tables 9 & 10.

- Student Support represents about 28% of best practices including:
    - Merlin platform
    - iSpring Suite
    - Level Up!
    - Moodle Learning Analytics
- Student Motivation represents about 85%[7]:
- Explain everything
- The dilemma of promotion or retention
- Escape room (x2)
- Level Up!
- Interactive presentation of educational content
- Interactive tools (x3)
- Yearbook badges

Despite this differentiation suggested in the pre-requisites of the study, findings show more interest from educational team members than mere (albeit highly important) student support. Perhaps it is not considered less important, but rather very important in the motivational category. For this reason, another two categories can be found:

- One referring to "methods" to motivate students.

[7] Some best practices are included in both the motivational and student support categories. For this reason the sum is more than 100%.

- The other one describes the tools used to dynamize, energize, activate and enhance learners.

Again, **no systems or methods are provided for official and systematic collection of student feedback**, which is especially relevant in this section referring specifically to student motivation. How can we know about their motivation, which is a very subjective, internal and personal question, if we do not ask students? How are faculty and Higher Education Institutions going to be able to help, enhance and accompany learning if we do not listen to them?

As in the other two sections, **the number of students and teachers** are not properly measured (sometimes institutions indicate numbers, while others give percentages, and usually they are referred to that particular initiative instead of measuring the best practice across the institution as a whole). Good practices in learning analytics to improve teaching and learning are included but, nevertheless, it seems that there is no data collected at the institutional level to improve overall educational practice, to learn as a whole system.

Only one best practice in the "Methods" section takes this into account. In Francisco de Vitoria University, it covers the full scope of listening through on-class surveys, student surveys and in-depth interviews conducted and analysed by its Active Listening Centre (Learnability), using a Transformational Listening methodology.

A. METHODS

Again, as in the teaching/learning section, the **verbs "Increase", "Enhance", "Help" and "Encourage"** appear (Table 9). All the assertions in that section are applicable to this one. In fact, there is a mixture of some initiatives here, like the example of the Escape Room, which two different institutions placed in two different areas. One, in TLAE, and the other in this SSM section.

As was already the case with Active Learning, there is hardly any reference, except in one case, to **legal aspects.** It seems that the clear awareness of the application of legal issues falls more on the platforms than on the methodologies (or even the interactive tools).

	Explain everything	The Dilemma of Promotion or Retention (novel multimedia case study)	Escape room (x2)
TEACHING MODE	Online; Hybrid	Online; Hybrid	Online; Hybrid
STUDY AREA	All areas	Education	Biomedicine; Biotechnology; Pharmacy
N. STUDENTS			149
N. TEACHERS			149
LEARNING OUTCOMES	1. Sharing experiences. Students love "going through the presentation with them", compared to making verbal comments based on a slide. The Explain Everything Whiteboard allows to freely draw diagrams on the screen to explain difficult concepts. It resembles a 1:1 session with a student in the office. Plus with the built-in web browser, it allows to have everything in one area versus switching between windows when there is a need to reference other applications. 2. Explain Everything is a game changer in terms of visual thinking	1. Users are actively engaged in the case throughout: selecting a role, sorting and explaining and revisiting their ethical values, choosing pathways for further inquiry, reflecting on the diverse views and information they encounter, and making interim and final decisions about Ada's future. 2. The resource can be used in a fully online or blended format, and can be completed either asynchronously or synchronously, individually or in groups, and either as a stand-alone learning experience or as a lead-in to group discussion. 3. The case is driven by a rich visual and audio narrative that incorporates images, videos, text, graphics, and audio stories to immerse users in authentic settings and choices. 4. It is fully accessible and provides multiple supports, including a FAQ on the US education system, to support a global user base. 5. The program is designed to reflect real-world situations faced by educational professionals, while also presenting concepts, data, and skills that are central to ethical decision-making in a wide array of educational contexts.	1. Helps to develop group work competencies 2. Self-evaluation purposes. Evaluation of previous knowledge or partial evaluation 3. Encourages students' motivation to study theoretical material 4. Increases the feeling of being a part of community
TECHNOLOGIES USED	Explain Everything is a whiteboard and a collaborative platform for engaging online and offline teaching. "Teach the way you like, anytime, anywhere"	Illumina	Many (Genially for creating interactive and animated digital content)
STUDENT EVALUATION			Student surveys + In-depth interviews + Survey questionnaires
LEGAL CONSIDERATIONS			Non specific
SCALABILITY	Medium Scalability in user number and prices	Medium Scalability in user number and prices	Medium
OTHERS	None	None	Basic Knowledge of Genially and motivational videos editing

	Level Up!	Moodle Learning Analytics
TEACHING MODE	Online; Hybrid	Online
STUDY AREA	Humanities; Basics of Linguistics	All areas
N. STUDENTS	60%	50%
N. TEACHERS	Non official data	50%
LEARNING OUTCOMES	1. To encourage students to achieve higher learning outcomes 2. To increase students' motivation to learn independently and challenge themselves to achieve higher level 3. To link learning activities with their gamification and engaging elements	1. Provides teachers instant information on progress of student based on their VLE footprints (assignments, writing text, engaging in forums, opening materials, etc.) 2. Helps teachers to modify their courses based on the analytics, so that the course is engaging for students 3. Helps to spot students who face issues along the course 4. Enables teacher to provide extra support those students 5. Students behaviour can be compared
TECHNOLOGIES USED	LevelUp Plugin on LMS Moodle	LMS (Moodle)
STUDENT EVALUATION	No formal data	LevelUp Plugin on LMS Moodle
LEGAL CONSIDERATIONS	Non specific	GDPR
SCALABILITY	Yes	Yes
OTHERS	Basic knowledge of LMS Moodle	In case artificial intelligence is utilized, the learning environment can provide student with assignments that are of his/her leve based on the analytics

Table 9. Key Performance Indicators in Methods (Student Support & Motivation)

What appears as a valuable asset is the issue of the "learning narrative", deployed through rich visual and audio narratives that incorporate images, videos, text, graphics, and audio stories to immerse users in authentic settings and choices. Students want to **share experiences.**

A. INTERACTIVE TOOLS

Platforms such as the LMS (or others that complement it like the Merlin Platform or iSpring Suite – an extension for PowerPoint presentations-) or video conferencing tools also appear here. For this reason, this block is quite similar to the section on TLAE learning in the type of data it yields.

The **large number and diversity of tools** makes it difficult to categorize them beyond their common note of interactivity. According to the institutions that have proposed them, a certain prior preparation is necessary for their proper use, not only for digital and technological competence, but also to know how to integrate them properly into the digital pedagogy of the course. What is key here is the word (and meaning of) **Interaction**.

	Merlin platform	iSpring suite	Content
TEACHING MODE	Online	Online; Hybrid	Online; Hybrid
STUDY AREA	All areas	All areas	Humanities; Basics of Linguistics
N. STUDENTS	100%		60
N. TEACHERS	100%		No data
LEARNING OUTCOMES	Support to users is organized through: 1. Helpdesk (mail, phone) 2. Personal consultations 3. Manuals for teachers and students for the e-learning platform 4. Two day classroom interactive courses: "The basics of Merlin" and "Advanced work in Merlin"	1. To present educational material to students in a modern and visual way 2. To increase students' motivation to learn independently 3. To engage students in a variety of interactive forms of learning	1. To present educational material to students in a modern and visual way 2. To increase students' motivation to learn independently 3. To engage students in a variety of interactive forms of learning
TECHNOLOGIES USED	Merlin e-learning platform	iSpring suite (plugin to the Powerpoint software)	H5P
STUDENT EVALUATION			Based on students' feedback, VLE Moodle is a fairly user-friendly and easy-to-understand system, but the content provided by lecturers often lacks visual and inclusive aspects. The system is becoming dull for today's youth. Interactive content elements strongly enrich the classic Moodle environment and create an inclusive space for learners. Interactive content elements make the learning material more playful and thus 'tame' the modern young person, for whom the presentation is often a key motivator.
LEGAL CONSIDERATIONS			None
SCALABILITY	Yes	Medium Scalability in user number and prices	Yes
OTHERS	None	Features of iSpring Suite 1. Ability to turn your presentation into a mobile online course 2. Possibility of video lectures and easy coordination with slides 3. Ability to create complete and interactive tests with a flexible scoring systemAbility to record the screen 4. Ability to realistically simulate conversational dialogues 5. Enjoy a rich library of ready-made characters and objects 6. Ability to publish iSpring Suite content to other popular VLE	Training courses for faculty

	Interactive tools (x4)	Yearbook Badges
TEACHING MODE	Online; Hybrid	Online
STUDY AREA	All areas	Digital area (Internet Business; Data Management; Marketing Automation)
N. STUDENTS		200
N. TEACHERS		
LEARNING OUTCOMES	1. Regarding the learning results in terms of learning competencies, the students develop a greater degree of autonomy in knowledge adquisition and a practical application of the knowledge to concrete situations. 2. The students also gain a better understanding of the learning objectives. With this methodology, the adquisition of higher cognitive level learning results is facilitated (analysis, practical application, creation,...) during the activities performed in class, thanks to the previous preparation in the student autonomous work phase. 3. Enhance committment of the student with their own learning process 4. Build a sense of belonging, of community (interaction with the lecturer and with other colleagues)	1. Every individual student online Yearbook became a real access point for networking between students 2. The winners of the different "hall of fame" categories shared in social networks their prizes, supporting their professional profiles
TECHNOLOGIES USED	Videoconferencing tools (Zoom, Google Meet) + Active tools (Mentimeter, Nearpod, Miro, Mindmesiter, Socrative, Eduflow, Genially, Canva, Adobe Premier) + Ethics Assurance and reflective tools (Turnitin)	Genially
STUDENT EVALUATION	No formal data	
LEGAL CONSIDERATIONS		Non specific
SCALABILITY	Yes	Medium
OTHERS	None	Basic Knowledge of Genially The digital format allowed for relatively low production costs and this makes easy to maintain the Yearbooks for a long period of time

Table 10. Key Performance Indicators in Interactive Tools (Student Support & Motivation)

Insights

In this section it was significant that, although the call was to identify tools for student support and motivation, the institutions that participated in the study went directly to identifying more methods than tools (despite each method having its own associated tool).

This is already **indicative of a maturity in e-learning**, at least for the 5 participating institutions. What is important is not the tool, which could be devoid of any pedagogical meaning if used in any other way, but why and for what purpose it is used.

This is the section that most clearly shows that **everything is integrated**, as opposed to a more additive concept, where e-learning was able to grow in its beginnings. Online and hybrid learning are not recent realities but consolidated. However, much needs to be reconsidered because of its rapid growth in the last two years due to the COVID-19 pandemic, in which there has been little time to prepare teachers and students in this process of re-education in their way of teaching and learning.

This section, even more than that of plagiarism prevention and ethics assurance, is very much interconnected with the section on TLAE, as indicated by the institutions. It is easy to see this in the typology of the responses and the data provided.

Perhaps the student support aspect may have a more institutional derivative (both in terms of technology and social/psycho-educational infrastructure), but the motivation aspect cannot be conceived as disconnected from teaching/learning and assessment.

Gamification procedures have the ideal capacity to change human conduct. This leads to an increased interest in planning new instruction frameworks. To boost internal motivation, competitive and playful activities must be designed. And what appears as a valuable asset is the issue of the "learning narrative", deployed through rich visual and audio narratives that incorporate images, videos, text, graphics, and audio stories to immerse users in authentic settings and choices. Students want to share experiences ("stories", to coin the term used on "Instagram"). Despite this, we must be careful when using many tools "all the time" ("Kahoot!´s culture"). It is important to balance the number of tools used and link them to pedagogical purposes.

We can find some key issues to apply:

- The structure and progress of the course (by weeks, months, etc.).
- Individual and social aspects must be considered in the design of formative activities.
- Interaction must be easy and frequent.
- Student workload.
- Multiculturalism and interculturalism in the design of online courses (this is also inclusive design).
- Virtual community building.

The future of education is starting to point to new realities such as holographic technology or to the Metaverse[8] and its immersive intent of the digital experience.

Even with all the tools that can enhance learning, it should not be forgotten that **the greatest motivator and activator is and will be the teacher.** And that the future educational relationship in online learning **cannot be designed without** the feedback of its main protagonist: **the learner.**

8 EdX is an Education Partner for Meta, formerly the Facebook company Immersive Learning Investment. Enabling future development of the Metaverse through Spark AR curriculum (28th October 2021). https://press.edx.org/edx-is-an-education-partner-for-facebooks-immersive-learning-investment

8. CONCLUSIONS AND RECOMMENDATIONS

Finally, the main conclusions of the study are presented, as well as a series of recommendations that will lead to the project's Intellectual Output #2.

A. CONCLUSIONS

The main conclusions after integrating the insights from the 3 areas analyzed are presented below.

Table 11. Integrated Insights

Teaching/Learning & Assessment/Evaluation, Plagiarism Prevention & Ethics Assurance, and Student Support & Motivation
For online education to become consolidated the results demonstrated prior to this time in the COVID-19 pandemic must be repositioned and made tangible. We have a lack of academic culture and poor understanding of the concepts (plagiarism and academic ethics).
The existing regulations vary widely and with different degrees of regulation among countries. More practical and concrete research at the national level is required to incorporate local contexts into the global unit. The main regulations come from the GDPR and the ENQA guidelines. Also, the EU directive on the accessibility of the websites of public institutions is a key regulation to be considered. These are very well considered when analysing platforms, mainly, and the accreditation of students' knowledge, but they do not seem to be as present in the teaching activity. One of the star topics at present is student assessment (learner authentication, work authorship and examination security) and certification.
Academic institutions have invested heavily in authorship tools. In addition to the use of this type of tools, codes of ethics and internal regulations have been developed to penalise inappropriate use of the contents in evaluations. Proctoring is not as widespread as the use of tools like Turnitin but perhaps it should be considered because it is no longer merely a matter of copying work, but the trend is that some students order and pay for original work
There is a challenge in digitizing "everything", not just the materials, as commonly understood, and the 100% online model must be distinguished from the hybrid one. - The curriculum, with a universal, inclusive, and accessible design (UDL). - The learning outcomes, to be solid and consistent in VLE. - Tasks and assignments, with formative and peer assessment, and a very strong real-life connection, encouraging decision-making. - Collaborative work in small teams, building a sense of belonging and community, with periodic group presentations, activating problem-solving.

Active learning is what is needed:

- The action verbs found are: Facilitate, Enhance, Apply and Allow.
- Organizational methods: critical thinking development activities, practical application of knowledge, discussions, search for and analysis of new resources, creative work, interactive learning activities, group work, individual work, presentations of information.
- Flipped classroom is the most commonly implemented methodology. Simulation pedagogy is also quite widespread.
- Keeping the student's attention is something to work on, with time management, self-regulation of learning or the complexity of tasks.
- The effectiveness of the mixed mode is also influenced by the extent to which the activity is synchronized. The more sync it is, the better the sense of interaction. The more async, the greater the reflection process.
- Legal considerations must be considered in teaching methods, not just in assessment or Ed-Tech tools.
- New and disruptive ways of e-learning are emerging and should be considered (experiential learning, just in time learning, etc.).
- Student support aspects may have a more institutional derivative (both in terms of technology and social/psycho-educational infrastructure), but the motivation aspect cannot be conceived as disconnected from teaching/learning and assessment.

When designing the course, there are some key issues to consider:

- The structure and progress of the course (by weeks, months, etc.).
- Gamifying the experience and introducing a "learning narrative" through rich visual and audio narratives that incorporate images, videos, text, graphics, and audio stories to immerse users in authentic settings and choices.
- Individual and social aspects must be considered in the design of formative activities.
- Interaction must be easy and frequent. Balance the number of tools used and link them to pedagogical purposes.
- Measure the student workload.
- Multiculturalism and interculturalism.
- Virtual community building.
- Consider the feedback of the students. Listen to them. A real student-centred approach.

Assessment and evaluation might be connected and integrated; activities must be planned in detail, with a careful selection of the topic, adequate establishment of evaluation criteria and the accompaniment of the students' reflection process, and performance, competencies and reflection on the own learning process are requirements of the best e-learning implementation.

In Assessment and Evaluation, legal documents must be applied:

- Code of Ethics
- Internal Evaluation Policy
- Misconduct Policies
- Guidance & Procedures
- Student Contracts
- Learning Agreements

B. RECOMMENDATIONS

Educational institutions must focus their efforts on:

- Investing in ensuring that teachers have sufficient skills and support for pedagogical planning and the use of online tools.
- Providing special support for online learners.
- Creating an internal and strategic culture.
- Leveraging third-party software strategically.
- Making use of different analytics to obtain data-based information for the future use of teaching solutions. Learning analytics help identify students at risk, increase motivation (dashboards for students) and personalize learning.
- Assuring the scalability of the models with the use of tools recommended for them, both in pedagogical and technological aspects.

In addition to disciplinary tools and academic policies, academic organizations should put greater effort into developing a culture of ethics. This can be done through (among many other possible initiatives):

- Student courses such as Academic Matters.
- Workshops for students.
- Access to tools for students to check and adjust their work.
- Teacher training: both in terms of plagiarism control and the design of training activities in order to be able to verify the identity of each student.
- Development of guidelines and scales that help teachers and students to share and accept the scores achieved.

The future of education is challenging, with new trends such as the immersive digital experience. Even with all the tools that can enhance online learning, we emphasize that the greatest motivator and activator is and will be **the teacher and that learning cannot be designed without the learner, who should be the centre of the learning design.** Whereas the role of the teacher is that of a motivator, the student should be the main actor in his/her learning process.

As stated earlier, distributing learning materials online is not quality teaching but rather, e-learning environments should be built to support active learning and interaction. A high-quality online course is clearly scheduled and proceeds in a logical order. Other elements of successful e-learning include the use of appropriately selected tools and constant student guidance given by the teacher. The structures of the learning environment must be built on the basis of learning objectives. The starting point of high quality online teaching is the development of the student's thinking instead of what technology can achieve.

The development of an integrated model that would bring value to the science of education in e-learning should meet the following premises:

- It should distinguish the particularities of the 100% online mode from the hybrid modality in the application of the new methodology. How to facilitate time management, self-regulation of learning and task complexity in both modalities (if there are differences, maybe depending on the idiosyncrasy of the different disciplines).
- The new methodological model must be sufficiently flexible and open so that national legislation can be complied with, enabling compliance not only with national and international regulations in its platforms and tools, but also in its teaching/learning and diagnostic, formative and summative assessment methods.
- Practical considerations must be accounted for in application and measurement. A lot can be measured when everything is digital. Dashboards are suggested as a useful tool for institutions, teachers and students, in order to improve retention rates.
- The methodology should guide teachers to choose appropriate tools that support the learning goals.
- A methodology that personalizes the learning experience, motivates the student and supports him/her in the development process.
- A methodology that merges teaching with assessment in a definitive way, proposing continuous assessment methods and tools that are viable for the teachers´ (and students´) workloads.
- A balanced methodology between teachers-peers-self-learning, human-automated, appropriate and effective.
- Universal Design Learning should be considered, to eliminate barriers to access to education, and Prime Time Learning, to connect and foster the students' commitment to their studies.
- The digital competencies of teachers and students should be promoted in those specific aspects required by the proposal.
- The scalability of the model, as well as current national and international regulations such as the GDPR, should be considered.

What should be provided:

- A training plan for teachers and students.
- Methodological sheets and guides.
- Maps of actions.
- Toolkits and guides.
- Dashboards.

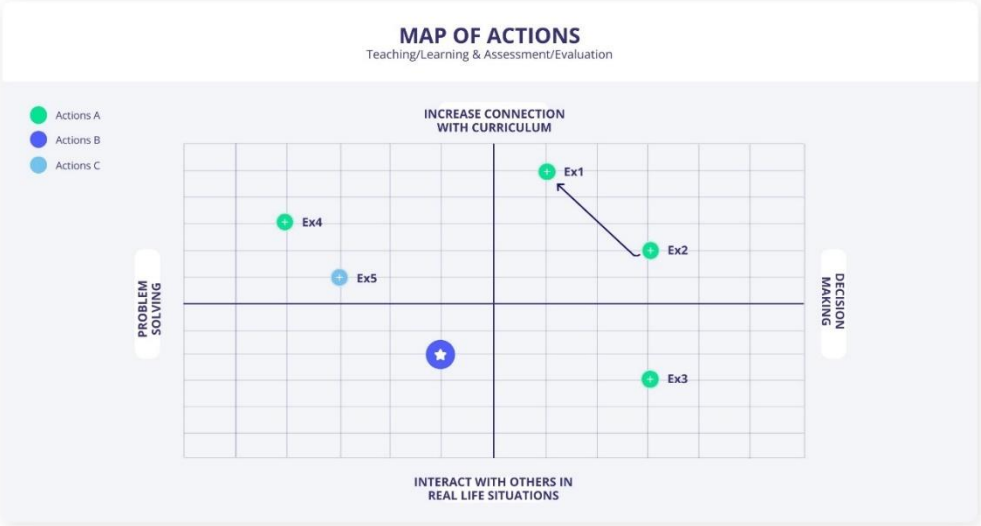

Figure 3. Example of a map of actions.

IO1 GLOSSARY

Academic integrity

Universities are built on inspiring free thought and encouraging intellectual debate and exchange of ideas – academic freedom. With this freedom comes an equally compelling responsibility to uphold academic integrity – honest endeavours, ownership of work and acknowledgement of prior thoughts, ideas, data and research.

Brainstorming

The students should brainstorm their ideas to the questions presented by using chats, boards or live speaking, especially at the beginning of the lecture. The first minutes of online lectures are very important in order to make students active during the lecture.

Emergency Remote Teaching

ERT is used to describe the procedures for online teaching and learning throughout the COVID-19 pandemic as schools and colleges closed. It refers to transitory online learning procedures.

e-Portfolio

The learning achieved by using the e-portfolio can be considered as self-directed, since by creating it, students reflect on the learning they have obtained, which in itself modifies the perception of the experience. This process allows them, online and anywhere anytime, to integrate what they have learned with previous knowledge and to use it to initiate new learning.

Escape Room

Escape room is an interactive method, which engages students to find answers to the questions and to escape from the virtual room created by the teacher. Every group of students (or students individually) then moves to another virtual room, in which they receive questions and the link to where the answers can be found (e.g. the link to the research article). The group must find the answers as quickly as possible. The group that escapes the room first is the winner.

Flipped Classroom

Flipped classroom is most often a combination of classic and online teaching, although we use it exclusively online nowadays. Digital teaching materials are prepared in advance by teachers and available to students on time, and the lesson is used for practice, research, resolving ambiguities, discussion and conclusion. In case the lesson cannot be held in the classroom, it is possible to conduct it in an online environment. Flipped classroom is a great approach in which direct instruction moves from group learning to individual learning. The role of the educator is to guide students as they apply concepts and engage creatively in the topic and class materials. Recorded screens and videos using different tools are utilised to further the learning process.

Learning Analytics

Learning analytics means collecting, analysing and measuring information on the learner in order to understand learning and optimise learning environments. Learning analytics help collect data to serve students, teachers and management. The data can be projected in many visual forms such as graphs, tables and charts.

Learning Management System (LMS)

This is the virtual platform used to provide resources and to access course information. A teacher can share learning materials and lecture notes with their students, among other features. There are many versions, such as Moodle, Blackboard, Canvas, D2L, etc.

Live Online Classes

Live online classes represent a practice of choice for most universities in an online virtual environment, especially during COVID-19 pandemic. They have mostly been adopted by universities that had no prior experience in teaching online and having online programmes, while those that are experienced in this mode offer various teaching and learning methods. In live online classes, students learn from lectures, combined with their literature and class materials for the course. The best option is having great lectures, holding online office hours for student consultations, as well as using Kahoot! (or similar) to make learning more interesting through an innovative programme.

Personal Learning Environment (PLE)

PLE is a person's own learning environment/platform in which the person makes his/her learning process visible. The PLE can include students' prior learning (work history, earlier education), publications and materials related to their studies and traineeships. It can take the form of a blog in which students collect study-related assignments, reports, photos, video clips, etc. during their studies in their PLE. PLE is used to support student assessment and is mainly focused on the assessment of a student's professional growth. It takes prior learning (e.g. at work or previous studies) into consideration and it makes student's learning visible.

Plagiarism software

This software (Turnitin, SafeAssign, Plagscan) works by searching for coincidences or similarities in different databases, magazines and publications available on the internet and comparing them with the test presented. From that information, an originality report is prepared, that is, a report that shows the percentage of similarity between the student's text and other sources. The professor, taking the report into consideration, will judge if the student's work is original or not.

Project Based Learning

The teachers design projects in different subjects from the curriculum of the Business Analytics Degree. Students' interest is raised and teachers increase their connection with them, allowing the students to enhance their learning experience and expand their knowledge beyond the course topics.

Simulation Pedagogy

Simulation pedagogy is based on experiential and joint learning. Simulation learning situations mimic "reality", share knowledge and learn together in a learning-by-doing spirit. In the simulation training, multidisciplinary teams receive a precise assignment and clear objectives, for which they prepare in advance. The use of De Bono's six thinking hats methodology can help students to act in their roles. Simulation pedagogy allows students to rehearse their professional skills in real-life situations in a safe environment and it helps them to reflect on their own behaviour.

Universal Design Learning (UDL)

Universal Design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. This concept was born out of architecture and design but has great potential to impact disability-related access. Seven principles: equitable use, flexibility in use, simple and intuitive, perceptible information, tolerance for error, low physical effort, size and space for approach and use.

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SPAIN

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Since 2008 she has been a professor at the UFV, teaching Physiology, Cell Biology and Cell Cultures in different degree programmes. In addition, she has participated in numerous educational innovation projects related to the use of active methodologies and creation of teaching content.

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Head of the Studies and Applied Research Unit, Dr Kristina Bespalova is responsible for studies and applied research processes development and implementation management at Kauno kolegija/ University of Applied Sciences. She is an expert on study quality improvement and control, study development processes in virtual environments and usage of intelligent learning technologies. Dr Kristina Bespalova has extensive experience in the development of study informative systems (PeopleSoft Campus Solutions). As a lecturer she developed the curriculum for the subject “Intelligent learning technologies (remotely) and non-formal education programme, Learning in Virtual Environment. Adobe Connect System”.

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Master's degree in German Philology. Freelance translator. Subjects taught: German language, linguistics, sociolinguistics, computer-assisted translation tools. For more than 10 years he has been interested in the development of digital competences and the compatibility of distance and face-to-face studies. Organiser and facilitator of events on digital competences.

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She has experience in teaching and the use of different teaching methods. She has taught both large and small groups.

Aija Hietanen

Aija Hietanen has more than 20 years of experience in developing eLearning processes and pedagogy at Savonia University of Applied Sciences. She has worked on several projects that have developed the use of social media in teaching and learning, personal learning environment (PLE), the virtual learning platform Verkkosalkku, e-Portfolio, quality of e-learning, learning analytics, etc. Aija Hietanen works as an e-Learning mentor for teachers and students and is a member of the steering group of online learning and digital pedagogy at Savonia UAS.

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Doc. dr. sc. Tanja Grmuša is a senior lecturer and head of the Department of Marketing and Communications at Zagreb Polytechnic. She holds a master's degree in communication and *croatology* from the Croatian Studies department at University of Zagreb. She holds a PhD from the postgraduate doctoral study of Information and Communication Sciences at the Faculty of Philosophy, University of Zagreb. She teaches communication and methodological courses at Zagreb Polytechnic. She has participated in domestic and international conferences and published several scientific papers. She is the editor of the proceedings of two scientific and professional conferences "Fedor Rocco", held in 2013 and 2016. She is also the co-author of the electronic textbook Methodology for Seminars and Final Papers.

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Mr. sc. Neven Šipić is a senior lecturer in the Department of Marketing and Communications at Zagreb Polytechnic and an Erasmus coordinator. He completed two undergraduate studies in Economics and Geography at Saint Cloud State University. He earned a Master's of Science degree in 2010 in Economics, majoring in Tourism at University of Nevada, Las Vegas. He served as an assistant professor at University of Nevada in Las Vegas, and at the Faculty of Maritime Studies in Split. As a student, he won multiple scholarships and awards. He also gained work experience outside of academia, in hotel management. He is the author of more than a dozen scientific papers and co-author of the electronic textbook Methodology for the preparation of seminars and final papers and the electronic script Fundamentals of Entrepreneurship.

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Dr. sc. Željka Zavišić is a professor and vice dean for mobility and international cooperation at Zagreb Polytechnic. She graduated and obtained her Master's degree at the Faculty of Economics, University of Osijek, and then obtained a doctorate in marketing. She worked as a teaching associate at the Faculty of Economics in Osijek, the Polytechnic in Vukovar, and as a lecturer at the Polytechnic in Slavonski Brod. She teaches a group of marketing subjects at Zagreb Polytechnic. She is the author of more than a dozen scientific and professional papers in the field of interest, and the electronic textbook Fundamentals of Marketing published by the parent institution.

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Dr. sc. Sanja Rocco is a senior lecturer in the Department of Marketing and Communications, a member of the Board of Directors, the head of the Department of Management and Production in Culture and the instructor of several courses. A graduate in architecture with many years of experience in the field of communication design, with numerous awards, she has been actively involved in the design profession for many years, including as vice president of the International Council of Designers Ico-D. She obtained a Master's degree in marketing at the Faculty of Economics, University of Zagreb, and a doctorate at the Faculty of Economics and Business, University of Maribor, on the topic of design orientation in marketing. She has published a peer-reviewed electronic textbook, Product Management, Brand Creation and Design, as well as a number of scientific and professional articles in her field of interest - design and innovation management, application of creative thinking and branding and visual communication.

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Having obtained his degree from University of Wolverhampton and Masters from Staffordshire University, Manny Athwal is the lead development manager for E-learning resources and strategy at School of Coding. He has experience in building e-learning platforms from the ground up. Manny also works on bringing gamification and interaction in online learning environments and is currently undertaking research in AI & Education. He is a specialist coder in languages such as Python, Java and HTML.

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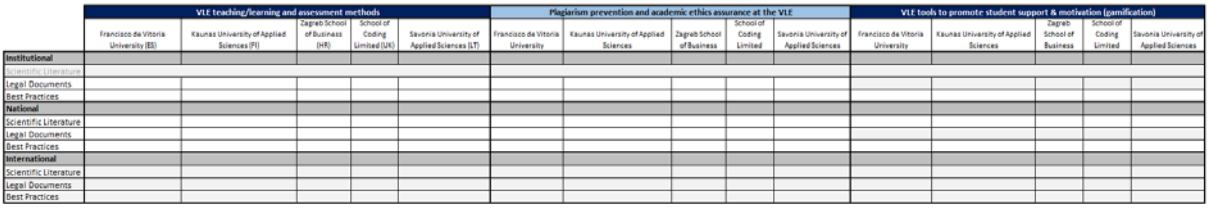
ANNEXES

Annex 1. FOLLOW-UP EXCEL



	VLE teaching/learning and assessment methods					Plagiarism prevention and academic ethics assurance at the VLE					VLE tools to promote student support & motivation (gamification)				
	Francisco de Vitoria University (ES)	Kaunas University of Applied Sciences (FI)	Zagreb School of Business (HR)	School of Coding Limited (UK)	Savonia University of Applied Sciences (LT)	Francisco de Vitoria University	Kaunas University of Applied Sciences	Zagreb School of Business	School of Coding Limited	Savonia University of Applied Sciences	Francisco de Vitoria University	Kaunas University of Applied Sciences	Zagreb School of Business	School of Coding Limited	Savonia University of Applied Sciences
Institutional															
Scientific Literature															
Legal Documents															
Best Practices															
National															
Scientific Literature															
Legal Documents															
Best Practices															
International															
Scientific Literature															
Legal Documents															
Best Practices															

Annex 2. QVS - RESEARCH AND ANALYSIS PHASE TEMPLATES

1. Institutional Level

Table of Best Practices, T&L Methods.

Best Practices	Description & Evidences
Teaching & Learning Methods	
A. "Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in teaching and learning methods***
Differentiating methodology	*Brief description of the methodology used, indicating its differential added/summative value*
Study Area (area of knowledge) in which the best practice has been applied	*Examples: Medicine; Humanities; Engineering, etc.*
Number of students taking the course/subject using this best practice	*No (percentage over total number of students)*
Number of teachers using the best practice	*No (percentage over total number of teachers)*
Learning outcomes	*Description of main learning outcomes*
Technologies used	*List of technologies used and reason why they were selected*
Student evaluation (if applicable)	*How students evaluate teachers (Example: 4 out of 6)*
Teaching mode	*Specify (hybrid, online)*
Recommendations/needs to introduce this best practice	*Detail of resources needed to implement the best practice as well as recommendations for its scalability*

Legal considerations	*Legal considerations and context to be taken into account (if applicable), specify which ones (link to relevant documentation)*
Available evidence	*Screenshot + web link or social media profile (if this kind of evidence exists) or relevant documents to be included (example: published institutional guidelines for Best Practices) + name and email of relevant teachers involved*
Other aspects to be considered	*Specification and/or inclusion of other additional aspects considered to add value to the best practice description*
B. **"Best Practice #2" (Include the name of the best practice/institution if applicable)**	***Description and short narrative of why it is considered a best practice in teaching and learning methods***
[Items listed in BP1 to be repeated, the same n times, 'n' being the number of best practices]	

Table of Best Practices, A&E Methods.

Assessment & Evaluation Methods	
A. "Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in assessment or evaluation***
Indicate if it is an assessment or an evaluation BP	*Argumentation/rationale*
[Items listed in BP1 to be repeated, the same n times, 'n' being the number of best practices]	
B. "Best Practice #2" (same items n times)	

Table of Best Practices, PP&AEA.

Plagiarism prevention and academic ethics assurance in the VLE	
A. "Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in plagiarism prevention and academic ethics assurance***
[Items listed in BP1 to be repeated, the same n	

times, 'n' being the number of best practices]	
Indicate if it is a PP or AEA BP	*Argumentation/rationale*
+ Institutional legal rules/regulations	*Specify if there are available codes of conduct/evaluation rules. Summarize content and specify if they are published documents.*
+ National legal rules/regulations	*At national or regional level, Quality Assurance agencies, whether compulsory or recommendations. Detail which ones and where they can be consulted (references, links)*
B. "Best Practice #2" (same items n times)	

Table of Best Practices, VLE Tools SS&M.

Tools for student support and motivation	
A. "Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in tools for student support and motivation***
Indicate if it is a student support BP or a motivation BP	*Argumentation/rationale*
VLE Tools	*Indicate which ones and describe them briefly (main purpose, why they were designed, how they can be used, how they can be integrated in VLE…)*
Study Area (area of knowledge) in which the best practice has been applied	*Examples: Medicine, Humanities, Engineering, etc.*
Number of students taking the course/subject using this best practice	*No (percentage over total number of students)*
Number of teachers using the best practice	*No (percentage over total number of teachers)*
Learning outcomes	*Description of main learning outcomes*
Student assessment (if applicable)	*Scores (Example: 4 out of 6)*
Teaching mode	*Specify (hybrid, online)*
Recommendations/needs to introduce this best practice	*Detail of resources needed to implement the best practice as well as recommendations for its scalability*
Legal considerations	*Legal considerations and context to be taken into account (if applicable), specify which ones (link to*

	relevant documentation)
Available evidence	*Screenshot + web link or social media profile (if this kind of evidence exists) or relevant documents to be included (example: published institutional guidelines for Best Practices) + name and email of relevant teachers involved*
Other aspects to be considered	*Specification and/or inclusion of other additional aspects considered to add value to the best practice description*
B. "Best Practice #2" (same items n times)	

2. National Level (Include the name of your specific country)

2.1. COUNTRY (PLEASE SPECIFY: Lithuania, Spain, Croatia, Finland, UK)

COUNTRY NAME:

Best Practices	Description & Evidence
Teaching & Learning Methods	
A. "Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in teaching and learning methods***
Indicate its main purpose/aim	*Description*
Who is using/implementing it?	*Name of the university, school, company or other type of educational or training organization. Link to its web page*
Main learning outcomes	*Description*
Other relevant aspects to be considered	*Description*
B. **"Best Practice #2" (same items n**	

times)	
Assessment & Evaluation Methods	
A. "Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in A&E methods***
Indicate its main purpose/aim	*Description*
Who is using/implementing it?	*Name of the university, school, company or other type of educational or training organization. Link to its web page*
Main learning outcomes	*Description*
Other relevant aspects to be considered	*Description*
B. **"Best Practice #2" (same items n times)**	
Plagiarism Prevention & Academic Ethics Assurance	
A. Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in PP & AEA***
Indicate its main purpose/aim	*Description*
Who is using/implementing it?	*Name of the university, school, company or other type of educational or training organization. Link to its web page*
Main learning outcomes	*Description*
Other relevant aspects to be considered	*Description*
B. **"Best Practice #2" (same items n times)**	
VLE Tools for Student Support and Motivation	
A. Best Practice #1" (Include the name of the best practice/institution if applicable)	***Description and short narrative/reason why it is considered a best practice in SS&MM***
Indicate its main purpose/aim	*Description*
Who is using/implementing it?	*Name of the university, school, company or other type of educational or training organization. Link to its web page*
Main learning outcomes	*Description*

Other relevant aspects to be considered	*Description*
B. **"Best Practice #2" (same items n times)**	

Legal Documents	**References**
A. Name/reference of Legislation 1	***Name and web link***
What teaching and learning aspects does it regulate?	*Brief description*
Mandatory level	*Compulsory, recommended, best practice reference…*
Other relevant aspects to be considered	*Description*
B. Name/reference of Legislation 2	***Name and web link***
[same items as in 1]	

Annex 3. QVS – TEMPLATE AND EXAMPLE OF NATIONAL LITERATURE REVIEW DOCUMENTATION

Funded by the Erasmus+ Programme of the European Union

SPAIN: NATIONAL SCIENTIFIC LITERATURE

(Universidad Francisco de Vitoria)

Task:

Search and translate to English 3 national scientific literature documents (papers in high impact journals preferred).

1 document per area. 1 for T&L&A&E; 1 for PP&EA; 1 for SS&M.

1 page summary per document -200/300 words-.

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ABSTRACTS:

T&L&A&E	Reference: Usart Rodríguez, M. (2020). *What do we know about the effectiveness of digital technologies in education?* What works in Education: evidence for educational improvement. Ivàlua & Fundaci Bofill. [Extracted from: https://fundaciobofill.cat/publicacions/tecnologies-digitals]

Which modality or degree of virtualization has a most positive impact on education?

Research on the different modalities began by measuring the differences between online a **hybrid educational programs**, as opposed to face-to-face ones that did not use technologi However, the current consensus on the feasibility of fully online education has allowed us go beyond the comparison and move towards the study of specific differences within digi modalities.

Six meta-analyzes and a systematic review specify this part of the evidence. The mixed hybrid modality (one that combines face-to-face and distance learning) is the one th presents more evidence, although some studies focused on fully online programs provide with some lessons applicable in the current context of the pandemic.

The findings of the meta-analyzes and reviews suggest an **overall effectiveness in terms learning the mixed mode** over the face-to-face mode. The great variability of resul however, indicates that this effectiveness **depends on the context and the way in which t model is applied**: the introduction of the mixed modality requires a **rethinking of t instructional design, as well as an investment in additional time and effort towards a mo active and student-centered approach. Mixed mode enhances learning outcom** combining the benefits of the mode face-to-face and online mode. As an example, **it allo to include materials**

SAVONIA

Primetime learning: collaborative and technology-enhanced studying with genuine teacher presence (T&L&A&E)

Pekka Koskinen, Joni Lämsä, Jussi Maunuksela, Raija Hämäläinen & Jouni Viiri
https://stemeducationjournal.springeropen.com/articles/10.1186/s40594-018-0113-8

Two universities in Finland developed a research-based instructional strategy, the *primetime learning mo* and piloted it in two physics courses in 2016-2017. The model includes social integration, versatile assessment as well as active learning components that are carried out as a four-phase process as follows (figure 1):

1) **Principles**: students study the topic independently with help of textbooks, videos etc. following the flipped classroom principles

2) **Practice**: Students meet in small groups to complete research-based assignments

3) **Problems**: Students solve real-life problems by utilizing by principles learned during the course. Teacher is available via a "hotline".

4) **Primetime**: Student groups meet privately together with the teacher to go through any remaining questions students have on the topic.

Figure 1: Primetime learning model

By developing the primetime model, the researchers aimed for a learning model that, in addition to solid learning outcomes, would improve student retention, promote research-based teaching practices, and provide a positive learning experience. The model was ba on collaborative and technology-enhanced learning, formative assessment without a final exam and a clo student-teacher interaction in student-teacher meetings.

The pilot courses had 72 (2016) and 77 (2017) active students and they were divided into groups of five students. The pilot courses were compared with the courses held in 2014 and 2015 by the same teachers, same content and similar number of students on each course. The pilot observed persistent student activit improved retention, and good learning outcomes. The outcomes have been measured by how well studen have learned the topics under study, often reported as gains in pre- and posttests. The research results urg avoid passive lecture-type teaching and to favor active learning methods by students actively interacting fellow students and material at hand. The pilot had three research questions: 1. Did the students follow th

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November 2021

Erasmus+ KA2 VLE teaching/learning and assessment methods analysis report. Project No. 2020-1-LT01-KA226-HE-094740. Project Title: Quality of Virtual Studies (QVS). Submission ID: 1680744

Coordination of Intellectual Output 1: Universidad Francisco de Vitoria (Francisco de Vitoria University). Spain.

Project Coordination: Kaunas University of Applied Sciences. Lithuania.

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