MOTIVE PROJECT

R1

METHODOLOGY FOR TEACHING AND TRAINING

IN ONLINE ENVIRONMENT

Contents

Project Summary

MOTIVE – Methodology for Online Training in Innovative Virtual Environment, is a 1-year Erasmus+ project (KA220-VET - Cooperation partnerships in vocational education and training) designed to create innovative conditions for improving the quality of teaching in an online environment. This can be achieved through a purposeful study of the nature of online learning methods and subsequent development of a unified approach to be used in conducting training in a digital environment and the accompanying practical exercises and assessment of acquired knowledge.

The main goal of the project is to create and put into practice a common methodology for organizing and managing online learning that covers the fundamental aspects of teaching in a digital environment, namely: setting and achieving correct educational goals, proper selection of methods for pedagogical communication, including online classroom management, conducting a learning process (theoretical and practical part), oriented towards measurable results, as well as planning and providing the necessary resources for the specific training. The indicated characteristics of the online training, which will be covered in the methodology, are the minimum necessary ones that the teachers should use when conducting the online training.

The main target groups of the project proposal are:

• Teachers in secondary and higher education;

• Vocational training centres for vocational education and training;

• Education management experts;

The main context of the project is the creation of innovative conditions for improving the quality of teaching in an online environment. This can be achieved through a purposeful study of the nature of online learning methods and subsequent development of a unified approach to be used in conducting training in a digital environment and the accompanying practical exercises and assessment of acquired knowledge.

The creation, description, and implementation in practice of a unified methodology for organizing and conducting online trainings and motivational videos is inherently an innovative training product that is lacking in the partner countries -Iceland, Bulgaria, Spain, Greece and Cyprus. In the last 24 months, education in its entire organizational and teaching nature has undergone a serious metamorphosis worldwide. The COVID-19 pandemic required a sharp change in the educational process, as it had to move from one reality to another - digital. This reality, imposed by factors external to the educational process, found teachers unprepared, which in turn led to a significant reduction in the quality of educational services.

Here is the place to emphasize that the unpreparedness of the diverse organizations offering educational services is not expressed in a technological aspect, but in the lack of quality and mostly proven methods for conducting online training. From the feasibility study and the data obtained from it, it is clear that over 75% of teachers say they need help in the process of conducting online training. Specifically, this need for

assistance is expressed in clearly defined and practically applicable common methods for conducting online training. The need for an extreme transition to learning in a digital environment has forced educational organizations to create their own methods and approaches for conducting online learning.

The following direct and indirect results will be achieved within the project:

Direct results:

- Established framework of the methods used so far in practice for conducting trainings in a digital environment – Based on detailed research by all project partners will be accumulated the necessary information. It will be studied in detail and an analysis will be compiled, containing information about the most used methods for organizing and conducting online trainings.

- Prioritization of the problems before the affected parties in the educational process - It is important to identify the identified problems by their priority, as this will influence the choice of mechanisms and measures to be included in the general methodology for online learning.

- Developed specific models of the structure of a common methodology for organizing and managing online learning.

- Based on the study, analysed information and prioritizing the identified specific problems, specific models of the common methodology for online learning will be developed. The project partners will choose which models and parts of them to be included in the development of the common methodology for online learning.

- Developed and adopted the common methodology for online learning - The general methodology for online learning will be developed based on the selected models. After its final completion, the methodology will be verified by all project partners.

Indirect results:

- Built transnational capacity in the field of organizing and conducting online training.

- Created model for formation of innovative policies in the field of online learning.

- Reduced deficit of information about the development of educational processes in the digital environment.

At the end of the project the following main results will be available:

- Created and put into practice an innovative training product representing a common model for conducting online training and motivational videos.

- Improved capabilities of the target groups for organizing and conducting online trainings, modelled according to the needs of the learners.

- Increased quality of the educational process conducted in a digital environment.

- Strengthening the demand for individual and group distance learning conducted in a digital environment.

- Improved policies in the field of education and in particular training in the digital environment.

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- Increasing the opportunities in online education to cover users with lower education.

- motivational videos to reduce the effect of anxiety in teachers, created in connection with the transition to online learning.

1.0 National Reports & Best Practices

1.1 Iceland

The main subjects that the participants said they taught were national languages, history and social science. Most had no more than 20 students in class. All participants use either only e-learning methods or e-learning methods additionally to face-to-face learning. Age groups vary but are of course connected to the type of schools. Adult education with the oldest age group. The participants in the survey seem to have very diverse opinion on the different ways to make sure that students pass the course.
Here are some of the main results from the questionnaires.

1. Do you use e-learning and distant learning in your teaching? (0 point)

More Details

- Yes, I use e-learning methods o...   1
- Yes, I use e-learning methods a...   9
- No, I do not use e-learning   0

2. Which tasks do your students usually have to perform in order to pass your class (more than one answer possible)? (0 point)

More Details

● Upload documents	9
● Fill out online quizzes	7
● Write texts/homework /projects...	7
● Perform group work	9
● Post in forums	2
● Pass interim tests	1
● Pass final exams	2
● Apply creative methods	6
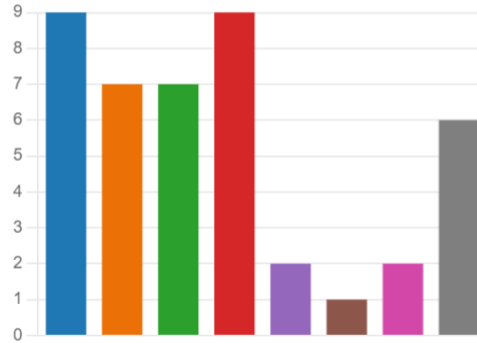
4. Which features of moodle/other platform do you usually use? (more than one answer possible) (0 point)

More Details

● Polls	9
● Upload and download of materi...	7
● Forums	3
● Assessment	7
● Glossary	2
● Wikis	0
● Tests	8
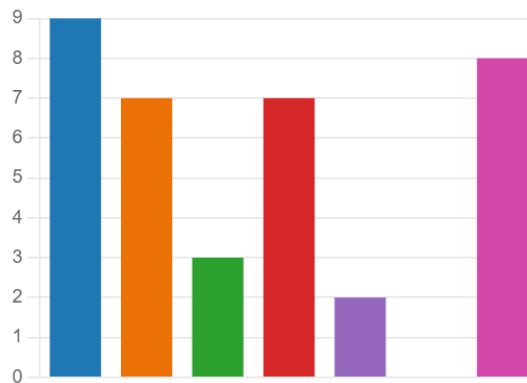
6. Which three features of moodle/other platforms are the most important to you? (3 answers possible)   (0 point)

More Details

- 🔵 Polls   5
- 🟠 Upload and download of materi...   7
- 🟢 Forums   2
- 🔴 Assessment   5
- 🟣 Glossary   0
- 🟤 Wikis   0
- 🟣 Tests   7

Case study

Upper secondary education in Iceland during the COVID-19 pandemic

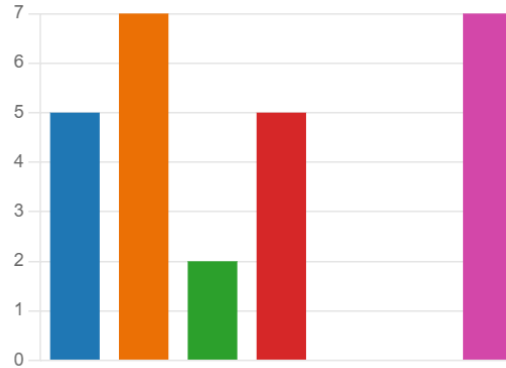As in other parts of the world, the COVID-19 pandemic had an extensive impact on the Icelandic education system. During the spring semester 2020 all upper secondary school buildings closed and teaching and learning was moved online overnight. This change which can be described as 'emergency remote teaching' (Bozkurt & Sharma, 2020) posed significant challenges for schools and teachers, requiring them to instantly adapt their teaching practices and course plans to a digital environment. The aim of the study is to investigate how upper secondary school teachers adapted and changed their teaching practices during the COVID-19 pandemic in the spring of 2020, their views on administrative support and impact on students. In May 2020, all upper secondary school staff were sent an electronic questionnaire on different aspects of working and teaching during the COVID-19 pandemic (Háskóli Íslands, n.d.). Here the focus is on the answers of upper secondary teachers to three categories of questions: (1) management and support during the transition to remote teaching; (2) changes made to teaching practices, such as teaching methods and assessment; and (3) impact on students, in terms of demands, participation, and homework. The answers provided are analyzed by school size (less than 250 students, 250–500 students, 501–1000 students, and more than 1000 students) as well as whether the teachers had any prior experience in distance education. Overall, 680 upper secondary school teachers answered the questionnaire (37% males, 57% were in the age bracket 40–59). The sample adequately reflects school population demographic characteristics, and the response rate was 42% of the overall number of upper secondary school teachers registered in The Association of Teachers in Upper Secondary Schools. The results showed that most teachers worked from home and said that they made changes to their teaching practices during the COVID-19 pandemic. Courses were rarely suspended and therefore teachers generally continued their teaching load, but in most cases under drastically changed circumstances. Overall, pedagogical support seems to have been insufficient, particularly in larger schools. About a third of teachers maintained the weekly class schedule, but half could decide whether

to do so or not, indicating a lack of coordination within schools in how best to organize classes. Teachers in larger upper secondary schools thought their duties were less clear and said they had received fewer directives from the school leadership in comparison to teachers in smaller schools.

The results also show significant influence on teaching practices, especially in larger schools. The challenges included using varied teaching methods, continuing teaching practical or workshop classes, and encouraging student collaboration. Most teachers seem to have dealt with the challenges during the COVID-19 pandemic by providing more flexibility and adapting their teaching to student needs, and the fact that the majority of them seem to have changed their assessment practices provides evidence of this adaptation. Having experience of distance education seemed to have mitigated negative effects, and teachers with such experience were more likely to say the effects on their teaching were minimal. Finally, the results show that the teachers adjusted their demands on students during the COVID-19 pandemic in the spring of 2020. Teachers said student attendance and participation had decreased, and this negative effect was more pronounced at larger schools, whereas teachers at smaller schools were more likely to report no change in student participation. Again, having experience of distance education seems to have mitigated the negative effects reported. Taken together, these results highlight the challenges facing upper secondary teachers during the COVID-19 pandemic in the spring of 2020, but also demonstrate that teachers worked hard in overcoming these challenges and adapted to new circumstances. The results show that most teachers would have liked more pedagogical support in changing their teaching practices and that there can be a fine line between professional independence and lack of support. During the past decade or so, teaching and assessment in upper secondary schools has gradually become more diverse, in line with new curriculum guidelines. However, the results here show that teachers struggled with using diverse teaching and assessment methods during the COVID-19 pandemic, indicating a relapse in this development. This gives cause for concern, especially if the situation is prolonged. These results highlight the need to include courses in teacher education on distance education and using information technology in teaching, especially since distance education experience was found to mitigate negative effects. Distance education pedagogy is also important to increase student attendance and participation, particularly to counteract the impact on vulnerable students and students in danger of dropping out.

Article from: https://opinvisindi.is/handle/20.500.11815/3315

1.2 Spain

Questionnaires

Section 1 – Personal Information

2. Gender
10 responses

- Male
- Female

60%

40%
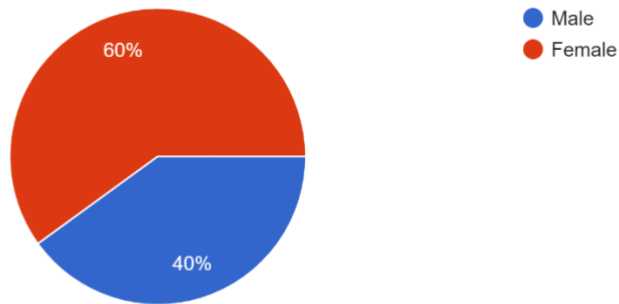
3. Age - select
10 responses

- 20 - 29
- 30 - 39
- 40 - 49
- 50 - 59
- 60+

40%

10%

50%

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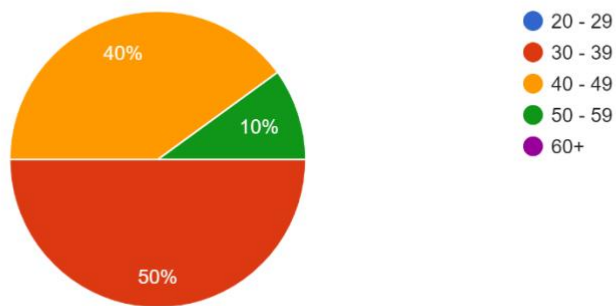
4. Highest level of education

10 responses

- 1. Secondary School
- 2. Vocational Education and Training
- 3. University Level
- 4. Post-graduate Level
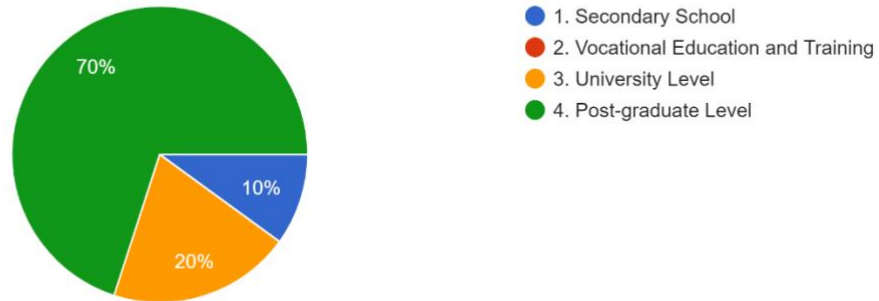
Analyzing the 10 Spanish questionnaires, we can highlight 2 important details. We only received answers from people older the 30 and almost all people (9 out of 10) had at least a university degree.

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Section 2 – Characteristics of the survey participants teaching subjects

1. Teaching subject
10 responses

Subject	Responses
1. National language	0 (0%)
2. Mathematics	0 (0%)
3. ICT	0 (0%)
4. Physics & Chemistry	1 (10%)
5. History	1 (10%)
6. Social Sciences	3 (30%)
7. Other Sciences	3 (30%)
8. Music	0 (0%)
9. Painting	0 (0%)
10. Arts	0 (0%)
11. Financial literacy	0 (0%)
12. Other	3 (30%)
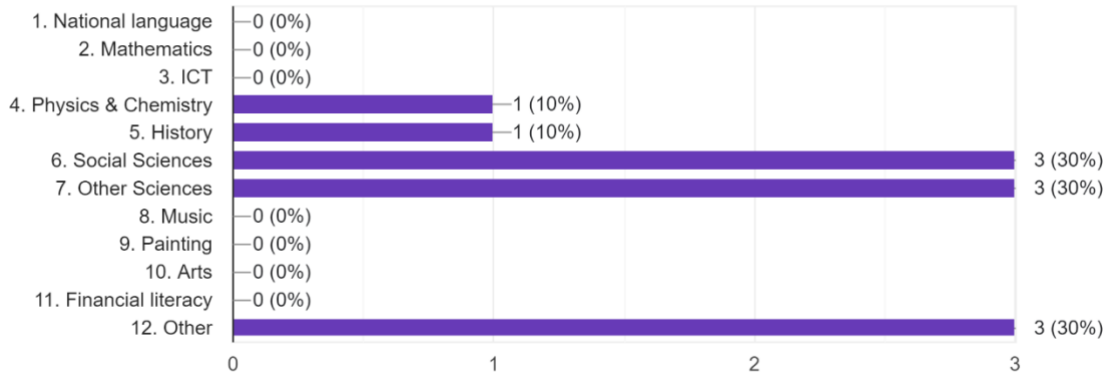
2. Size of the class
10 responses

Class size	Responses
1 - 9	0 (0%)
10 - 19	2 (20%)
20 - 29	4 (40%)
30 - 39	4 (40%)
40+	1 (10%)
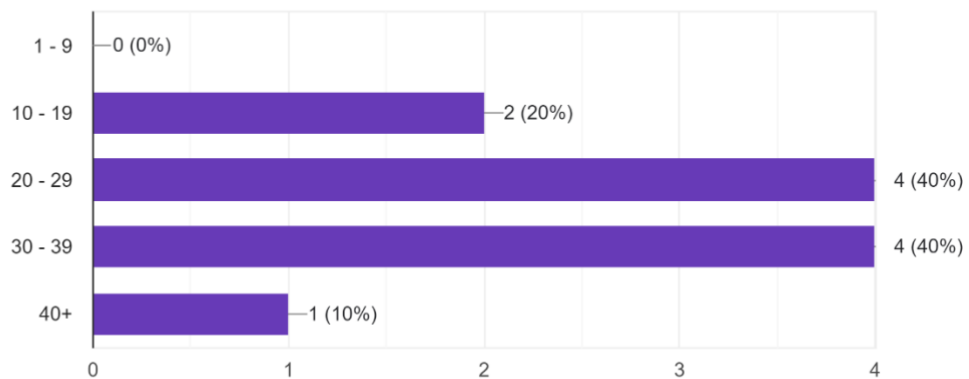
Summing up Section 2, we can highlight that the questionnaires were filled out by teachers from a wide range of subjects. Most of the teachers (8 out of 10) had a class size between 10 and 39 students.

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Section 3 - Questionnaire for tutors and teachers using e-learning

1. Do you use e-learning and distant learning in your teaching?
10 responses
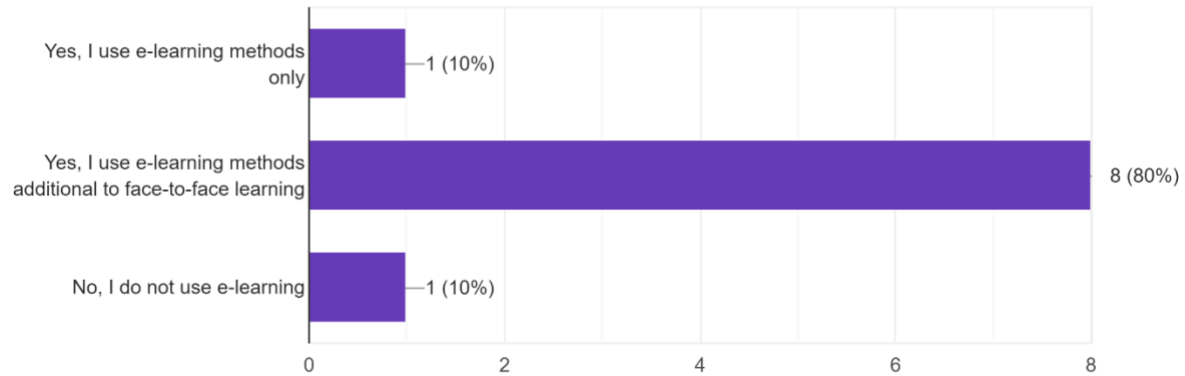
2. Type of school or level you teach mostly:
10 responses

3. Age group of your students

10 responses

Age group	Count
7 - 12	0 (0%)
13 - 18	7 (70%)
19 - 25	2 (20%)
26 - 35	0 (0%)
36 - 45	1 (10%)
46+	0 (0%)
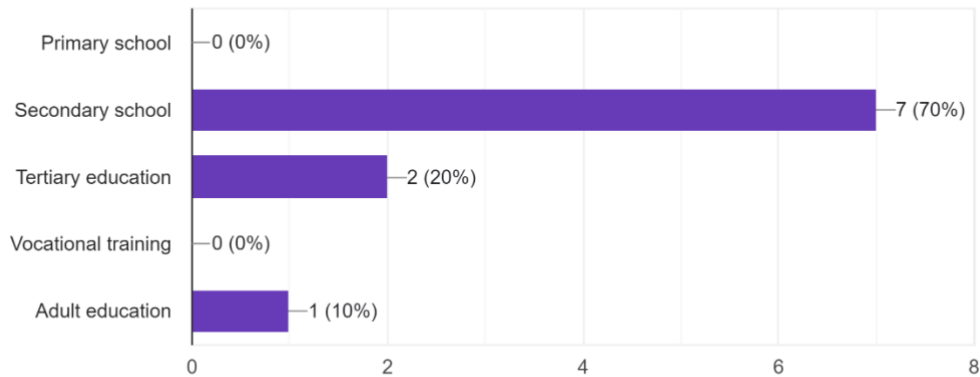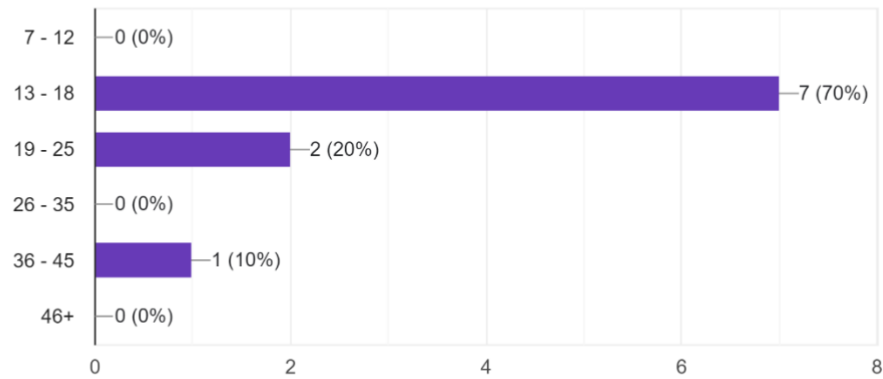
4. Which tasks do your sutdents usually have to perform in order to pass your class?

10 responses

Task	Count
A. Upload documents	6 (60%)
B. Fill out online quizzes	3 (30%)
C. Write texts/homework/projec…	7 (70%)
D. Perform group work	6 (60%)
E. Post in forums	1 (10%)
F. Pass interim tests, if yes how…	3 (30%)
G. Pass final exams	6 (60%)
H. Apply creative methods	2 (20%)
I. Other	1 (10%)

5. How do you assess your students´learning paths?

10 responses

Option	Value
A. Grades (depends on the nationsl system), 1 - 5 for example	8 (80%)
B. Points	1 (10%)
C. Percentages	2 (20%)
D. Others	1 (10%)

6. How often do you assess your students´ learning paths within one semester?

10 responses

Option	Value
A. Just once (e.g. one exam in the end)	1 (10%)
B. Twice (e.g. one interim and one final)	0 (0%)
C. Several times (e.g. several tasks during the semester)	8 (80%)
D. Irregularly, please explain	1 (10%)

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7. How do you asess your student´s progress?

10 responses

Answer	Count
A. I assess formal requirements (uploading documents on time, handing in papers on time, etc.)	7 (70%)
B. I assess my students according to the content of the class/course (level of knowledg…	6 (60%)
C. I assess my student's participation (posting in forums, active participation i.e. asking q…	6 (60%)
D. I assess other issues, like:	2 (20%)

8. What would you say, which students are most likely to fail your class? (more than one answer possible)

10 responses

Answer	Count
a. Those who are inexperienced with e-learning.	1 (10%)
b. Those who do not fulfill formal requirements (e.g. upload on ti…	2 (20%)
c. Those who work and study in parallel.	0 (0%)
d. Those who have children.	0 (0%)
e. Those who are lazy.	7 (70%)
f. Others:	2 (20%)

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9. How do you communicate that a student is about to fail a class?

9 responses

a. I would communicate it via email.	2 (22.2%)
b. I would communicate it via telephone.	0 (0%)
c. I would communicate it in a personal meeting.	8 (88.9%)
d. I would ask someone else (an administrator, a tutor, etc.) to c...	2 (22.2%)
e. I would not communicate it. Students are self-responsible f...	1 (11.1%)
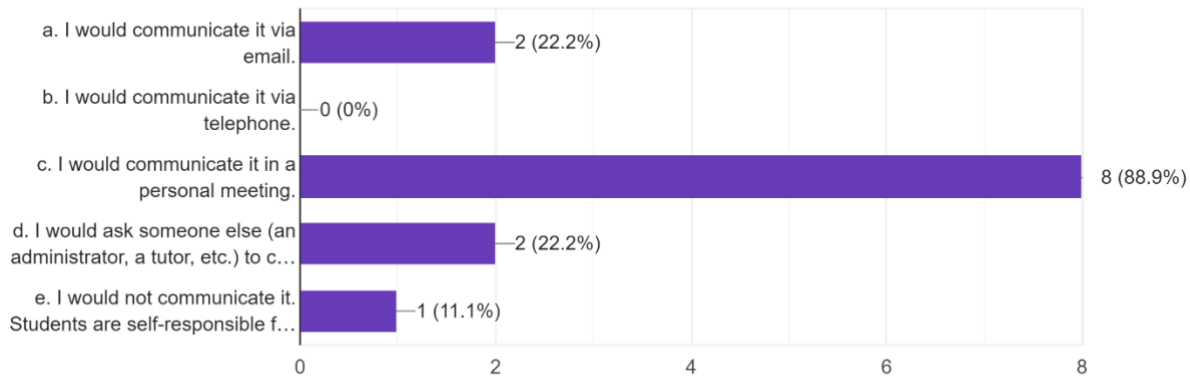
Trying to pick out the most important statistics of the first part of Section 3, it seems important to mention that all but 1 teacher uses online teaching. 8 of the teachers who filled in the questionnaires use e-learning methods to support face-to-face teaching.

Another fact that seems interesting is that 7 out of 10 teachers consider that lazy students are the most likely to fail their class. So active participation seems to be one of the most important factors to pass class. This is also backed up by the open questions 10 to 12 and apparently goes for online and face-to-face teaching.

Another detail is that even if classes are implemented online, teachers would communicate possible failure in a personal meeting. This highlights the importance that teachers still give to personal face-to-face communication.

Especially interesting seem the answers giving to open question 12 (please see below). The problems that teachers face are from a different nature.

10. How would you notice a student failing a class?

- He/she doesn't participate and doesn't work the activities
- Not doing required tasks and is disconnected from class
- After talking to students, tutor and family
- Doesn´t submit homework and fails interim tests
- If they start failing exams or not presenting their homework.
- student does not participate in the lessons, as well as he/she fails tests, etc
- He/she don't send the activities required on time or fail the exams. He/she has many mistakes when do the activities
- Since I teach adult education and my students usually attend class because they want to learn, I don´t assess the learning path. Therefore, my students do not "fail" a class.
- I normally tell them the marks they are having with their actual performance and ask to change, I give opportunities til the last moment

- Not passing interim exams. No active participation. Tasks not in time

11. What could prevent a student from failing your class?

- I ask him/her to work a little every day and try to participate in class activities and debates.
- Recuperation tasks and communication with family vía online platform
- Going to class, participating in class and being active
- Assisting all classes, preparing all homeworks and visiting tutor
- Studying at home and paying attention in class.
- personal meeting+ extra revision time
- They should take their time to check activities in class and use the time that we have to ask their questions.
- As I said, the most important thing is that students are interested in the topic.
- To work daily and organize the tasks I require
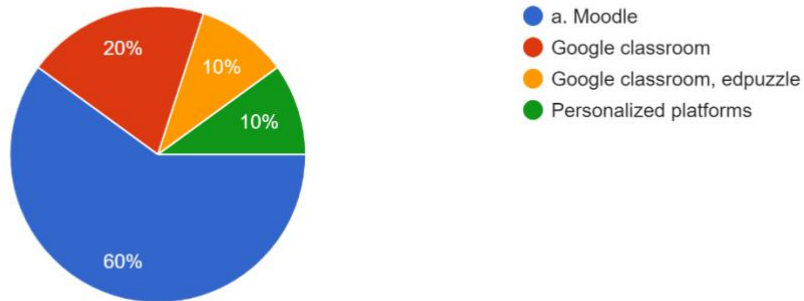- Active participation at all levels

12. What are the main problems you discover with using e-learning in general when it comes to assessment?

- you never know if they are actually doing the activity
- Students are not used to follow class online
- Students are usually not prepared to follow e-learning education. E-learning should be from 16 up. They are distracted easily. They should receive a specific class on advantages and disadvantages of e-learning
- Students usually are used to e-learning. If they do not use it, is because they don´t want to
- The interaction during explanations: sometimes it's difficult to break shyness or to realize if they all are understanding your explanations.
- they do not manage time to submit tasks
- Some of the students don't have interest in this kind of e-learning activities. It can be a waste of time for the teacher.
- No assessment
- I think it is useful for auto-evaluation, for giving information and in my subject also to reach the objectives of the subject itself related to computers and work in the cloud.
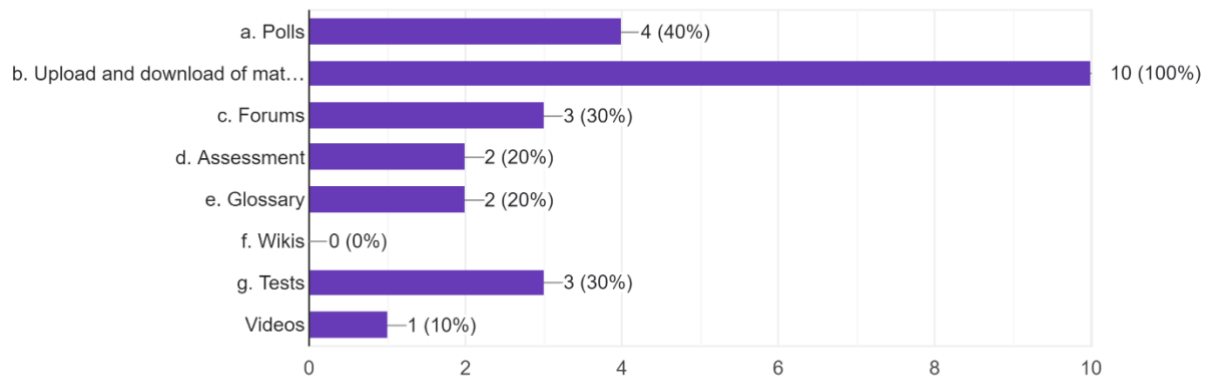- Digital divide sometimes makes the social divide even bigger.

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13. Which e-learning platform do you usually use?
10 responses

- ● a. Moodle
- ● Google classroom
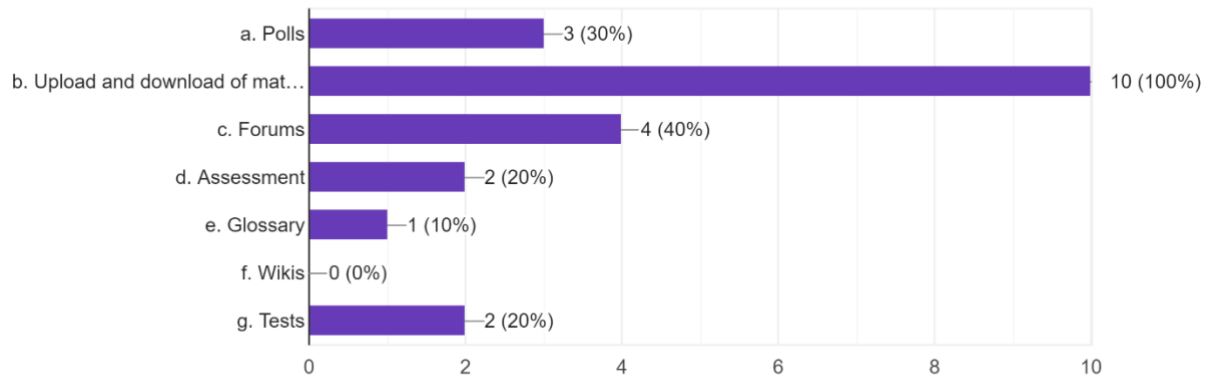- ● Google classroom, edpuzzle
- ● Personalized platforms

Pie chart values: 60%, 20%, 10%, 10%

14. Which features of moodle/other platform do you usually use? (more than one answer possible)

10 responses

- a. Polls — 4 (40%)
- b. Upload and download of mat… — 10 (100%)
- c. Forums — 3 (30%)
- d. Assessment — 2 (20%)
- e. Glossary — 2 (20%)
- f. Wikis — 0 (0%)
- g. Tests — 3 (30%)
- Videos — 1 (10%)

15. Which three features of moodle are the most important to you? (3 answers possible)
10 responses

- a. Polls — 3 (30%)
- b. Upload and download of mat… — 10 (100%)
- c. Forums — 4 (40%)
- d. Assessment — 2 (20%)
- e. Glossary — 1 (10%)
- f. Wikis — 0 (0%)
- g. Tests — 2 (20%)

Concerning the second part of Section 3, it seems that most teachers mainly use the most basic features of online platforms (uploading and downloading materials). Generally speaking, you could argue that teachers by now have used mainly the basic parts of online teaching to make the online experience as similar to face-to-face learning as possible. It seems that most of the teachers have not used those features of online teaching that might have a comparative advantage to face-to-face teaching. The in-depth interviews that follow go into the same direction.

In depth questions

In the following we will try to capture the most interesting answers giving during the in-depth interviews. We will therefore follow the same structure provided within the PR1 Planning Document.

III.1. What do you believe the role of education and training is today? How do you think it has changed in the last ten years? How do you think it will change in the next ten years?

Most of the interviewees interpret the role of education in a very broad sense. They see that one aim of education is to create a better society. One teacher even mentions that education should have the ambition to create a society with a higher level of happiness. Nevertheless, due to a limited amount of resources and due to the fact that education is not set to produce benefits, interviewees interpret that over the last 10 years there has been a shift towards a system that basically helps to provide resources for an ever more capitalistic society.

In this context, especially the role of ICT within the education is still to be defined.

III.2. What is the role of the educator, teacher, trainer, facilitator, moderator, etc. in the teaching and learning context, online and face-to-face? What role description would you give yourself for this course?

Concerning the role of educator, teachers, etc. interviewees agree that there has been a progressive loss of respect and authority. Even though, there is a big difference between different parts of society. Depending on the level of education (primary, secondary, tertiary, adult education) the way teachers, educators etc. are seen demonstrate a wide spectrum. The most important factor, apparently, is not the economic background of the family, but rather the importance they give to education in general.

The role of the teacher also depends on what level of education they work in. Teachers of mandatory education describe their role as more basic. Higher education and adult education see a wider responsibility of education for building a more just society.

One teacher mentions an interesting aspect of the way competitiveness is included within the classroom. The teacher mentions the negative side of it for society building but admits that he uses it to create incentives for students. Based on his experience this ambivalence is present within online and face-to-face training and important to tackle for a successful learning experience.

III.3. Where does your particular course fit in, overall, in the education of your participants? Why do students need to take your course? What is the value of your course?

III.4. What responsibilities do you have to your students? What responsibilities do they have toward each other and toward you?

Concerning teachers' responsibilities, again, there is a wide range of answers. Some teachers interviewed set their focus on transmitting content, others focus on triggering interest in knowledge and learning experiences, and others see their responsibility as important part of a strong, democratic society, healthy enough to defend a liberal society and its basic values.

III.5. How should students be tested regarding their learning? What methods do you think work best, especially given particular course content?

The answers given within the interviews back up the general impression of the questionnaires. Depending on the general focus of the teacher and on the subject itself, teachers use different kind of assessment methodology. Some teachers limit themselves to the basic national grading system, implementing a series of interim-tests and final exams. Others give more importance on active participation in class and the fact that students hand in their homework in time. One teacher mentions the importance of positive reinforcements, which, again should be used in face-to-face and online environment.

III.6. Do you think teaching online will be qualitatively different from teaching in the face-to-face classroom? If so, how?

All interviewees agree that teaching online is different from teaching face-to-face. Connectivity in online setting (humor, eye-contact, non-verbal communication etc.) influence strongly on the teaching and learning experience. The main problem of online teaching is seen within the educational divide that it might underline. Based on their experience, interviewees state that students with general educational interest usually work really well in online environment – they might even benefit from online teaching in comparison to face-to-face. On the other side, students who already have difficulties engaging in class (face-to-face) fall even further behind while implanting class in online environment. Therefore, "going online" might deepen an educational divide.

III.7. How would you describe your own level of ADEQUACY of the skills and competences necessary for online teaching and training?

Teaching online is seen similar as learning online. Teachers who have a general interest in improving their skills and implementing innovative online teaching, usually find a way to learn new methodologies and techniques. Those who are reluctant to update their teaching techniques, fall behind. So "going online" might create a similar divide for teachers as already mentioned for students. For the interviewees the most important factor is teacher´s own motivation and interest in updating teaching methodologies.

Some mandatory courses for teachers are seen critically and sometimes as waste of time, since they are not adapted to very personal needs and subject content. Even the quality of these mandatory courses is very doubtful.

1.3 Greece

On 10 March, with 89 confirmed cases and no deaths in the country, the government, in cooperation with the Greek National Public Health Organization, decided to suspend the operation of education institutions at all levels nationwide. As a response to the challenge imposed by school closures, the education ministry launched digital tools enabling distance learning and a specific web portal providing information for education and training programmes at all levels. Priority was given to the implementation of distance learning in the last year of upper secondary education programmes. However, all learners in primary, secondary (including VET), post-secondary and tertiary education had access to distance learning. Learners at post-secondary vocational training programmes could follow 95% of the courses in this way.

Supporting learners, teachers and trainers
In the two-month period of the lockdown, teachers and trainers were supported both technically by the central technical team based at the education ministry and pedagogically through short-term training sessions in digital skills.

All schools (including VET) nationwide were swiftly provided with tablets and laptops by the education ministry; the initiative was supported by European funds and private donations. This equipment is used by teachers and learners to ease the implementation of distance learning. In the long term it will also contribute in enhancing learners' digital skills. Priority was given to supporting low-income families, unemployed parents, single families, families with three children, families with many children or orphaned families, learners with special needs or excellent achievements. The equipment was distributed according to the number of learners and the existing technological equipment at each school; the specific number of tablets and laptops was subject to the total amount of donations.

This unforeseen situation has triggered cooperation between the public and the private to support the education system and equip Greek youth with the necessary digital skills for the 21st century. Based on the most recent data, broadband cover reaches 99.9% of households and 4G mobile network coverage reaches 97%. The vast majority of families with children have, at least, one smart phone and computer; they also have unlimited data connection to the internet. The Greek Government also gave access to digital classrooms via landline telephones, at minimal charge. Discussions were held with internet providers to provide further support to distance learning.

Modern distance learning: synchronous
According to education ministry data, participation in distance learning was significant, with the number of leaners views rising by 70% on average per day. More than 112 000 teachers have managed hundreds

of thousands of hours of live broadcasting in digital classes with over 1 096 311 learner views. The number of online courses per day peaked at approximately 41 000; in total there were almost 10 000 000 participations by learners in online courses. Priority was given to learners in the last year of upper secondary education, who are candidates for the nationwide university entry exams. All necessary measures were taken to enable them to attend online courses via livestreaming, aiming to achieve 100% participation.

Asynchronous learning
Almost 1 200 000 learners and 200 000 teachers have registered at the Panhellenic school network and are using asynchronous distance learning platforms. Networks are constantly being upgraded to respond to the extremely high demand from both learners and teachers. From the beginning, all schools have been included in asynchronous distance learning. The education ministry's platforms (Panhellenic school network, E- class, E-ME) and web portals providing digital education material (Photodendro, Aisopus, E-Books) are constantly being upgraded.

Educational television
Broadcasts of educational television for primary school pupils started on 30 March 2020 and on the first day 51.2% of children in the age group 4-14 (more than 141 000) watched them. Data show that educational television programmes have been watched, if only for a minimal time, by 588 313 viewers.

Public post-secondary VET institutes (IEK)
In less than a week after face-to-face learning was suspended (10 March 2020) 114 of the 124 public IEK launched or set up asynchronous teaching platforms and started broadcasting synchronous distance learning.

Universities/ tertiary education institutions
A significant number of courses in each department of tertiary education institution is in place, combining existing asynchronous teaching platforms with synchronous distance learning. Based on official data gathered by the education ministry from tertiary education institutions nationwide, the University of Crete and Charokopeio University offer 93% of their courses via distance learning; the figure for Patras University is 91% of its courses.

Questionnaires Analysis & Conclusion

Most of the respondents had not participated in online courses before the Covid-19 outbreak, 46 % did participate in e-learning courses before the Covid-19 lockdown while 54 % did not and
34.1% respondents prefer face-to-face learning, while 15.9% prefer e-learning. Also, 50% respondents prefer a combination of face-to-face learning and e-learning.

The Main Problems of E-Learning and Solutions

The main problems impeding the effectiveness of online instructions are:

- The content of some educational material is not suitable for students whose learning ability is weak.
- Sometimes online courses are hindered by poor network connection and poor lesson planning/student attentiveness.

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- Insufficient teaching resources for online courses.
- Insufficient (financial) support for teachers' teaching space, environment, and equipment.
- Lack of teachers' enthusiasm in teaching.
- It is relatively difficult for teachers to engage students' attention, maintain classroom order and organize classroom discussions, the way they would in face-to-face learning.
- Difficulties in addressing different learning styles.
- Isolation.

The solution to those problems is building strong self-motivation skills concerning the online learning environment. Additionally, face-to-face communication with the tutors can be substituted with online communication, and online interactive activities between students should be promoted, similarly to the way they would be in traditional schools or in university classrooms. Also, solving an e-learning problem with a non-e-learning solution (e.g., taking course materials home to have the student's husband read them aloud or writing an exam at a different time from the rest of the class) is an alternate format.

1.4 Cyprus

SUMMARY OF THE QUESTIONNAIRE ANSWERS:

In Cyprus we received 10 responses. All participants are active educators from Cyprus, 70% are Male and 30% are Female. All responders are 30-49 years old and most of them have post graduate level education. The teaching subjects are spread in all categories, the most common size of class they teach is 20-29 students using blended learning. Two respondents use only online teaching/e-learning. The level of students is well spread from Primary school to adult education and VET with an average age of 20-29 years old.

All educators assess performance using a grading system and most of them more than one time in each semester. Most teachers communicate the potential failure of a student via email or personal meetings.

Concerning e-learning, the most common problems that may arise are the following:
Cheating
Lack of concentration
Tire of students and less concentration.
Students are inexperienced
Writing in a board
Cheating, plagiarism, etc.
Disengagement
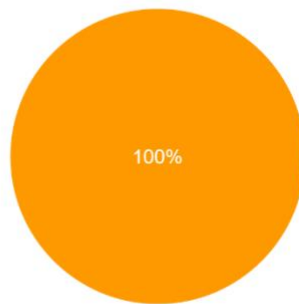Cannot control participation
Be on time
No real participation

Most educators use e-learning platforms for sharing material, content and resources related to the class.

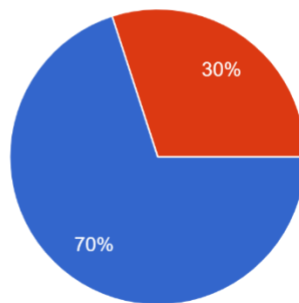RESULTS FROM THE QUESTIONNAIRE:

1. Country of origin
10 responses

- ● Bulgaria
- ● Spain
- ● Cyprus
- ● Greece
- ● Iceland

2. Gender
10 responses

- ● Male
- ● Female

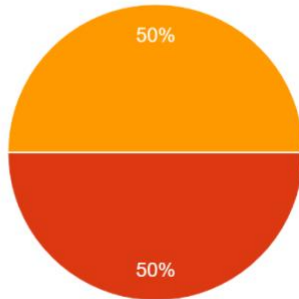MOTIVE

Co-funded by the
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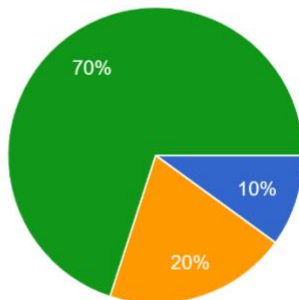of the European Union

3. Age - select a range
10 responses

- 20 - 29
- 30 - 39
- 40 - 49
- 50 - 59
- 60+

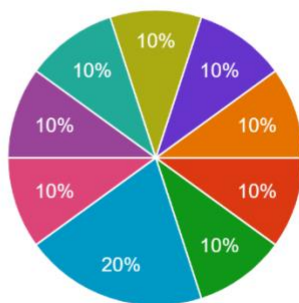## 4. Education - select highest level of attainment
10 responses

- Secondary School
- Vocational Education and Training
- University Level
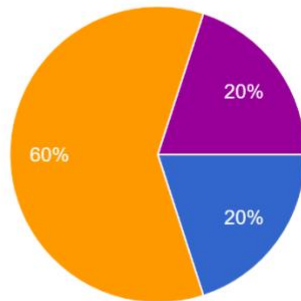- Post Graduate Level

5. Teaching Subject
10 responses

- National Language
- Mathematics
- ICT
- Physics / Chemistry
- History
- Social Sciences
- Other Sciences
- Music

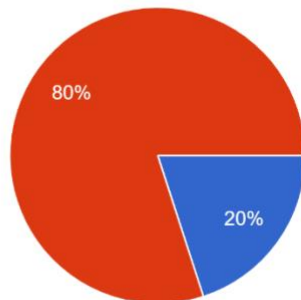△ 1/2 ▼

6. Present SIze of class (number of students)

10 responses

- ● 1 - 9
- ● 10 - 19
- ● 20 - 29
- ● 30 - 39
- ● 40+

7. Do you use e-learning and distant learning in your teaching?
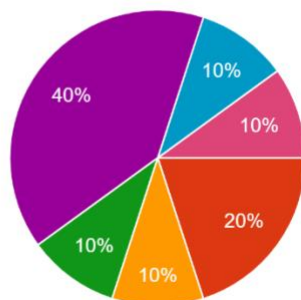
10 responses

- ● Yes, I use e-learning methods only.
- ● Yes, I use e-learning methods additional to face-to-face learning.
- ● No, I do not use e-learning.

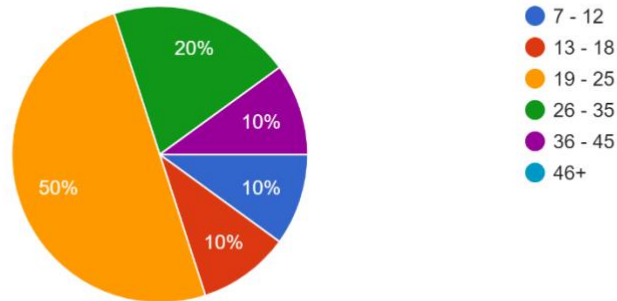## 8. The type of school or level you teach mostly:

10 responses

- ● Primary School
- ● Secondary School
- ● Tertiary Education
- ● Vocational Training
- ● Adult Education
- ● University
- ● University

9. What is the average age group of your students:

10 responses

- ● 7 - 12
- ● 13 - 18
- ● 19 - 25
- ● 26 - 35
- ● 36 - 45
- ● 46+

10. Which tasks do your students usually have to perform in order to pass your class (more than one answer possible)?

10 responses

Upload documents	4 (40%)
Fill out online quizzes	3 (30%)
Write texts/homework /projects/…	6 (60%)
Perform group work	6 (60%)
Post in forums	1 (10%)
Pass interim tests, if yes how…	5 (50%)
Pass final exams	6 (60%)
Apply creative methods	3 (30%)

11. How do you assess your students' learning paths?

10 responses

- ● Grades (depends on the national system), 1 – 5 for example
- ● Points
- ● Percentages

![MOTIVE logo]

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12. How often do you assess your students' learning paths within one semester?

10 responses

- ● Just once (e.g. one exam in the end)
- ● Twice (e.g. one interim and one final exam or test)
- ● Several times (e.g. several tasks during the semester)
- ● Irregularly
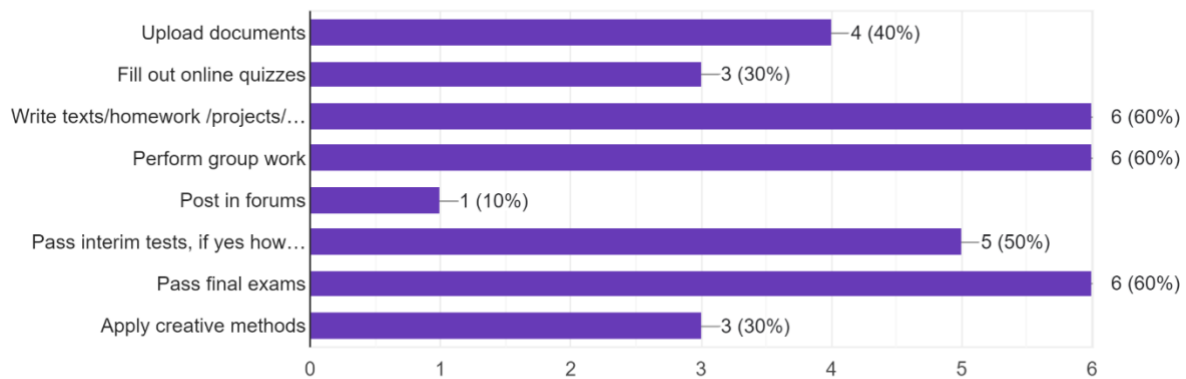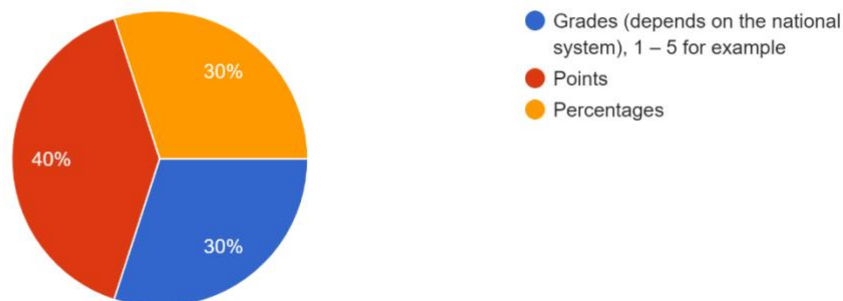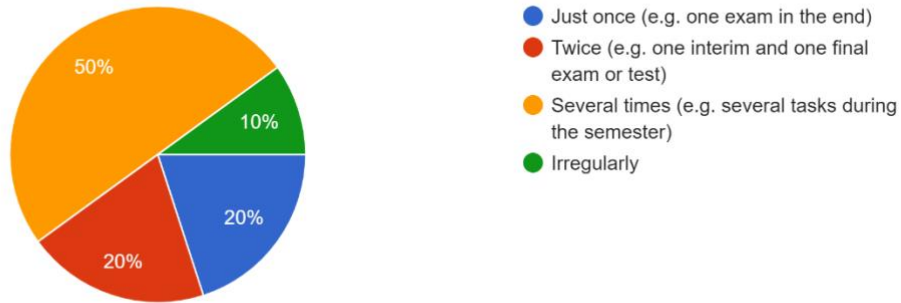
13. How do you assess your student's progress? (more than one answer possible)

10 responses

I assess formal requirements (uploading documents on time, handing in papers on time, etc.).	5 (50%)
I assess my students according to the content of the class/course (level of knowledge in a certain…	5 (50%)
I assess my student's participation (posting in forums, active participation i.e. asking q…	4 (40%)
I assess other issues	4 (40%)
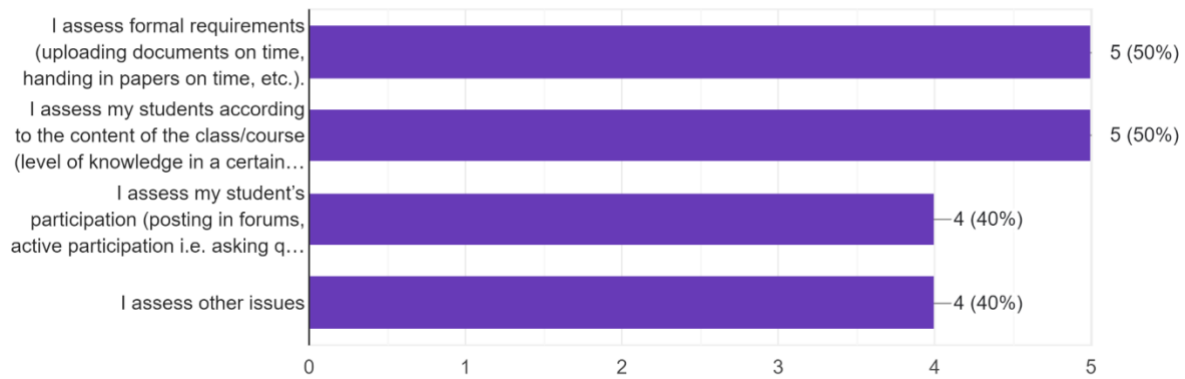
14. What would you say, which students are most likely to fail your class? (more than one answer possible)
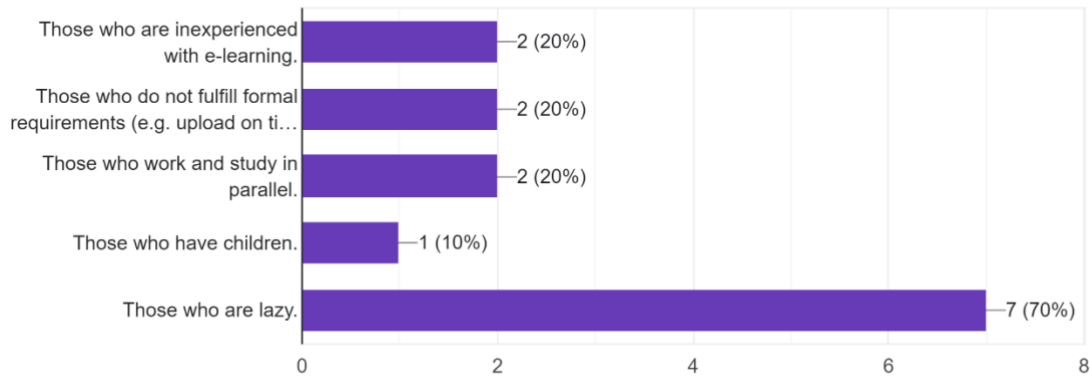
10 responses

15. How do you communicate that a student is about to fail a class?

10 responses

- I would communicate it via email.
- I would communicate it via telephone.
- I would communicate it in a personal meeting.
- I would ask someone else (an administrator, a tutor, etc.) to communicate it.
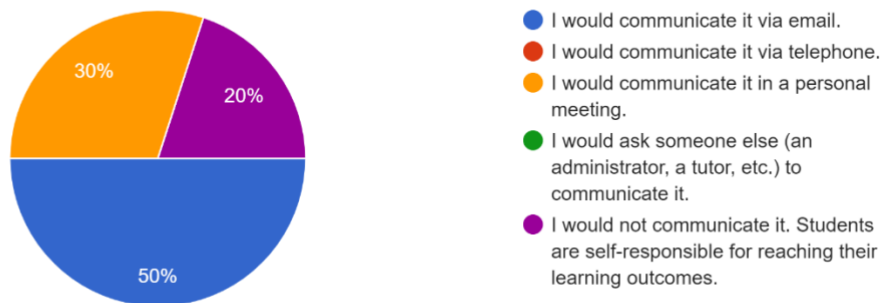- I would not communicate it. Students are self-responsible for reaching their learning outcomes.

16. How would you notice a student failing a class? 10 responses

Warn them and tell them to do their best at the evaluation
Poor grades
By email
Via the final marks announcement
Hji
Overall performance
Grades
Na
Not working enough
From the final exam

17. What could prevent a student from failing your class? 10 responses

Good Evaluation (exams, hard work at the end)

Study
Class attendance, hard work and willingness.
Study hard
Exams extra
Study
Extra help
Chat
More participative
ONLY FINAL MARK

18. What are the main problems you discover with using e-learning in general when it comes to assessment?10 responses
Cheating
Lack of concentration
Tire of students and less concentration.
Students are inexperienced
Writing in a board
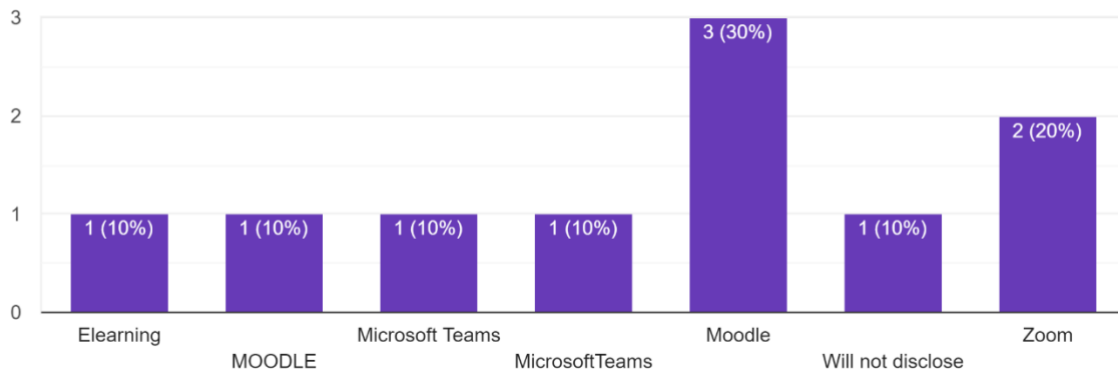Cheating, plagiarism, etc.
Disengagement
Cannot control participation
Be o time
No real participation
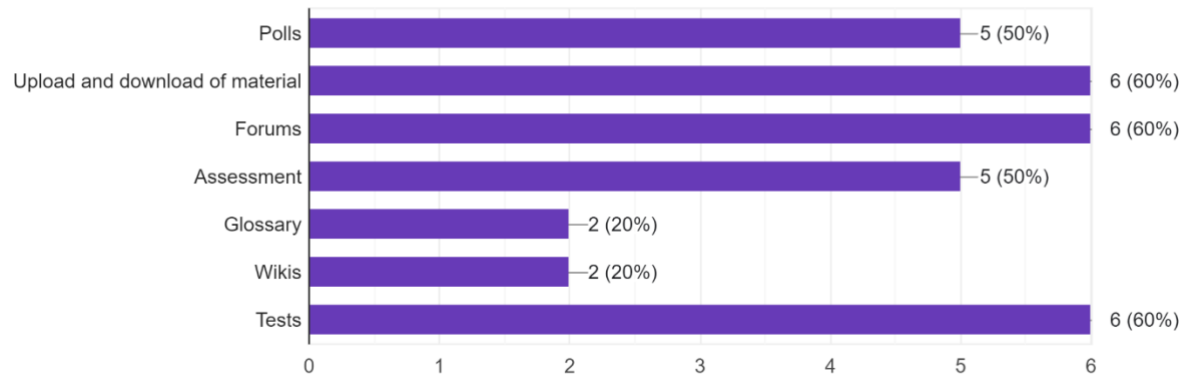
19. Which e-learning platform do you usually use?
10 responses

20. Which features of moodle/other platform do you usually use? (more than one answer possible)
10 responses

Feature	Value
Polls	5 (50%)
Upload and download of material	6 (60%)
Forums	6 (60%)
Assessment	5 (50%)
Glossary	2 (20%)
Wikis	2 (20%)
Tests	6 (60%)

21. Which three features of moodle are the most important to you? (3 answers possible)
10 responses

Feature	Value
Polls	4 (40%)
Upload and download of material	7 (70%)
Forums	3 (30%)
Assessment	2 (20%)
Glossary	0 (0%)
Wikis	2 (20%)
Tests	4 (40%)
I don't use moodle	1 (10%)
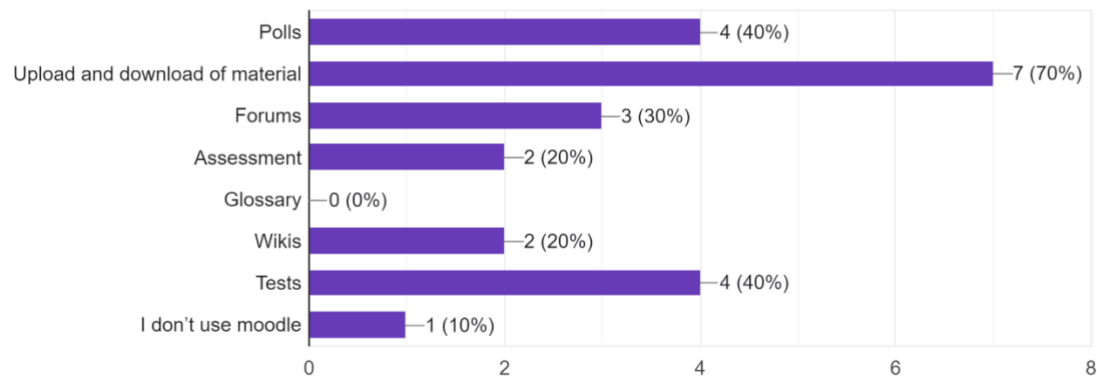
SUMMARY OF INTERVIEW ANSWERS:

RESULTS FROM INTERVIEWS

INTERVIEW 1:

SECTION I. PERSONAL CHARACTERISTICS

I.1. Country of origin:

	1. Bulgaria		2. Spain	X	3. Cyprus
	4. Greece		5. Iceland		

I.2. Gender:

X	1. Male		2. Female

I.3. Age – select one of the ranges below:

	1. 20-29		2. 30-39	X	3. 40-49		4. 50-59		5. 60+

I.4. Education – select highest level of educational attainment:

	1. Secondary School		2. Vocational Education and Training
	3. University Level	X	4. Post-graduate Level

SECTION II. CHARACTERISTICS OF THE SURVEY PARTICIPANT'S TEACHING SUBJECT

II.1. Teaching subject:

	1. National language
	2. Mathematics
	3. ICT
	4. Physics & Chemistry
	5. History
X	6. Social Sciences
	7. Other Sciences
	8. Music
	9. Painting
	10. Arts
	11. Financial literacy
	12. Other

II.2. Present size (number of students in class):

	1. 1-9		2. 10-19	X	3. 20-29		4. 30-39		5. 40+

SECTION III. EXISTING PRACTICES IN THE FIELD TRAINING AND TEACHING

III.1. What do you believe the role of education and training is today? How do you think it has changed in the last ten years? How do you think it will change in the next ten years?

- Education and training are about transferring and assimilating knowledge and developing skills, which are necessary for one to find their way in a professional career. Also, it's about helping student to develop a critical approach in solving problems.
- It changed significantly, in the sense that digitalization and Industry 4.0 has increased the amount of knowledge + created new needs for skills.
- AI and other recent developments would require students to learn and do more not only during in-class training but also while working (life-long training and learning).

III.2. What is the role of the educator, teacher, trainer, facilitator, moderator, etc. in the teaching and learning context, online and face-to-face? What role description would you give yourself for this course?

- To facilitate the training/teaching of students. The educator should be the channel through of which a student would gain access and understanding to relevant knowledge. Also, the educator should help the student develop the necessary skills.

III.3. Where does your particular course fit in, overall, in the education of your participants? Why do students need to take your course? What is the value of your course?

Students need to take my course to be able to understand and analyse:
- the need and scope of corporate restructuring, the feasibility and trade-offs employed in the different forms of restructuring
- the various modes of restructuring, as well as the planning and execution of various restructuring strategies
- compare, and argue over, corporate finance policy decisions based on recent scientific research over the corporate restructuring
- an in-depth understanding of conglomerate structures and the appropriateness of the different valuation models used

The course adds value because students:
- develop critical awareness of the issues related to corporate financial management decisions regarding corporate restructuring
- develop applied critical thinking and analysis skills through solving real-world problems in the form of case studies

III.4. What responsibilities do you have to your students? What responsibilities do they have toward each other and toward you?

The students need to attend all classes, participate during the lecture and to attend all coursework. Toward each other, the need to develop a nice group spirit while completing groupwork.

III.5. How should students be tested regarding their learning? What methods do you think work best, especially given particular course content?

Below I discuss the assessment methods I consider the most effective:

Assignments (e.g., case studies, problem sets, presentations). Students have the opportunity to work in groups to provide answers to assignment questions that will be handed in for assessment. They also have the opportunity to present their work during class time.

Case Studies. The case method is one of the most effective pedagogical tools to sharpen your analytical and decision-making skills. Cases intend to give you practice in assembling data, supporting and discussing decisions. Moreover, the case method provides a vehicle by which to apply theories, concepts, and frameworks that we discuss in class or which you find in the assignments. An important objective of the case method is for you to develop expertise in handling the important issues in a case and recognizing the crucial problems which must be dealt with and solved. These "problem definition" skills, along with your supporting analysis and conclusions, are extremely valuable regardless of the path your ultimate career takes Finally, the discussion constitutes an opportunity to defend your position and to learn from others, by listening to their comments and criticisms. Students are expected to work in groups to provide answers/solutions to these case studies. Working in groups reduce the computational time, increase the level of accuracy, and learn from your colleagues. Make sure that you contribute equally while working in groups.
Final Examination. My course is also assessed by means of a comprehensive end-of-semester examination.

III.6. Do you think teaching online will be qualitatively different from teaching in the face-to-face classroom? If so, how?

For my classes, there is no great difference. Of course, f2f helps to foster more interpersonal relationships and help students to stay more focused and have greater class participation.

III.7. How would you describe your own level of ADEQUACY of the skills and competences necessary for online teaching and training?

My level is well advanced. Due to COVID restrictions, I have taught several courses/hours using online methods.

INTERVIEW 2:

SECTION I. PERSONAL CHARACTERISTICS

I.1. Country of origin:

	1. Bulgaria		2. Spain	x	3. Cyprus
	4. Greece		5. Iceland		

I.2. Gender:

x	1. Male		2. Female

I.3. Age – select one of the ranges below:

	1. 20-29	x	2. 30-39		3. 40-49		4. 50-59		5. 60+

I.4. Education – select highest level of educational attainment:

	1. Secondary School		2. Vocational Education and Training
x	3. University Level		4. Post-graduate Level

SECTION II. CHARACTERISTICS OF THE SURVEY PARTICIPANT'S TEACHING SUBJECT

II.1. Teaching subject:

	1. National language
	2. Mathematics
	3. ICT
	4. Physics & Chemistry
	5. History
	6. Social Sciences
	7. Other Sciences
	8. Music
	9. Painting
	10. Arts
	11. Financial literacy
x	**12. Other – Adult and Youth Education**

II.2. Present size (number of students in class):

	1. 1-9	X	2. 10-19		3. 20-29		4. 30-39		5. 40+

SECTION III. EXISTING PRACTICES IN THE FIELD TRAINING AND TEACHING

III.1. What do you believe the role of education and training is today? How do you think it has changed in the last ten years? How do you think it will change in the next ten years?

Technology and information changed the education scene in the last decade. The Internet and other sources made learning a challenge. Continuous change and update of information is key.

III.2. What is the role of the educator, teacher, trainer, facilitator, moderator, etc. in the teaching and learning context, online and face-to-face? What role description would you give yourself for this course?

Mentorship and guidance should take the role of face-to-face learning and at the same time taking time to learn student habits and characteristics that can be used to help the quicker learning process.

Online learning should be used mostly as a tool to share resources and material.

III.3. Where does your particular course fit in, overall, in the education of your participants? Why do students need to take your course? What is the value of your course?

As an adult and youth educator, the greatest value of the courses I provide is the additional learning not only in the form of information but also methods and tools that are not used in traditional academia and educational centres.

III.4. What responsibilities do you have to your students? What responsibilities do they have toward each other and toward you?

My responsibility is the cultivation, mentorship and mindset changing experiences I provide through education and dialogue. Their responsibility is their attention, participation and respect to all.

III.5. How should students be tested regarding their learning? What methods do you think work best, especially given particular course content?

Testing has many forms but in particular technological and modern skills testing is most efficient by solving real time practical problems.

III.6. Do you think teaching online will be qualitatively different from teaching in the face-to-face classroom? If so, how?

This is true and it is something evident in the last years from the experience we all have during the Covid Pandemic and its driving of the education process towards online means. Online lessons apart from the technical difficulties, also show a drop in attention and expectations of learners.

> For example, face to face activities and mentoring is very difficult if not impossible to replicate with online means. Students expect only resource sharing and some examples/problems sharing.

III.7. How would you describe your own level of ADEQUACY of the skills and competences necessary for online teaching and training?

> My level is more than adequate but there is always room for improvement and learning new things.

INTERVIEW 3:

SECTION I. PERSONAL CHARACTERISTICS

I.1. Country of origin:

	1. Bulgaria		2. Spain	X	3. Cyprus
	4. Greece		5. Iceland		

I.2. Gender:

	1. Male	X	2. Female

I.3. Age – select one of the ranges below:

	1. 20-29		2. 30-39	X	3. 40-49		4. 50-59		5. 60+

I.4. Education – select highest level of educational attainment:

	1. Secondary School		2. Vocational Education and Training
	3. University Level	X	4. Post-graduate Level

SECTION II. CHARACTERISTICS OF THE SURVEY PARTICIPANT'S TEACHING SUBJECT

II.1. Teaching subject:

	1. National language
	2. Mathematics
	3. ICT

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	4. Physics & Chemistry
	5. History
	6. Social Sciences
	7. Other Sciences
	8. Music
	9. Painting
	10. Arts
	11. Financial literacy
X	12. Other : **English as a foreign language**

II.2. Present size (number of students in class):

	1. 1-9		2. 10-19	X	3. 20-29		4. 30-39		5. 40+

SECTION III. EXISTING PRACTICES IN THE FIELD TRAINING AND TEACHING

III.1. What do you believe the role of education and training is today? How do you think it has changed in the last ten years? How do you think it will change in the next ten years?

Education is a conservative institution which promotes the contextual historic, social, political, and cultural situation of a nation (or a country). Its role over the decades has been to educate people, to prepare them for the future society, to qualify them for work and to teach them morals and values. The last decade it seems that Education is running behind with respect to catch up (or to adapt) to the new challenges (climate change, population shifts, economic crisis, inequality, covid -19, technological explosion, wars, refugees). In my opinion, Education today is giving a "fight" with a new era which demands global citizens without superstitious beliefs, with a positive attitude through a process of lifelong learning. We are in between two eras and Education goals right at this moment are still outdated. I hope that after a decade, curriculums will be more openminded and Education finally will empower students for their adult life by helping them face any challenge positively and efficiently.

III.2. What is the role of the educator, teacher, trainer, facilitator, moderator, etc. in the teaching and learning context, online and face-to-face? What role description would you give yourself for this course?

Teacher's role independent of the mode of instruction (face-to-face or online teaching) is to inspire, motivate, encourage, and educate students. In the in-person educational context, the teacher can better detect each student's particular needs, talents, gifts, areas of growth that will help prepare an individual /personalized educational plan. In addition, the teacher can

better moderate peer discussions and interactions that create a more dynamic learning environment. Recently there have been technological advancement that facilitate the role of teacher as described above, in online teaching.

III.3. Where does your particular course fit in, overall, in the education of your participants? Why do students need to take your course? What is the value of your course?

English language as a foreign language for my country (Cyprus), is of great importance and students Know it. English is currently the language of Internet, Commerce, Technology, Travel, Online Education and Social Media.
Students' media – saturated lives depend on their ability to read, understand, and communicate in English. I believe that our Curriculum in this area gives the opportunity to students to improve their language through videos, story books, creativity projects, listening, writing, speaking etc.

III.4. What responsibilities do you have to your students? What responsibilities do they have toward each other and toward you?

I need to plan for my students a very good, organized lesson and to create opportunities for each student to thrive, therefore, I need to consider the different abilities of my students and differentiate the standard curriculum accordingly. I also need to give feedback to all my students, together and separately to each one. I sometimes want to assign small/creative homework without theory and memorization. Of course, I need to be the one who is mentoring the whole process with respect and understanding.
As for my students' responsibilities toward each other is obvious from the above that respect, and discussion are essential. They must be open, flexible and when is possible to give peer mentorship.
What I ask from my students is respect to the rules and punctuality with the time. I encourage/want them to be commitment to their learning and of course to give me their personal feedback.

III.5. How should students be tested regarding their learning? What methods do you think work best, especially given particular course content?

Assessment and Evaluation are ongoing processes at any subject/course/lesson. It works best with open books quizzes, small projects, creativity assignments without anxiety. I feel though, that is good as for the students, as for the teachers to conduct at least three to six (start – middle – final) standardized tests(per course) just so the teachers can detect needs, progress, problems and modify their teaching methods if necessary.

III.6. Do you think teaching online will be qualitatively different from teaching in the face-to-face classroom? If so, how?

Teaching online is here and as everything indicate is going to stay. During the next years there will be more online than face-to-face classes. Heavy lectures and memorization (traditional classroom) will give their place to flexible, readily available (accessible) teachers. And of course, different skills (traditional vs digital) and evaluation tools (traditional tests vs online quizzes and creative projects) will prevail. Face-to-face learning has the benefit of "live" competition with classmates and inner motivation, something that are missing from online teaching now BUT because young people today are familiar with technology, learning through technological tools will become more natural and easier to them.

III.7. How would you describe your own level of ADEQUACY of the skills and competences necessary for online teaching and training?

My transition as a teacher from face-to-face teaching to online teaching started since the 2020 lockdown. After attending several workshops, seminars, and related courses, I would say that I feel relatively competent in the basic skills required for online teaching. I admit that this is still an area of growth for me as all my pedagogical training was focused on traditional in-person teaching. I don't have the Know-how that is required for more specialized online activities and other online forms of instruction but in a scale 0-5 I would rate myself at 3.

INTERVIEW 4:

SECTION I. PERSONAL CHARACTERISTICS

I.1. Country of origin:

	1. Bulgaria		2. Spain	x	3. Cyprus
	4. Greece		5. Iceland		

I.2. Gender:

	1. Male	x	2. Female

I.3. Age – select one of the ranges below:

	1. 20-29	x	2. 30-39		3. 40-49		4. 50-59		5. 60+

I.4. Education – select highest level of educational attainment:

	1. Secondary School		2. Vocational Education and Training
	3. University Level	x	4. Post-graduate Level

SECTION II. CHARACTERISTICS OF THE SURVEY PARTICIPANT'S TEACHING SUBJECT

II.1. Teaching subject:

	1. National language
	2. Mathematics
	3. ICT
	4. Physics & Chemistry
	5. History
	6. Social Sciences
	7. Other Sciences
	8. Music
	9. Painting
	10. Arts
	11. Financial literacy
x	**12. Other – Engineering**

II.2. Present size (number of students in class):

	1. 1-9		2. 10-19		3. 20-29		4. 30-39	X	5. 40+

SECTION III. EXISTING PRACTICES IN THE FIELD TRAINING AND TEACHING

III.1. What do you believe the role of education and training is today? How do you think it has changed in the last ten years? How do you think it will change in the next ten years?

> The approaches to teaching can be categorized according to major educational goals that affect teaching strategies. On one hand the goal of education is viewed as the transmission of knowledge by the teachers to the students. On the other hand, the goal of education is viewed as facilitating students' autonomous learning and self-expression. Among the most difficult problems faced by the education system are those associated with teaching effectiveness. The current preparation of teachers for specific age levels, specific subject matter, specific academic skills, etc., does not take into consideration sufficiently the complexity of factors such as changes and students' various characteristics.
>
> At the moment and during the last decade there has been:
> An increasing demand in education and University Level Learning
> An increasing number of resources and knowledge
> A large number of technological advancements that can help the education transformation.

Education remains mostly unchanged with very generic and traditional teaching methods implemented but on the other hand the COVID-19 accelerated the use of technology.

III.2. What is the role of the educator, teacher, trainer, facilitator, moderator, etc. in the teaching and learning context, online and face-to-face? What role description would you give yourself for this course?

To pass knowledge and inspire learners to pursue their own development and advancement.

III.3. Where does your particular course fit in, overall, in the education of your participants? Why do students need to take your course? What is the value of your course?

My courses have the goal to advance students towards their engineering degree. Engineering is an exciting subject because it combines scientific and mathematical knowledge with creative thinking. It teaches you to question the established ways of doing things and to come up with new ideas. In order to do this, you need creativity and an ability to look beyond what has been done before.

III.4. What responsibilities do you have to your students? What responsibilities do they have toward each other and toward you?

My responsibility is to prepare and deliver advanced engineering courses that will set the basis and provide the necessary knowledge and creative thinking to the students, in order to continue their studies successfully.

Students have to be ready to learn and if necessary, develop thinking processes that fit the course. They deliver projects and assignments additionally to studying for their final exams.

III.5. How should students be tested regarding their learning? What methods do you think work best, especially given particular course content?

Solving problems during tests and scenarios that fit the courses.

III.6. Do you think teaching online will be qualitatively different from teaching in the face-to-face classroom? If so, how?

Teaching online is surely a challenge because direct communication is not of the same quality. Also, one to one encounter provides special attention and learning/teaching is in my opinion easier due to the better interaction.
Surely, online tools help spreading the learning material faster, but teaching is a whole other matter.

III.7. How would you describe your own level of ADEQUACY of the skills and competences necessary for online teaching and training?

1.5 Bulgaria

The COVID-19 pandemic confronted the education system with a new situation that urgent change of the current way of working. It was necessary to quickly acquire new knowledge and skills, as well as changes in the attitudes of all participants in the system to meet the needs of children, students and teachers. Effective normative changes and adaptations were implemented at the level of school and kindergarten, so that Bulgarian children and students do not miss school hours and continue to study synchronously or asynchronously according to the capabilities of the school and their family environment. Additional technical and financial resources have been provided to maximize access to distance learning in the electronic environment (DLEE). Digital and television educational content has been created freely accessible to all teachers and students from the Ministry of Education and Science (MES) and a number of partner organizations. All stakeholders in education cooperated in support of teachers, children, students and families. In Bulgaria, intensive training is an electronic environment entered after the pandemic, so the only reliable summaries of its application can be made as a result of analyzing this period. An Impact Assessment of the Institute for Educational Research was used for this purpose. The analysis contains survey made within the Bulgarian schools and their principals.

As a result, the 2020/2021 academic year passed without a hitch, including with successfully conducted national external assessments and matriculation exams, the average results of which did not differ significantly from those in the previous few years. This is a huge success against the background of alarming statistics from a number of countries around the world where students have lost tens of weeks of school time due to the compulsory closure of schools and the inability to provide effective training outside them. According to a country-specific survey commissioned by the Ministry of Education and Science, "every second school principal indicates the low motivation and engagement of students and the excessive employment of teachers in connection with the preparation and conduct of the learning process in an electronic environment as the two main sources of inefficient implementation of the DLEE ". For teachers, teaching and communicating at a distance has brought additional stress, emotional strain and a number of new challenges that require a new type of support. In the MES survey, 40% of teachers and 60% of principals say that students' knowledge has deteriorated as a result of the DLEE, with more than a third of them they also see a decline in students' academic performance.

The additional requirements for a suitable environment and means for learning and teaching from home, for additional support and participation of parents, for skills for self-regulation and active participation in the learning process despite the lack of live social contact create new challenges especially for children and students. vulnerable groups. In Bulgaria, the most vulnerable groups include children and students who come from low-educated and poor families, do not speak Bulgarian at home or have special educational needs, as well as some of the students living in villages. 20-25% of children and students in Bulgaria are in such a situation. For them, the additional support they receive in school from teachers, educational mediators, social workers and other non-pedagogical professionals is fundamental to overcoming the deficits of the family and community environment and their inherent educational inequalities. In the context of distance learning in an electronic environment, the risks of low educational outcomes and low involvement in the educational process of these groups of children and students, as well as possible subsequent dropping out, increase. Levels of early school leaving remain high, those of

functional illiteracy too. Inequality in student achievement is increasing. These challenges are further exacerbated by the new demands on teachers and students imposed by the pandemic. That is why, more than ever before, it is crucial to pay attention to the deep and long-term problems facing the Bulgarian preschool and school education with a special focus on the difficulties for students from risk groups and on the specific needs of support, development and empowerment of their teachers.

Resource security
The need to quickly readjust the educational process from a present to a remote form has led teachers and students to start using new technologies much more actively. This showed more participants in the system that computers, tablets and phones can be a useful and convenient tool in the teaching and learning process. More and more teachers dared to try new teaching methods and organize their classes according to the needs of individual students. The range of educational applications and platforms with learning content and materials used by teachers is growing. Over 90% of schools have access to a suitable online platform, 75% of them have access to the necessary digital tools and applications for effective learning in an electronic environment.

Nearly 86% of schools, all teachers have a computer, laptop or tablet in their home. In the remaining 14% of schools, between 1% and 16% of teachers do not have access to an electronic device at home. 68% of the schools have taken measures for additional resource provision of the teaching process by providing equipment (electronic devices) for personal use of teachers. Providing conditions for students to participate in distance learning in an electronic environment by supporting those who do not have access to electronic devices at home is a key factor in supporting learning and reducing the manifestations of educational inequalities. Half of the schools have made a targeted effort to provide electronic devices to students in need, thus ensuring the necessary minimum conditions for the integration of technologies to support their learning.

The data show that in 87% of schools all teachers have permanent access to home internet. However, it should be noted that in 3% of the schools there is not a single teacher who has internet at home, and ¾ of these schools are located in the villages. To assess the capacity of schools to offer an adequate continuing learning process through blended / hybrid learning formats in the 2020/2021 school year, we consider Internet security and the quality of the Internet connection in the schools themselves. In 46% of schools all students have constant access to the Internet at school when a face-to-face learning process takes place.

At the same time, 28% of principals indicated that only 1% of students had access to the Internet at the school. Another 3% of schools do not have internet access for students. Immediately before the transition to distance learning (in an electronic environment or other form), schools were provided to varying degrees with a suitable virtual environment. 73% of schools had an electronic diary. Half of the schools had a subscription to educational platforms, and 13% of the schools had their own platforms through which online learning could take place. It should be noted that just before the transition to distance learning in March 2020, a relatively small proportion of schools (33%) used a platform for online communication between the school and the student's home.

Professional development of teachers for teaching in a digital environment
In 2017-2020, on average, most teachers participated in trainings for the use of innovative teaching methods (47.9% of all) and for the use of ICT in the teaching process, including work with equipment (41% of all). On average, about 1/3 of the teachers have received additional qualifications for working

with parents. The average share of teachers in the individual schools is relatively low, who have participated in key for the effective conduct of distance learning in an electronic environment training for advanced training: for work with specialized educational platforms and educational resources (average 30.4%) and for planning and organization of the learning process (average 30.8%). However, it should be borne in mind that the variations between schools are significant. In about 30% of the schools no teacher has received additional qualification for work with educational platforms and educational resources during the last 3 school years, as 2/3 of these schools are located in the villages.

In only 6% of schools did the entire team of teachers conduct distance learning, relying on previous qualifications to work with educational platforms and educational resources. For the same period in 11% of the schools there are no trained teachers for work with ICT, and in 15% of the schools the teachers have not received qualifications for planning and organizing the learning process. In 20% of the schools no teacher has participated in a qualification for working with parents for the last 3 years, and the majority of these schools are located in small towns and villages. In practice, in these schools the team of teachers has organized and conducted distance learning in an electronic environment without the availability of up-to-date formal qualifications on key aspects of the effectiveness of this training.

Logistics of the learning process
The teachers in most schools have used more than one distance learning platform in an electronic environment. The most widely used platforms are MS Teams, Google Classroom, Schoolo (BG platform), Zoom and Moodle. In many schools the platforms were changed in the process of work. About 8% of schools used only applications (Viber, Messenger) and social networks (Facebook, Instagram). Different schools have used different approaches to choosing platform (s). Despite the considerable freedom of choice that was given to them, for 48% of the schools the leading factor in the choice of platforms was the recommendations of the Ministry of Education and Science. Less than half (46%) of schools have taken into account the preferences and capabilities of students, although this should be a leading consideration given that students' perceptions of the usefulness of a platform and their ability to work with it are key conditions for the engagement and active participation of students in online learning. 46% of the schools have decided for a unified use of one platform by all teachers in the school, and ¼ of the schools have given freedom to the teachers to choose the platform / s with which to work. Only 7% of schools have benefited from their own platform, which allows distance learning.

Potential for introduction of new teaching methods
A significant share of schools report improved capacity to implement sustainable changes in the organization of the learning process and to develop educational innovations. 89% of principals believe that the experience of teachers and students with ICT creates potential opportunities for the development of innovative practices in their school. Despite recognizing this potential, a relatively small proportion (33%) of principals have identified a specific innovative practice as a result of distance learning experience and have immediate plans for its development. Again, 89% of principals consider the change in teachers' attitudes after distance learning as a factor for effective integration of technologies in the process of teaching and learning, and for 79% of them the attitudes of students also create opportunities in this regard.

In 62% of the schools there is a potential for parent-supported changes in the future organization of the learning process. Only 3% of principals do not see an opportunity to develop future educational innovations based on the experience of distance learning in an electronic environment. For 15% of principals, even if there is an opportunity to develop educational innovations, it is not immediate. The availability of technological capacity (electronic resources and technologies) for possible future

development of mixed (hybrid) forms of training, combining face-to-face and online training, is assessed as relatively high - more than half of the principals believe that they have such capacity as a result of distance learning. . In addition, 79% of them consider the technical and pedagogical skills of teachers to be sufficient for the effective combination of face-to-face and online learning. Moreover, about 83% of principals indicate that school teachers are motivated to use digital technologies in face-to-face learning. But it should be borne in mind that 67% of principals identify the need for additional training to develop the digital skills of most teachers. 90% of principals report improved cooperation between teachers in the school as a result of working during distance learning. Good cooperation between teachers and the development of professional teaching communities is considered a prerequisite for mutual learning and professional development of teachers, improvement of pedagogical practices and ultimately for achieving better educational results. The assessment of 87% of the principals is that they did better with the distance learning than they initially expected. As far as the legal definition of efficiency in Bulgaria is "the degree of achievement of the goals when comparing the actual and expected results of the activity", it can be said that the majority of principals define the effectiveness of distance learning as high than expected. Only 5% of directors believe that what has been achieved is below their initial expectations and in this sense have achieved lower efficiency.

Potential inefficiencies are generated mainly due to:
- the short time for preparation of the transition from face-to-face training to distance learning (64% of the principals);
- low motivation and commitment of students (47% of principals);
- limited access of students to technology and the Internet (47% of principals);
- digital competencies of students (46% of principals);
- Insufficient provision of electronic devices (44% of principals);
- insufficiently developed functionalities of the used platforms (40% of the principals);
- Insufficient support and commitment from parents (39% of principals)

It is noteworthy that the skills and competencies of teachers are not considered a serious threat to the effectiveness of distance learning in an electronic environment.

Organization of the learning process from a distance
In world practice, traditional forms of distance learning in an electronic environment (offered so far mainly in higher education) include both synchronous and asynchronous forms of organization.
In world practice, traditional forms of distance learning in an electronic environment (offered so far mainly in higher education) include both synchronous and asynchronous forms of organization. Each of these two methods has its advantages and serves different purposes. In asynchronous organization of distance learning in an electronic environment, the relationship between teacher and students is not realized in real time, as students have online access and can interact with the learning content at any time. However, in a situation of extraordinary reorientation from a present learning process to a distance learning process for all students, synchronous learning offers significantly better opportunities for interaction between teachers and students, and between students themselves in real time. This form provides a better opportunity for student involvement and participation in learning, and encourages active learning and collaboration between students, allows for immediate adaptation of the learning process to support learning, regular monitoring of progress and immediate feedback. The data show that 63% of schools have conducted synchronous distance learning in an electronic environment, and the remaining 37% have organized an asynchronous learning process. 71% of schools in large cities, 79% of

schools in small towns, and only 46% of schools in rural areas have organized a synchronous online distance learning process.

According to the theory of educational effectiveness, the time during which students are actively engaged in learning is a major factor in achieving learning effectiveness. In a little over half (52%) of the schools, the distance learning process in an electronic environment has fully adhered to the weekly schedule of classes approved at the beginning of the school term. It can be said that from this point of view in these schools similar conditions have been created for utilization of learning time as in the present training. In the other half of the schools, however, the learning process deviated to one degree or another from the weekly schedule of classes in person.

This format is often considered a key component of flexible learning in an e-learning environment. According to the Cognitive Model for Media Choice (Robert & Dennis, 2005), asynchronous learning develops the ability to process information because learners have the opportunity at the appropriate time and at their own pace to understand the learning material, seek additional information, and so on.

At the same time, however, it presupposes the availability of skills for self-directed learning and time management by learners, good self-regulation in the learning environment, access to additional support in case of learning difficulties, etc. However, in a situation of extraordinary reorientation from a present learning process to a distance learning process for all students, synchronous learning offers significantly better opportunities for interaction between teachers and students, and between students themselves in real time. This form provides a better opportunity for student involvement and participation in learning, and encourages active learning and collaboration between students, allows for immediate adaptation of the learning process to support learning, regular monitoring of progress and immediate feedback. In addition, synchronous learning creates conditions for maintaining the so-called. "Social presence" (personal connection with others), which is especially important for the socialization of students and for limiting the feeling of isolation and stress. All of these dimensions are essential to learning effectiveness (Webster & Hackley, 1997; Volery 2001), especially in school education and younger students.

The data show that 63% of schools have conducted synchronous distance learning in an electronic environment, and the remaining 37% have organized an asynchronous learning process. 71% of schools in large cities, 79% of schools in small towns, and only 46% of schools in rural areas have organized a synchronous online distance learning process. Along with the specific form of organization of the distance learning process, we also examine the extent to which this process has adhered to the weekly schedule of classes approved at the beginning of the school term. Adherence to the weekly schedule of classes, the duration of classes, the time for self-preparation, the overall length of time during which students have been engaged in the process of distance learning, determine the time spent learning. As stated in the methodology, according to the theory of educational effectiveness, the time during which students are actively engaged in learning is a major factor in achieving learning effectiveness (Creemers & Reezigt, 1996, 1997; Creemers & Kyriakides, 2008).

In a little over half (52%) of the schools, the distance learning process in an electronic environment has fully adhered to the weekly schedule of classes approved at the beginning of the school term. It can be said that from this point of view in these schools similar conditions have been created for utilization of learning time as in the present training. In the other half of the schools, however, the learning process deviated to one degree or another from the weekly schedule of classes in person. The transition from the present organization of the learning process to distance learning in March 2020 was carried out in a

state of emergency and without prior training and experience of schools in conducting distance learning. The lack of experience and clear algorithms for working in such conditions (which differ significantly from the routine of working in the physical classroom) on the one hand, and the need for more active measures to engage and effectively teach students, imply the application of adequate systems for supporting and adapting the learning process - both by individual teachers at the class level and by school management at the school level.

Just over half (54%) of the schools have established a procedure for daily monitoring of the learning process from a distance, in order to adapt it if necessary. In about 33% of schools such a procedure is applied at least once a week. From this we can conclude that the majority of schools (87%) have established systems for regular monitoring and adaptation of the organization of the learning process to identified needs. It should be noted that the schools in the villages were particularly active in this respect - 60% of these schools monitored the learning process on a daily basis, and another 35% did so at least once a week. At the same time, about 2% of schools have not applied at all procedures for monitoring and adapting the organization of the learning process, and the majority of these schools are located in small towns. It is clear from the principals' responses that teachers in most schools have used more than one distance learning platform in an e-learning environment. The most widely used platforms are MS Teams, Google Classroom, School, Zoom and Moodle. In many schools the platforms were changed in the process of work. About 8% of schools used only applications (Viber, Messenger) and social networks (Facebook, Instagram).

Different schools have used different approaches to choosing platform (s). Despite the considerable freedom of choice that was given to them, for 48% of the schools the leading factor in the choice of platforms was the recommendations of the Ministry of Education and Science. Less than half (46%) of schools have taken into account the preferences and capabilities of students, although this should be a leading consideration given that students' perceptions of the usefulness of a platform and their ability to work with it are key conditions for student engagement and active participation in online learning (Volery, 2001).

46% of the schools have decided for a unified use of one platform by all teachers in the school, and ¼ of the schools have given freedom to the teachers to choose the platform / s with which to work. Only 7% of schools have benefited from their own platform, which allows distance learning. We also explore the considerations of schools, which predetermine their choice of a major platform for online learning among the many options available. Here again, the recommendations of the Ministry of Education and Science play a leading role in the choice of 45% of schools, but for 50% of schools the main reason for choosing a main platform is its ease of use. Thirdly, the choice is determined by the offered functionalities of the platform (for 44% of the schools). The security of the platform and the choice of teachers are taken into account by 39% of schools. Only 19% of schools that have chosen a basic platform for conducting distance learning in an electronic environment have taken into account the preferences of students (Figure 25). Again, students 'perceptions of the usefulness of a platform and their ability to work with it are considered a prerequisite for students' engagement and active participation in e-learning, and ultimately for the success of the learning process.

2.0 Online Learning

2.1 Why develop online and e-learning?

Many organizations and institutions are increasingly using technology to deliver learning. One advantage for them in using e-learning is its potential for providing a good return on investment. Developing e-learning programmes is in fact more expensive than preparing classroom materials or organizing training the trainers' events, especially if multimedia or highly interactive methods are required. However, delivery costs for e-learning (including costs of web servers and technical support) are considerably lower than those for classroom facilities, printing materials, instructor time, participants' travel and job time lost to attend classroom sessions.

Furthermore, while traditional methods can reach a limited number of individuals per year, e-learning can reach thousands of people throughout the world, thereby resulting in a highly cost-effective method in the longer term.

E-learning can reach a wide target audience, including learners who are:

- geographically dispersed, with limited time and/or resources to travel;
- busy with work or family commitments, which do not allow them to attend courses on specific dates with a fixed schedule;
- contingent workers, such as consultants, professionals working part-time, independent contractors;
- located in conflict and post-conflict areas and/or restricted in their mobility due to security reasons;
- limited from participating in classroom sessions due to cultural or religious beliefs;
- facing difficulties with real-time communication (e.g., foreign language learners).

Moreover, web-based learning makes use of existing infrastructure (computers, servers, intranets, etc.) and learners' activities can be managed, tracked and monitored through learning management systems.

E-learning allows flexibility to learn anytime, anywhere. It enables learning to be easily (and cheaply) spread over time, so that it takes place over a longer period, thereby enhancing its effectiveness. Online learners can take e-learning courses from their office, home or any other place where there is an Internet connection. They can benefit from just-in-time learning, by accessing e-learning content at the moment they need it, rather than over fixed dates and periods.

E-learning also allows the use of a variety of instructional methods, the combination of collaboration activities with individual learning, and the personalization of learning paths based on learners' needs.

The quality of an e-learning course is enhanced by:

LEARNER-CENTRED CONTENT: E-learning courses should be relevant and specific to learners' needs, roles and responsibilities in professional life. Skills, knowledge and information should be provided to this end.

GRANULARITY: E-learning content should be segmented to facilitate the assimilation of new knowledge and allow flexible scheduling of time for learning.

ENGAGING CONTENT: Instructional methods and techniques should be used creatively to develop an engaging and motivating learning experience.

INTERACTIVITY: Frequent learner interaction is needed to sustain attention and promote learning.

PERSONALIZATION: Self-paced courses should be customizable to reflect learners' interests and needs; in instructor-led courses, tutors and facilitators should be able to follow learners' progress and performance individually.

Training programmes aim to develop different types of skills:

COGNITIVE SKILLS, which involve increasing knowledge and comprehension (e.g., scientific concepts), following instructions (i.e., procedural skills) and applying methods in new situations to solve problems (i.e. thinking or strategical skills);

INTERPERSONAL SKILLS, such as those involved in active listening, presenting or negotiating; and

PSYCHOMOTOR SKILLS, which involve acquiring physical perceptions and movements (e.g., playing sports or driving a car).

Since e-learning is not ideal for all purposes, it is unlikely that it will replace classroom training completely in an organization. An effective application of e-learning may be to complement conventional training in order to reach as many learners as possible.

2.2 Online & e-learning content

E-learning content can be produced for self-paced e-learning, where learners are free to learn at their own pace and to define personal learning paths based on their individual needs. Alternatively, it can be complemented by facilitation, social interaction and online collaboration activities.

E-learning content is usually hosted on a web server, with learners accessing it from an online learning platform. When offered through an Internet connection, there is the potential to track learners' actions in a central database through online registration.

E-learning content is developed according to a set of learning objectives and is delivered using different media elements, such as text, graphics, audio and video.

Some types of e-learning product are mobile-responsive, meaning that they can also be accessed from and properly displayed on mobile devices (tablets and smartphones).

2.3 Types of online & e-learning content

E-learning content includes a range of materials that can be more or less sophisticated in the use of media and level of interactivity. Types of e-learning content can be classified as follows:

Simple learning resources

Simple learning resources are non-interactive resources such as documents, PowerPoint presentations, animated videos, video tutorials and audio files (podcasts). These materials are non-interactive, in the sense that learners can only read or watch content but cannot perform any other action.

When they match defined learning objectives and are designed in a structured way, these materials can be a valuable learning resource, even though they do not provide any interactivity.

E-learning courses

E-learning courses are stand-alone interactive learning materials that correspond to one or more learning objectives by providing explanations, examples, interactivity, questions and feedback, glossaries, etc., in order to make learners self-sufficient in learning new concepts and skills. They can combine several types of media, including text, images, animations, audio and video.

E-learning courses can include one or more e-learning lessons, whose duration should be limited to a maximum of about 30 minutes of learning time.

An e-learning lesson can have a linear sequence, where content is presented in a predefined order; or it can take a branching approach, where learners follow different paths according to their choices.

A range of instructional techniques can be used to create an e-learning lesson.

Regardless of the approach selected, there are some typical elements that are generally present in an e-learning lesson. They include:

- introduction: providing the learning objectives for the lesson and an overview of how the knowledge gained from the lesson can be used by the learner (motivational step);

- core content: a set of screens combining text and media elements, examples and practice questions; and,
- summary: a short description of the topic covered, or lessons learned, to help the learner memorize the lesson's key points.

E-learning courses often include additional resources, such as downloadable job aids (e.g., checklists, tables), a glossary providing key terms and related explanations, and a bibliography and/or links to web resources, where learners can find out more about the topic.

Simulations and games

Simulations and games are highly interactive forms of e-learning. The term 'simulation' basically means creating a learning environment that simulates the real world, allowing the learner to learn by doing. Simulations are a specific form of web-based training that immerses the learner in a real-world situation and responds in a dynamic way to his/her behaviour. Learning games involve a competitive component, a challenging goal and a set of rules and constraints.

Virtual reality and augmented reality are new and effective ways to realize simulations and games. Virtual reality can be very powerful for simulating human interaction and for practical training in real-world physical scenarios.

Performance support tools

Performance support is informal learning that supports learners in applying existing skills or knowledge. Its use is integrated into the learner's work. It usually provides immediate answers to specific questions, thereby helping users to accomplish job tasks.

Performance support tools can take several forms and be delivered on different platforms (e.g., computer, printed document, mobile phone). Technical glossaries and checklists are a few examples of simple job aids, but sophisticated expert systems can also be developed to assist workers in complex decision-making.

Tests

Tests (also called quizzes, assessments, or knowledge checks) are an essential component of e-learning. They can be integrated into an e-learning course or be provided as stand-alone learning components.

Tests help to assess learners' progress, as well as the effectiveness of learning. They also have the potential to increase learners' engagement and to support the learning process through the provision of personalized feedback.

2.4 Online facilitation and social interaction

Social interaction components can be used to complement e-learning content with human and social dimensions. They include:

1. E-tutoring, e-coaching, e-mentoring: these services provide individual support and feedback to learners through online tools and facilitation techniques.

Tutoring, coaching and mentoring

Tutoring is provided by a tutor or facilitator to support learners in completing activities throughout the course.

Coaching is a task-oriented service to support the development of specific skills; it is normally provided by a subject matter expert over a short-term period.

Mentoring is a longer-time service to support future learners' development. For example, it can support the transfer of acquired knowledge and skills to the job context.

2. Collaborative learning: these activities range from discussions and knowledge sharing to working together on a common project or for a common objective.

Social software, such as chats, discussion forums and blogs, are used for online collaboration among learners.

Online discussions are designed to facilitate communication and knowledge sharing among learners. Learners can comment and exchange ideas about course activities or contribute to group learning by sharing their knowledge.

Collaborative project work involves collaboration among learners to jointly perform a task or an assignment and reach a common objective. Collaborative activities can include project work and scenario-based assignments.

3. Webinars and virtual classrooms: these instructional methods are the most similar to traditional classroom training, as they are live events led by an instructor or a subject matter expert.

An instructor teaches a group of learners remotely, and in real time, using a combination of materials (e.g., PowerPoint slides, audio or video materials). A **virtual classroom** usually includes interactive activities such as question-and-answer (Q&A) sessions, polls, quizzes and group work. Appropriate technology and good connectivity must be in place for both learners and providers.

4. Synchronous and asynchronous e-learning

The flexibility of Internet technology creates grey areas around the concepts of synchronous and asynchronous events (Morrison, 2003). For example, video and audio sessions can be recorded and made available for learners who cannot attend a live event.

Synchronous events

take place in real time. Synchronous communication between two people requires them both to be present at a given time. Examples of synchronous activities are chat conversations and audio/video conferencing.

Asynchronous events

are time-independent. A self-paced course is an example of asynchronous e-learning, because it can be studied at any time. E-mail or discussion forums are examples of asynchronous communication tools.

3.0 What is needed to develop online Learning

3.1 The activities

Good design and planning, while crucial for every type of training programme, are even more important for e-learning projects.

E-learning content and activities must be carefully designed before implementation, as less space is given for last-minute adjustments compared with face-to face training. Producing e-learning content may require more resources, so it is important to make sure that the final product meets some quality criteria. In addition, e-learning content can be delivered many times to different learners, and reused in different contexts.

Also, social interaction through online tools must be carefully planned to keep engagement and participation by learners who are not physically present in the same room. Instructions for activities must be very clear and technology must work properly.

Phases of an e-learning project

E-learning projects vary considerably in size and complexity. The process described below is comprehensive – it covers all the options that can be included in a complex learning project and can be applied to both self-paced and facilitated e-learning courses. However, some of the steps can be skipped or simplified according to the project's objectives and requirements, including budgetary, expertise and organizational constraints.

1. Analysis

A needs analysis should be conducted at the start of any development effort to determine whether:

- training is required to fill a gap in professional knowledge and skills; and,
- e-learning is the best solution to deliver the training.

The needs analysis enables the identification of general, high-level course goals.

Target audience analysis is another crucial step. The design and delivery of e-learning will be influenced by key characteristics of the learners (e.g., their previous knowledge and skills, geographical provenance, learning context and access to technology).

Analysis is also needed to determine the course content. Task analysis identifies the job tasks that learners should complete and the knowledge and skills that need to be developed or reinforced. This type of analysis is mainly used in courses designed to build specific job- related skills. Topic analysis is conducted to identify and classify the course content. This is typical of courses that are primarily designed to provide information.

2. Design

The design stage encompasses the following activities:

- formulating a set of learning objectives required to achieve the general, high-level course objective;

defining the order in which the objectives should be achieved (sequencing); and

- selecting instructional, media, evaluation and delivery strategies. The outcome of the design stage is a blueprint that will be used as a reference to develop the course. The blueprint illustrates the curriculum structure (e.g., its organization in courses, units, lessons, activities); the learning objectives associated with each unit; and the delivery methods and formats (e.g., interactive self-paced materials, synchronous and/or asynchronous collaborative activities) to deliver each unit.

3. Development

In this stage, the e-learning content is actually produced. The content can vary considerably, depending on the resources available. For example, e-learning content may consist of only simpler materials (i.e., those with little or no interactivity or multimedia component, such as structured PDF documents), which can be combined with other materials (e.g., audio or video files), assignments and tests. In that situation, storyboard development and the development of media and electronic interactions would not be conducted.

The development of interactive e-learning content comprises three main steps:

- content: writing or collecting all the required knowledge and information;
- storyboard: organizing the content into a structure by choosing appropriate instructional methods and creating a storyboard, i.e., an intermediate product where all the components of the final object are defined, including images, text, interactions, assessment tests; and
- courseware: finalizing the product by developing media and interactive components and generating the final version in the required delivery format(s).

4. Implementation

At this stage, the course is delivered to learners. The courseware is installed on a server and made accessible for learners. In facilitated and instructor- led courses, this stage corresponds to the actual delivery of the course to a group of participants, and it also includes managing and facilitating learners' activities.

5. Evaluation

An e-learning project can be evaluated for specific purposes. You may want to evaluate learners' reactions, the achievement of learning objectives, the transfer of job-related knowledge and skills, and/or the impact of the project on the organization.

3.2 The technology

Technology is required to produce and deliver e-learning. Digital tools and technologies are used in a variety of ways to support learning, teaching and assessment. A mix of digital learning tools, devices, platforms and applications is making learning more flexible and convenient.

Mobile technologies have proved to be useful for learners travelling in remote locations. Outreach benefit s of such technologies are evident for learners living in remote areas and facing limited access to conventional learning.

With the use of authoring tools, organizations can put together different resources into interactive packages formatted in a standardized way to be easily updated, repurposed, delivered and accessed by unlimited numbers of learners.

Some projects may require a learning management system to track and administer learners' activities and manage e-learning content. Learning management systems are efficient administration tools, not only for profiling, monitoring and tracking learners and their progress and behaviour, but also as a central resource repository system for easier updates and cataloguing of instructional materials.

Full featured video conference tools are just one example of how learning experiences are being improved. Skype, Zoom, MS Teams, GoToMeetings, WebEx, Google Meat, and similar services allow one-to-one, one-to-many and many-to-many working groups to share experiences with one another and interact inexpensively in real time, via PC or mobile devices.

Geographically dispersed trainers and learners can fully explore new virtual experiences thanks to features such as: high-definition video, screen sharing, file sharing, instant messaging and lesson recording. The mixture of audio and visual impact faithfully replicates and emulates natural immersive face- to-face learning.

4.0 Organizing your content

4.1 Defining learning objectives

Learning objectives determine the expected outcome of each learning unit. For example, will learners be able to memorize the steps of a procedure, or will they be able to perform it?

<u>What is a learning objective?</u>

A learning objective is a statement describing a competency or performance capability to be acquired by the learner. Objectives should be specified for the course, as well as for each single activity.

Learning objectives combine two main elements:

- the expected level of performance (through an action verb, such as 'describe' or 'explain'); and
- the learning content (i.e., the type of knowledge or skills that must be learned, such as 'the main objectives of a food security information system').

 Learning objectives can also include performance conditions (i.e., the context in which the behaviour will be performed, such as 'orally'); and performance criteria (i.e., how well the behaviour will be performed, such as 'with a maximum of five errors').

<u>Types of learning content</u>

The following classification identifies six main types of content: facts, procedures, concepts, principles, interpersonal skills and attitudes.

Facts: unique, specific information that answers the questions: who, where, when? Facts are shown, exhibited or indicated.

Examples: data, lists, historical events

Procedures: a procedure is a series of clearly defined steps, aiming to perform a task. Procedures answer the question: 'How to …?'

Concepts: a concept is a group of objects, entities or ideas that: are defined by a single word or term; share common characteristics; differ in unimportant characteristics; require a definition; and answer the question: 'What is …?'

Example: the concept of 'climate change'

Principles: a principle (or rule) describes a relationship between two concepts. For example: 'As price increases, the supply increases. Some principles can be translated into strategic guidelines that can guide decisions and complex tasks.

Example: 'guidelines for facing price volatility'.

Interpersonal skills: verbal and non-verbal skills for interacting with other people.

For example, content related to 'negotiating' or 'solving group conflict'.

Attitudes: predispositions to behaviour.

Example: content related to appreciate the 'importance and urgency of adopting measures for limiting the negative impacts of climate change'.

5.0 Delivery, Instructional and Evaluation methods

5.1 How to deliver the learning?

The choice of delivery format for a specific course is linked to the type of instructional method selected as well as to factors related to learners' characteristics, technological and organizational constraints (e.g., budget), and the time available.

Learner-related factors

The following are important factors to consider about learners:

- Learners' comfort with delivery channels; audio and video conferencing (i.e., synchronous e-learning) make it easier to develop a social presence and can enable more spontaneous exchanges to be generated. However, time limitations mean that not everyone can be available to participate all the time, especially in large classes and if there are dominant personalities. Also, audio and video conferencing can be frustrating for non-native language learners. Conversely, everyone can participate in asynchronous discussions and forums.

- Learners' level of technical expertise; if they have only recently experimented with e-mail, learners may have difficulty working with whiteboards and video conferencing. It is important to consider how much technical support can be offered to them.

- Learners' available time; in general, asynchronous learning allows more flexibility regarding time management. Learners can take lessons and contribute to discussions at the time that is most convenient for them, and review materials as often as needed. If learners are busy, are in different

time zones, or cannot conform to rigid schedules because they can only access a shared computer during certain hours, asynchronous tools may be preferable. Also, carefully designed self-paced material may be shorter and more concise than a presentation given in a live session (Stein and Graham, 2014).

- Technology aspects; the capacities of learners' computers, as well as their infrastructure and connectivity, need to be considered before making any decisions on technology. Understanding whether learners have easy access to network systems is crucial when deciding on the delivery format. Being aware of bandwidth limitations is particularly important. In the event of limited Internet access, for example, it may be necessary to provide materials offline in a downloadable format, or to deliver training through mobile technology. In this latter case, a mobile- responsive format – which can be properly visualized on tablets and mobile phones – may need to be adopted. It may also be important to consider what kind of computers and software programmes learners use, especially when creating e-learning courses in development contexts. Technical requirements, including multimedia capabilities, influence the selection of the media mix. However, it should be noted that using several different media tools does not necessarily improve the effectiveness of an e-learning activity. Good instructional design is more critical to achieving learning effectiveness than using sophisticated multimedia effects. If delivery on mobile phones is considered, you may want to collect information about the type of smartphone used by participants, and the data plan that they have agreed with the telephone company.

- Organizational requirements and constraints; a range of organizational requirements and constraints, such as the time and budget available, will influence the choice of delivery formats. Developing self-paced learning will generally require more time than preparing a virtual classroom. When instruction needs to be provided in the least amount of time, a series of large virtual classes may be the best solution. Investing in the development of a self-paced course makes sense to meet long-term training goals, rather than immediate, urgent training needs. However, it is important to bear in mind that development costs for interactive content have dramatically declined due to the development of new authoring tools. Moreover, e-learning materials can be reused several times in different versions of the same online course, or as components of different online courses. Knowing the number of learners and how many learning events are planned in the future is therefore important in assessing the cost impact. If planning a facilitated course, the organization must have appropriate resources to ensure facilitation and subject matter experts' support throughout the course. Using a learner management system can be a valid option for the organization, if there is a need to track learners' activities by following their participation and performance, for example their contributions to online discussions, use of learning materials and online evaluation test results.

- Good practices; by making use of asynchronous and synchronous learning and collaborative tools, it is possible to define e-learning solutions that match specific needs. Some good practices include:
    - Combining structured and ad hoc solutions. For example, an extensive curriculum on food security analysis can be developed as a stand-alone course, while short virtual workshops can be used to illustrate updates to a methodology or guidelines, to address a recently emerged problem.
    - Localization. If you have a diverse and geographically dispersed learner group for which translation and cultural adjustments are required, you might decide to develop a large self-paced e-learning course in English for all learners, followed by virtual classes in the local

language to deal with local issues, challenges related to the environment and context, and cultural differences.

- o Allowing downloads. Even in contexts with highly developed infrastructures, learners do not have continuous access to the Internet. They should be able to download online content and work on it offline.

5.2 Presenting different types of content

Analysing the different types of knowledge elements that constitute the content can help the instructional designer to present the content properly, in order to facilitate understanding by learners. The table below offers some tips for presenting different types of content:

	Types of learning content	Tips for presenting content
Facts	Unique, specific information that answers the questions: who, where, when? Facts are shown, exhibited or indicated. Examples: data, lists, historical events.	Provide a clear statement of the fact. Use visuals and infographics if feasible.
Procedures	A procedure is a series of clearly defined steps, aimed at performing a task. Procedures answer the question: 'How to …?' Example: 'instructions for creating a table in Microsoft Word'.	Make clear the various steps of the procedure, e.g., by using diagrams, tables or illustrations. For complex procedures, provide a map that clarifies which step are you currently describing, and/or a summary of the steps at the end. For software procedures, consider using the demonstration-practice method.

Concepts	A concept is a group of objects, entities or ideas that: are defined by a single word or term; share common characteristics; differ in unimportant characteristics; require a definition; and answer the question: 'What is …?'	Provide a definition of the concept. Especially for complex or abstract concepts, it is crucial to provide one or more examples, and non-examples.
Principles	A principle (or rule) describes a relationship between two concepts. For example: 'As price increases, the supply increases. Some principles can be translated into strategic guidelines, which can guide decisions and complex tasks. Example: 'guidelines for facing price volatility'.	Clearly state the principle or rule. Provide one or more examples, and non-examples. Use visuals to support understanding of cause-effect relationships. Consider using a scenario-based approach and serious learning games for teaching strategic guidelines.
Interpersonal skills	Verbal and non-verbal skills for interacting with other people. Example: content related to 'negotiating' or 'solving group conflict'.	Make learners practice rather than just providing principles and guidelines, for example, by using experiential simulations. Virtual reality has strong potential for developing interpersonal skills. Consider using storytelling, scenario-based learning and serious learning games.
Attitudes	Predispositions to behavior. Example: content related to appreciate the importance and urgency of adopting measures for limiting the negative impacts of climate change'.	Use examples, scenarios and stories showing the importance of applying a given behavior, and the negative consequences of not applying it. Pictures and videos have strong potential to influence attitudes.

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5.3 Using examples to improve learning

Adding examples is crucial to facilitate an understanding of concepts and the application of strategic principles.

Examples should always be present in your e-learning content, as they can help learners to make sense of concepts. They are particularly relevant when you need to explain abstract concepts, or to show the concrete application of a given process or procedure.

Examples can be used in deductive and inductive ways:

- o to illustrate a concept or show the steps of a procedure that has been previously introduced (deductive); or
- o to stimulate thinking and reflection before providing definitions and principles (inductive).

Tips for developing examples:

- o Integrate different media to present the example (e.g., a picture and text or audio narration).
- o If the example is long or complex, break it up into smaller components.
- o Try also to use non-examples, e.g., examples of incorrect application of principles.

5.4 Developing practice and assessment tests

Practice and assessment questions should be designed to reinforce the achievement of learning objectives. It is important that questions for practice and tests are aligned with learning objectives and learning activities, in order to correctly assess the right level of expected performance and content.

Questions play an important role in involving learners and keeping their attention, so you should try to use them as part of your core content, as well as for pre- or final testing.

In a job-oriented course, the questions should be placed in a job-realistic context, to build knowledge and skills that can be transferred to the job.

Developing practice and assessment tests for different types of knowledge

Different types of practice and tests are required for different types of content.

The table below offers some tips for promoting and assessing:

- memorization of facts;
- understanding of concepts and processes; and
- application of procedures and strategic principles.

Tips for developing practice and tests	
Facts	Have learners recall features or specifications. Have learners identify pictures or objects.
Concepts	Have learners discriminate between examples and non-examples. Have learners reformulate the concept.
Procedures	Have learners practice through operational simulation. Have learners actually perform the procedure.
Principles	Ask questions about the principles underlying a worked example. Have learners apply guidelines to solve a job-contextualized problem or case study.
Interpersonal skills	Have learners apply behavioral guidelines to an interpersonal communication problem or case study.
Attitudes	Ask questions to reflect on a given behaviour.

Question formats

In self-paced e-learning, practice and tests mainly consist of questions associated with response options and feedback. They generally have the following structure:

- a question or statement;
- an operational message that indicates to the learner how to perform the required operation (e.g., click, drag, press a key);
- a series of options;
- the correct answer; and
- feedback for the correct and incorrect answers.

The most frequently used question formats include:

- true or false
- multiple choice
- multiple responses
- matching
- ordering
- fill-in-the-blank
- short answer/essay.

Tips for developing questions:

- Practice questions should be created for all critical topics or tasks.
- The text of the question must be as clear and unambiguous as possible.
- Incorrect options should be plausible.

- An obviously wrong option does not play any useful role and reduces the learner's interest.
- Incorrect options should aim not to distract learners, but to anticipate common errors, so that useful information can be provided in the feedback.
- Provide textual responses of about the same length for each option. If one of the responses is much longer than the others, the learner will think that is the correct one.
- Provide explanatory feedback: after the learner responds to a question, provide feedback saying whether the answer is correct or incorrect, with a succinct explanation. For example, feedback on incorrect answers can clarify the missed concept or point learners back to course sessions that explain those concepts. Feedback on correct answers should go beyond a simple reiteration or reformulation of the correct answer. It should further elaborate or connect the concept to future course sessions.

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5.5 Using media elements

A number of different media can be combined to create compelling e-lessons. Pay careful attention when integrating media elements into your storyboard, to avoid overloading learners' working memory, as this can be detrimental to the learning process (Clark and Mayer, 2016).

Media elements: Text

Written text is an important 'medium' for communicating learning content. Some learning resources are completely text-based. The power of text-based resources is that learners can browse the text and find just what they need.

Careful attention should be given to the text's graphic display and integration with images.

Tips for using text:

o Display on-screen text to provide the best readability and clarity.
o If possible, use diagrams, graphs and flow charts to help the learners understand the content.
o Use graphic conventions consistently; for example, italic style must always be used for the same purpose.
o Use lists or tables to help learners organize the information.
o Use list points or blank spaces to separate items in a list, or focus attention on them.
o Consider word and row spacing to improve text readability.

Media elements: Graphics

Graphics include illustrations, pictures, diagrams and icons. They can range from photographic, realistic images to schematic representations or even tables.

Graphics can serve different communication functions, including adding aesthetic appeal or humor, depicting an object in a realistic fashion, providing retrieval cues for factual information, and supporting understanding of relationships between different elements and changes of an object over time (Clark and Lyons, 2010).

Graphics can play a crucial role in promoting learning. They should not only be used to add aesthetic appeal or visual interest to a screen. In e-learning, relevant graphics can facilitate learning by:

- drawing attention to a specific content element;
- suggesting analogies between new content and familiar knowledge;
- supporting the understanding of concepts;
- simulating the work environment and real situations; and
- motivating learners by making materials more interesting.

Tips for using graphics:

- Try to avoid graphics that have no real function in complementing the information in your text. Purely decorative graphics do not help learners to understand the text and should be minimized.
- Images, tables and graphs should be clear and easy to read. Provide text alternatives for non-text content to make content accessible for people with disabilities.
- Use images that are sensitive to gender and reflect diversity.
- Use pictures when creating a realistic context and suggesting analogies to real-life situations.
- An animated illustration can be used to show a series of procedural steps or the stages of a process.
- A matrix, conceptual map or tree diagram can show relationships among content.
- Line charts can demonstrate trends and enable learners to make comparisons between two or more variables.
- Bar graphs are useful for comparing quantities and dimensions.
- Pie charts show relationships between the parts and the whole, and are particularly useful for showing proportions and ratios.
- Flow charts are recommended to describe complex procedures.
- Diagrams can provide organization and meaning and are therefore recommended when you are trying to help the learner store and retrieve verbal information.
- When developing a text table, ensure that sequential relationships are accurately reflected, and arrange sequences so that they are represented from left to right and from top to bottom on the page. Working contrary to this 'natural' flow can create confusion. When using text tables, provide instructions on how to interpret and use the table.
- Ensure that diagrams, graphics and screenshots correspond to their descriptions.

Media elements: Animations

An animated illustration can show a series of procedural steps or transformations.

Tips for using animations:

- Allow learners to focus on only one object at a time.
- Use arrows to steer attention to selected details or motion direction.
- Segment long or complex animations and allow learners to access each chunk at their own pace, rather than playing all the steps continuously (e.g., by adding Play and Pause buttons).

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o   Limit the use of animation effects on text because they do not have any instructional function and can irritate learners

Media elements: Audio

Appropriate use of audio can greatly increase the effectiveness of a course. However, you need to carefully evaluate if your project really needs audio narration. In general, audio narration works best when used to explain or describe on-screen visuals, rather than to read on-screen text. You can use audio for the entire course, or only for specific parts of it, such as dialogues and scenarios.

Media elements: Video

Video is the only media tool that makes it possible to reproduce behavior, processes and procedures the way that they appear in real life. It can be used to present a case study, and is especially effective in role play to illustrate communication between people, especially if there is emotion involved.

5.6 Storytelling

What is storytelling?

Storytelling provides information through a story narrative that places content in a realistic context and illustrates the actions and decisions of one or more characters. It can use illustrations, pictures or video sequences.

When should storytelling be used?

The storytelling technique can be useful when you need to:

o   provide job-specific knowledge;
o   describe complex processes, where different actors perform different actions. The story can clarify who does what and helps learners to follow the flow of events;
o   add a human aspect to the lesson, since learners can follow the stories of real people; and
o   highlight the usefulness of the knowledge, since storytelling allows you to show how this knowledge can be integrated into a real situation.

Tips for using storytelling

o   Create a realistic and credible context. This is important for motivating learners, as it enables them to identify with the characters in your story. Learners need to feel that the story is similar to their own experience, and that the challenges faced by the characters could also happen in real life. This will help them to appreciate the usefulness of the knowledge that you are presenting.
o   Characters do not need to be present in every screen. 'Story screens', which show characters' actions and dialogue, can be alternated with 'theory screens' – i.e., screens providing concepts and guidelines. Story screens can be used to focus learners' attention on specific issues. For example, you can use them to:
    o   introduce a new topic: a story screen can present a topic (e.g., a specific task or a new problem that characters have to address), which is then followed by two or three theory screens to illustrate that topic; a story screen can then be used again to introduce the next topic;

o illustrate critical actions or decisions – a story screen can describe important actions and decisions that often lead to common mistakes and doubts;

o develop practice exercises – a story screen can be used to ask the learner questions about the story, applying guidelines to that specific situation.

o Be careful about gender and cultural issues when developing your characters. Know your target audience to better define the story characters' geographical provenience, names and style of dress. Dialogue among characters should be gender- and culture-sensitive.

o Try to make dialogue realistic by keeping sentences short and using informal language. Complex explanations should be provided in theory screens, rather than included in a dialogue.

5.7 Gamification

What is gamification?

Gamification is the inclusion of elements and techniques that are typical of games, such as:

o points
o levels
o rewards
o timers
o badges
o competition.

Adding game elements can increase motivation to engage in learning events. This should not be confused with developing serious learning games, which are designed to develop strategic skills by allowing learners to make decisions and witness the consequences of these, as described in the previous chapter.

When should gamification be used?

There are no specific restrictions on the use of game features in e-learning. They are very easy to implement with authoring systems. However, it is important to use gamification exclusively to support learning objectives; otherwise, they risk becoming distractions. In addition, it should be remembered that: "gamifying e-learning doesn't substitute for an effective instructional approach" (Allen, 2016, p.366).

5.8 Microlearning

What is microlearning?

Microlearning is a recent concept that can particularly apply to those contexts where professionals have limited time for learning, although they are expected to constantly acquire new information and apply new knowledge.

Microlearning is short-form content that can provide learners with just-in-time information. Specifically, it can be defined as content that addresses one main learning objective, and can be consumed in less than 10 minutes.

Microlearning characteristics, including its brevity and design for just-in-time learning, make it particularly suited to delivery on mobile devices.

Microlearning materials do not differ substantially from those described in the previous sections. They can consist of simple text-based resources, or short e-learning courses that apply some of the techniques, graphics (including infographics), audio or video elements described so far. The key difference, in terms of format, is that microlearning materials are shorter and may be less interactive than other e-learning materials.

Examples of microlearning include:

- o short documents (max five pages), especially suitable for technical content that learners can easily browse;
- o job aids (checklists, guiding questions, templates, if-then diagrams, etc.);
- o short e-learning courses (max 10 minutes), that can use different media, including audio and video; unlike standard e-learning lessons, these may not need practice questions and exercises;
- o short quizzes (questions & feedback);
- o short videos;
- o infographics, which are quick to understand; and
- o short podcasts, i.e., audio recordings.

When should microlearning be used?

Microlearning can be used as a stand-alone piece of learning; to complement other types of training – for example to reinforce prior learning or prepare for a training event (especially for technical training); as a performance support tool to be used on the job; or to keep learners updated on a matter with which they are already familiar (Torgerson and Iannone, 2020).

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6.0 Learning platforms

Which platform should we use to make the course available to learners?

6.1 What are learning platforms?

A growing number of organizations, educational and other institutions use learning platforms to deliver and manage their learning processes. A learning platform is a set of interactive online services that provide learners and educators with access to information, tools and resources, to support educational delivery and management via the Internet.

Learning platforms are usually referred to as virtual learning environments (VLE), learning management systems (LMS), or learning content management systems (LCMS). Despite differences between the platforms, these terms are often used interchangeably, since they have many features in common.

Learning management systems empower multiple end users to access online courses and instructions at the same time, regardless of their geographical or time zone. Likewise, fully functioning platforms empower organizations/ institutions to:

- o   centrally manage educational resources;
- o   deliver training in an efficient, consistent and timely manner;
- o   automate and optimize processes related to training delivery and administration; and
- o   monitor learners' progress and performance.

Traditional platforms were strongly content-centric, i.e., focused on content management, enrolment and simple reporting related to course completion and tracking. The lack of personalized and flexible content and one-size-fits-all approach to learning often failed to engage learners.

With the advance of technology and constructivist-based pedagogies, the focus of instruction has gradually moved to learners and personalization of their learning experience. As active agents, learners are being held accountable for their own learning paths. Inside the learning environment they are expected to show creativity and collaborate with other cohorts through networking and sharing. The strength of this approach lies in making learners feel motivated and engaged to participate in discussions, brainstorming, problem-solving sessions, interactivity and/or gaming. By exploiting the competitivity and playful value of gaming, learners are increasing the possibility of mastering topics and reaching their learning goals effectively.

A multitude of tools, components, processes and standards are connected in a learning ecosystem, as well as learners interacting with each other. Organizations aware of the interrelationship between the various components can create a sustainable learning environment that provides the greatest impact, both for the learner and organization (Spencer, 2013). A modern LMS can therefore serve as a backbone to such a learning ecosystem and bring it to a higher level.

The LMS industry offers a variety of learning platforms, with different levels of complexity. A full-featured LMS should include the following:

- Learning content management – creation, storage, access to resources.
- Curriculum mapping and planning – lesson planning, personalized learning experience.
- Content interoperability and portability – set of standards for content objects (courseware packages) sharable and compatible on different platforms (e.g. AICC, SCORM, xAPI (formerly Tin Can, IMS LTI).
- Assessment and testing management – a set of instruments for learner progress measurement.
- Progress tracking – learning progress data, such as course and activity completion or competency levels.
- Reporting and analytics – offering real-time and accurate information about learners, their activity, time and way they engage in training.
- Learner certification – possibility of certifying users on course or test/learning path completion.
- Social learning tools/activities – forums, wikis, assignments, quizzes, messaging systems, blogs, group discussions, and other formats for interaction with other learners and/or the teacher.
- Live web tools/social media integration – link to Facebook, Skype etc.
- Rich media support – i.e., video, audio and/or other interactive and engaging content.
- Gamification design techniques – tools for game-based learning.
- Multi-device/mobile-responsive design – with responsive design plug-ins, a seamless learning experience is delivered across multiple devices such as smartphones and tablets.
- Blended learning support.
- Skill and competences management – through the integration of HR and business planning to assess current competency levels against the capacity needed, so as to identify competence gaps and achieve business goals.
- Localization – multilingual support.
- Support services.
- E-commerce integration.

6.2 Proprietary vs. open-source Learning Management Systems (LMSs)

Learning platforms exist as proprietary or open-source software:

Proprietary LMS is licensed under exclusive legal rights, with restrictions for modification, further distribution, reverse engineering and other uses. They are closed source, with license costs per user, or paid on a monthly/annual basis.

Open-source LMS works under the terms of the GNU General Public License.
The license is intended to guarantee freedom to share and change the programme, and ensures that it is free for all users.

Open-source e-learning software packages include LMS/LCMS platforms, as well as authoring tools for courses and media features. Benefits of open-source software packages include:

- free distribution and licensing to unlimited users;
- modification and derived works are allowed;
- users worldwide are engaged in their development (i.e., community participation);
- ability to run on multiple platforms; and
- better and easier communication with other open-source languages, platforms and databases.

The most popular open-source LMSs have their roots in academia, and are mainly used in higher, primary and secondary education and learning-specific projects. The more successful LMSs have gradually expanded beyond the education environment, to the government and non-profit sectors, paving the way for use by small- and medium- business.

The open-source LMS initiative is constantly evolving with new reliable, interoperable and extendable packages and trends. The basic 'core system files' are easily accessible and offered to the community license-free, released under the GPL license. This open model architecture means that developers and contributors can customize a platform according to the client's needs or develop new software components, known as modules and add-ons, to extend basic system functionalities. Many plug-ins and add-ons that enhance platforms are freely downloadable.

	Proprietary LMS	**Open-source LMS**
License cost	Pricing models: licensing fee, renewable on yearly basis; subscription – a fee for each (active) user; or freemium (no charge for basic features, fee for add-ons).	No cost, no proprietary investment, leaving more budget for customization.
Source code	Locked for free use and developed by a professional developed team.	Open, developed by the community.
Development team	Professional developers.	Freelance developers, with different levels of expertise.
Ownership	Owned by vendor.	No vendor lock, owned by the
Ease of LMS implementation and deployment	Fairly easy.	Can be difficult and requires advanced technical skills.
Client support/ maintenance services	Dedicated support services provided by vendor.	Relies on community forums, online documentation, development community; more important LMS solutions offer services, training, and support from a variety of vendors.
Support/ maintenance cost	Included in license (pricing model).	Paid support.

Ease of customization	Performed only by a vendor's developers.	The code is open, with customization performed by freelance skilled developers according to specific needs. Strong link with end-user groups/communities who suggest changes and modifications.

Open-source packages offer code modification freedom, with infinite customization options. However, there are some drawbacks to consider when evaluating open-source LMS solutions. Although there is no upfront license cost, there may be some hidden costs. First, open-source programmes require a dedicated IT team with advanced technical skills to handle the set-up, installation and customization. In some cases, the total running cost of open-source LMS, including administration, support and maintenance, may even exceed the initial proprietary LMS license fee. Relations between customization control and cost-efficiency must be seriously assessed.

Based on their underlying instructional approaches, open-source LMS packages may be more suitable for education/academia, governments or business/ corporate users.

Hosting options – self-hosted vs. Software as a Service (SaaS)
LMS software can be deployed internally within the organization's IT structure or hosted on cloud (SaaS), with functionalities hosted on the vendor's infrastructure and accessed by logging into its site, where all communication and training take place. Each type has its pros and cons, so it is crucial to analyse all features included in the overall hosting cost, such as license, scalability, total cost of ownership. SaaS effectively addresses many such challenges. For example, it offers a variety of subscription plans: pay-per-user fee, pay-per-use or one-time, upfront license fee, or other plans to meet any business needs. In addition, costs of infrastructure, maintenance, ongoing support, care for regular backups and upgrades are entirely handled by the service provider. By contrast, self-hosting involves all implementation costs to be borne by the organization, and substantial technical knowledge is required to ensure that the platform is properly set up and updated.

6.3 Moodle

Moodle is the world's most widely used open-source learning platform. Although originally designed for higher education to help educators create online courses with a focus on interaction and collaboration, it has gradually and successfully been extended, and is now widely used by a range of other organizations and institutions, including K12 (kindergarten to 12th grade) education, and the health care, government, corporate and non-profit sectors.

Moodle runs without modification on Unix, Windows, MacOS and many other systems that support PHP scripting language and a database; it is compliant with SCORM and AICC standards.
By 2020, Moodle had reached more than 217 million users and almost 157 000 registered sites around the world. It was designed to be highly modular, so is fully customizable. Numerous modules extend its functionalities (e.g., graphical themes, authentication and enrolment methods, activities, resources and games to maintain learners' interest and enhance online engagement).

With the use of responsive design extensions, the platform is mobile-friendly, with seamless integration between the web and mobile experiences. Certification and badgification plug-ins are some of the many tools

designed to acknowledge and validate training achieved inside the Moodle platform. Certification and open badge requirements are strictly related to new HR policies, educational institutions and formal/informal education worldwide. The feature awards learners with digital certificates and/or open badges to validate competences and achievements earned within the learning environment. They are automatically generated, information-rich, contained within a record about a learner, issuing institutions and training and assessment criteria. Such certificates are easily verified at any time on their own unique URL. Furthermore, earned badges are sharable via social media and collected in a learner's portfolio.

7.0   Conclusions

Covid-19 outbreak has brought on challenges for all educational institutions and especially in higher education. Certainly, like many other aspects of everyday life, Covid-19 has had a serious impact on students, teachers, and educational organizations around the globe. As a result, a transition from face-to-face learning to e-learning has occurred. E-learning accommodates everyone's needs, can be used several times, it is a form of quick delivery of lessons, and it has reduced cost. Due to the wide set of benefits it gives to students, e-learning has become quite popular a solution in the Covid-19 period among students all over the world.

Many respondents have been diverted to e-learning from the conventional learning and most of them had participated in distance learning before the Covid-19 period. However, a combination of the two modes of learning is widely preferred by the sample. Concerning the effectiveness of e-learning, it is considered moderately effective besides traditional face-to-face learning. Additionally, undergraduate students, postgraduate students, teachers, and employees (civil servants and private sector employees) prefer a combination of e-learning and face-to-face learning while school students and parents prefer mainly face-to-face learning and respondents aged 18-30 are more likely to invest in e-learning while respondents aged 45-60 are not open to a distance learning module. Also, followers of face-to-face learning had not participated in e-learning courses before the Covid-19 lockdown while the exact opposite appears to be the case with the followers of e-learning. Finally, respondents who believe in the replacement/substitution of face-to-learning from e-learning believe also that distance education is very effective.

In Iceland, the main subjects that the participants said they taught were national languages, history and social science. Most had no more than 20 students in class. All participants use either only e-learning methods or e-learning methods additionally to face-to-face learning. Age groups vary but are of course connected to the type of schools. Adult education with the oldest age group. The results showed that most teachers worked from home and said that they made changes to their teaching practices during the COVID-19 pandemic. Courses were rarely suspended and therefore teachers generally continued their teaching load, but in most cases under drastically changed circumstances. Overall, pedagogical support seems to have been insufficient, particularly in larger schools. About a third of teachers maintained the weekly class schedule, but half could decide whether to do so or not, indicating a lack of coordination within schools in how best to organize classes. Teachers in larger upper secondary schools thought their duties were less clear and said they had received fewer directives from the school leadership in comparison to teachers in smaller schools.

The results show that most teachers would have liked more pedagogical support in changing their teaching practices and that there can be a fine line between professional independence and lack of support. The quality of on-line teaching must be met in the form of on-line training, and everyone should be aware of that this is different from onsite teaching. It also depends on the material, what is being taught and who is teaching, bearing in mind that it is difficult to compare the quality like this since there are so many other variables that influence it. There is also a difference between online learning and online teaching. More "tools and tricks" are needed to teach online. Methods and apps for example especially when it comes to training young people. To plan a creative workshop on-line, things must be done differently.

The skills needed to teach on-line are e.g., to be open for innovative ideas, learn to use diverse apps, know how to deliver on-line training, and know how the equipment/e-learning platform should be used. How to approach the media and how to deliver material through cameras over the internet. Chosen methods should consider who the students are because young people are used to watch quality videos that are short, concise, and well produced. Many things are useful for teacher to be more professional: information how to behave in front of the camera, how to deliver material, how to put material in shorter chapters, how to make a script for recording, how to edit videos and organize the material that you are producing.

In Spain, it seems that most teachers mainly use the most basic features of online platforms (uploading and downloading materials). Generally speaking, you could argue that teachers by now have used mainly the basic parts of online teaching to make the online experience as similar to face-to-face learning as possible. It seems that most of the teachers have not used those features of online teaching that might have a comparative advantage to face-to-face teaching. Teaching online is seen similar as learning online. Teachers who have a general interest in improving their skills and implementing innovative online teaching, usually find a way to learn new methodologies and techniques. Those who are reluctant to update their teaching techniques, fall behind. So "going online" might create a similar divide for teachers as already mentioned for students. For the interviewees the most important factor is teacher´s own motivation and interest in updating teaching methodologies. Some mandatory courses for teachers are seen critically and sometimes as waste of time, since they are not adapted to very personal needs and subject content. Even the quality of these mandatory courses is very doubtful.

In Greece, on 10 March, with 89 confirmed cases and no deaths in the country, the government, in cooperation with the Greek National Public Health Organization, decided to suspend the operation of education institutions at all levels nationwide. As a response to the challenge imposed by school closures, the education ministry launched digital tools enabling distance learning and a specific web portal providing information for education and training programmes at all levels. Priority was given to the implementation of distance learning in the last year of upper secondary education programmes. However, all learners in primary, secondary (including VET), post-secondary and tertiary education had access to distance learning. Learners at post-secondary vocational training programmes could follow 95% of the courses in this way.

In Bulgaria, the COVID-19 pandemic confronted the education system with a new situation that urgent change of the current way of working. It was necessary to quickly acquire new knowledge and skills, as well as changes in the attitudes of all participants in the system to meet the needs of children, students and teachers. Effective normative changes and adaptations were implemented at the level of school and kindergarten, so that Bulgarian children and students do not miss school hours and continue to study synchronously or asynchronously according to the capabilities of the school and their family

environment. Additional technical and financial resources have been provided to maximize access to distance learning in the electronic environment (DLEE). Digital and television educational content has been created freely accessible to all teachers and students from the Ministry of Education and Science (MES) and a number of partner organizations. All stakeholders in education cooperated in support of teachers, children, students and families. In Bulgaria, intensive training is an electronic environment entered after the pandemic, so the only reliable summaries of its application can be made as a result of analyzing this period.