d-ICT

Improving VET Distance Learning through a Gamified Asynchronous eLearning Methodology

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Lessons Learned: Exploring the taken resolution aimed at facilitating distance learning in the COVID-19 era

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1. Introduction

The following Final Survey Results Report summarizes our findings in the framework of the project "d-ICT: Improving VET Distance Learning through a Gamified Asynchronous eLearning Methodology" under the Erasmus+ KA2 programme. The survey is implemented to feed the Project Result 1: "Lessons Learned: Exploring the taken resolution aimed at facilitating distance learning in the COVID-19 era". This report provides insights from educators' experience with distance training/learning before, during and after the COVID-19 pandemic.

The d-ICT project aims at creating an innovative gamified asynchronous eLearning experience addressed to VET educators to strengthen their distance teaching skills and enhance the distance learning experience, in order to prevent school dropout. The fast-moving transition to distance learning education during the COVID lockdown caught the VET educators unprepared as many of them had not built the capacity to provide interactive lessons online so far.

The following report is based on both qualitative and quantitative data collected through three different methodologies. Quantitative data were gathered from a questionnaire addressed to 20 VET trainers from each partner, while qualitative data came from a focus group of 8 VET trainers and 5 digital interviews from each partner. In the following sections, the survey method will be analyzed further.

The research is based on nine thematic areas. Additionally, the Survey Results will provide insights and statistics on how VET educators approached the challenges of distance learning and the creation of an asynchronous gamified experience. The clues, that will come from those thematic areas, will help us to identify: a) Skill gaps of VET educators on the distance teaching tools, interactive digital educational techniques, techniques to make the e-classroom climate more enjoyable in order to prevent school dropout, b) Best distance learning practices applied, c) Recommendations and points for improvement in the distance learning methodology to make the distance learning experience more lively, d) Difficulties experienced during the COVID lockdown from both VET educators and learners and e) Lessons learned from the COVID era about VET distance learning.

2. Background and objectives

Due to Covid-19, schools and training centres were forced to carry out distance learning for more than a year. Distance learning during Covid was a sudden novelty for which no one was ready. Thus, most of the teachers chose the simplest resolutions: re-proposing traditional frontal lessons in online mode.

Most of them had no experience with long-distance training prior to the corona pandemic. As a consequence, VET teachers reported on the difficulties they encountered during the lockdown period. The most significant remarks were:

- The lack of effective digital resolutions by the Ministry of Education, Sport and Youth.
- The lack of effective assessment tools that decreased the interest of learners.
- The absence of a practical approach to distance learning. Trainers complained about absence / less feedback from the students; they experienced less flexibility in teaching and they had less possibility of improvising. The biggest difficulty reported was the lack of a proper design.
- Difficulties in social interaction with the class.

Another important aspect of distance learning was the digital skills of VET educators. The main findings from the survey were:

A sharp increase in the digital skills of VET educators after the pandemic, according to the questionnaire.

No training for VET educators was provided by the Ministry of Education, since the government educational system had never foreseen their proper preparation and training on those issues. Only those with a personal interest in long-distance education and digital tools chose to engage in additional training.

Although educators might have good digital skills, the lack of digital resources and tools or problems with the internet connection during the pandemic decreased their students' interest. According to the focus group, they were not given any digital tools to make the teaching procedure more exciting and interactive.

On the other hand, the trainers involved in this survey took innovative and original digital resolutions, considering forced distance learning during the pandemic as an opportunity to experiment with creative solutions, to unveil already existing skills in students and teachers, to empower unexpressed potential of students and to adopt more informal approaches in teaching.

Further, distance learning during covid was interpreted by them as a precious opportunity to maintain social relationships for both students and teachers in a period of total isolation.

Generally, VET educators seemed interested in the innovative method offered by the project that will facilitate the evolution of the training procedure. Their responses in developing an asynchronous gamified experience can be described as very positive. More specific:

- VET educators stated that this digital tool could boost students' interest in learning more.

- Asynchronous learning is important because it can work as an alternative approach to homework. Also, it will allow them to keep the traditional classroom interaction.
- VET educators see the benefits of the use of gamified experience in education and are therefore eager to receive training on its application.

However, they expressed their concerns about the applicability of this experience. Due to the multisectoral character of VET schools, it might not cover every aspect of every discipline.

Also, VET educators suggest focusing on hybrid and integrated teaching, while lessons and pedagogical methodologies would be redesigned.

According to the latter, the most important features included should be:

- Immediate feedback
- Leader boards
- Badges-Awards
- Points

The d-ICT project seeks to deepen its knowledge about the needs of VET educators, through a second-stage bottom-up analysis and address those needs by compiling, developing, and disseminating interactive digital educational experiences and tools.

In particular, with the current project, the consortium partnership aims to achieve the following objectives:

- To meliorate the digital skills and competences of VET educators in the field of distance learning.
- To create an innovative gamified asynchronous eLearning experience.
- To combine the assets of gamification and distance-learning.
- To boost the interest and curiosity of VET learners and keep them captured in the process of teaching, thus, reducing the phenomena of dropouts due to the boredom that non-interactive distance-learning creates.
- To empower interaction and teamwork with classmates under distance learning circumstances.
- To raise awareness about the significance of facilitating the distance learning methodology through interactive approaches like digital gamification.

In summary, the results of this survey show that:

Most of the VET educators had little experience with long-distance training prior to the corona pandemic.

Many of them were forced to improve their digital skills without any help from the Ministry of Education.

The majority find that the inclusion of gamification in distance learning would generally help, provided that it will not replace traditional teaching.

3. Project Results

The portfolio of **"Lessons learned" (PR1)** is a bottom-up process that will refine the needs of the VET educators and collect significant experiential educational materials, by collecting the digital strategies implemented in every country and the personal coping strategies to abide by the needs of COVID era.

The **"d-ICT e-Toolkit" (PR2)** will construct an e-book and the e-tool with cutting-edge distance learning practices and tools, that VET educators can apply in their working place.

The **Gamified asynchronous eLearning experience** will be an innovative interactive digital distance learning methodology, where VET educators will become familiar with the digital innovation and the interactive way of teaching via a computer.

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4. Methodology

The field research was conducted for the final report to identify digital skills, competencies, gaps and needs for distance learning in VET education. The combination of three different methodologies (questionnaire, focus group and digital interviews) is actually the survey method for collecting both qualitative and quantitative educational data in a bottom-up process.

VET educators were the direct target group of this project. The VET educators work in VET centres. In order to improve the collection of high-quality quantitative data, 20 VET educators from each partner were approached and were asked to fill in a Questionnaire regarding distance learning. Regarding the qualitative data gathering, 8 VET Educators from each partner were approached and involved in a Focus Group, while another 5 per partner from each partner gave a Digital Interview.

The criteria according to which the VET educators were selected are the following:

their experience in VET education,

their proven interest in the topic of the project,

the fact that they were flexible, enthusiastic and reliable, with the will to exchange good practices, ideas, thoughts, tips and personal skills with the others,

they were fluent in English.

Questionnaire

The questionnaire included 20 VET educators through emails, calls, and social media. It was open online from 10-2022 to 11-2022. It contained 15 questions with multiple choices. Using a questionnaire, 20 trainers self-assessed their competencies (e.g. supporting their self-regulated learning) before and after the COVID pandemic.

Focus Group

Qualitative data were collected by focus groups and interviews. In the focus group, 8 VET educators were chosen from different specializations in VET education. The focus group lasted approximately 2 hours and engaged participants in a fruitful discussion. Some follow-up questions and a guided discussion followed.

The aim of the d-ICT focus group was to describe work conditions during the lockdown, trainers' struggles to make distance learning engaging and effective for all home-based students, the digital resolutions and the digital tools used, and to clarify points for improvement and possible solutions and/or suggestions. This type of methodology stimulated joint brainstorming on the participants' needs, deficiencies, potentials, preferences, and capacities. Oral accounts of the participants' work conditions, needs, deficiencies, and expectations brought into the VET system due to COVID-19. A series of flexible learning interventions using digital technology were discussed when reflecting on the diverse needs of trainees in learning new content in an innovative manner.

Digital interviews

There was a video-recording of 5 Digital Storytelling interviews by 5 VET educators, who shared their personal experiences and provided recommendations for reinforcing distance learning to make it more attractive and fun and reduce school dropout.

Overall, they faced many challenges during the lockdowns in terms of online training but they believed that it is a way that can prove to be really beneficial to students and/or trainers. VET educators expressed their interest and wanted to know more about the project's intellectual output, especially the asynchronous gamified experience, as they believed it could be beneficial to distance learning.

5. Findings per Thematic Area

The findings of the questionnaires and the focus groups will provide us the survey results. This section is divided into 9 thematic areas.

Before the presentation of the survey results, general details will be mentioned about the participants. First of all, twenty VET educators per partner submitted their responses to the disseminated questionnaire. In the focus group, eight VET educators per partner took part. The sex of the participants, their age and the years of teaching experience in VET education varied.

An important statistic that plays a crucial role in the findings, is whether they had distance learning experiences prior to the corona pandemic. According to the findings of the questionnaires and focus groups (Chart 1), approximately 31% of the VET educators had distance learning experience prior to the corona pandemic. Those participants had taken part into distance learning courses, blended postgraduates and e-twinning projects.

Chart 1

QUESTION 4: PRIOR TO THE CORONA PANDEMIC, DID YOU HAVE ANY EXPERIENCE WITH DISTANCE LEARNING?

YES 31%
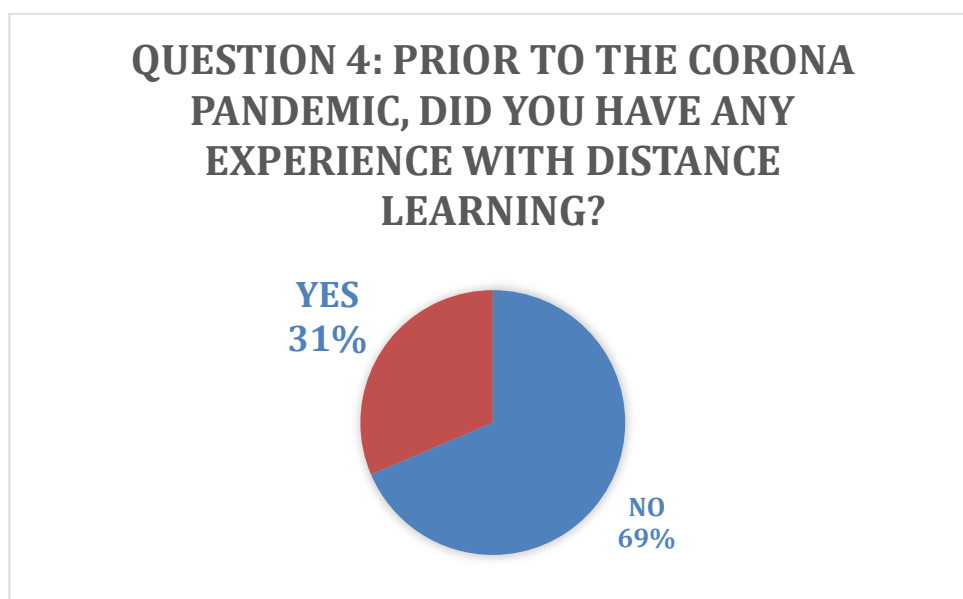
NO 69%

Two of the questionnaire questions aimed at deducing an understanding of the progression of digital skills in VET educators due to the pandemic through self -identification of digital competencies before and after the pandemic. According to Chart 2, the vast majority of the questionnaire participants stated that they have improved their digital skills significantly and they helped each other organize the modules and lessons that would be delivered.

Based on the questionnaires, the digital skills which the participants have after the corona pandemic have been improved compared with those they had before the Covid-19 period.

That means that many VET educators were forced to develop their digital skills in order to make their lessons more attractive to their students.

Combining the three methodologies (questionnaires, focus group and digital interviews), we present the details of the survey results, according to the following thematic areas.

Chart 2

Questions 5 and 6:
knowledge of digital skills before and after the corona pandemic:

■ BEFORE ■ AFTER

	NON-EXISTENT	WEAK	FAIRLY GOOD	VERY GOOD	EXCELLENT
BEFORE	2%	23%	36%	28%	11%
AFTER	0%	3%	29%	44%	24%
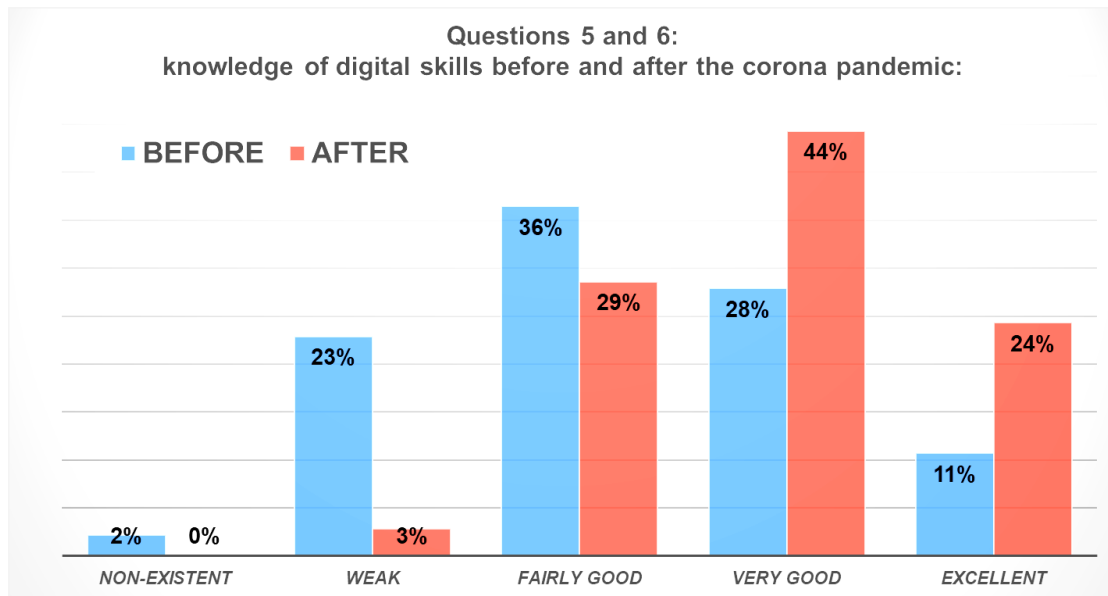
Thematic areas

I. Digital resolutions taken per country (during the distance learning in the time of covid-19 pandemic)

The education response during the early stages of COVID-19 focused on implementing remote learning methodologies as an emergency response. During the pandemic, one of the biggest challenges was how to quickly transform learning products designed in face-to-face delivery to distance delivery (via online tools). The support that was requested by VET trainers was not only to turn this training into online distance learning but also on how to reuse the content created at an early stage of the pandemic, making the courses more attractive and higher-quality - for example transforming a PowerPoint that had very dense and extensive content into something interesting and dynamic for the learner/trainee. Most of the digital approaches selected were made on internet-based solutions, combining a variety of digital resources. Bringing new realities and lines of learning and business, where Hybrid learning (combines in-person learning with digital online learning) is more often used than just face-to-face learning.

According to VET educators, Covid-19 pandemic contributed to the faster digitization of the countries. On the other hand, the Ministry of Education of each country was unprepared to help them with the problems caused by distance learning. Despite the fact that the majority of the participants agreed that distance learning had helped keep their schools alive during the corona pandemic, almost all of the VET educators weren't trained for something like that. VET trainers with a solid experience in the field identified themselves as competent only in real classrooms. There were schools where most of the less experienced teachers chose the simplest resolution, to re-propose traditional frontal lessons in online mode.

However, the majority of the VET educators tried to quickly adapt to the new demanding setting, by transforming the learning material designed for in-class delivery to distance learning. Thus, most of the VET educators were forced to seek help from other educators or from groups created in social media platforms for that reason. Many of them trained themselves in order to respond to the difficulties of distance learning. However, there were few of them, especially the older VET educators, whose digital e-teaching skills did not yield the desired results.

II. Digital resources

Even if before the pandemic the trainers weren't acquainted with digital resources for using them in their lessons, they all can list now numerous platforms that could make their work easier. Plenty of digital resources were used by VET educators in order to make the lesson more interesting and to facilitate communication between teachers and students. The resources were basic and most of the time free of charge.

Some of the resources used by the VET educators involved in the survey were:

- Google Teams and Zoom which enabled the delivery of teaching sessions within a matter of minutes, as long as trainers and learners had a stable internet connection,
- Google docs and Google forms,

- Microsoft Teams - which contained some tools that were integrated to create more appealing learning processes like parallel rooms, Quizzes, online Post It (to help learners/trainees in the process of brainstorming activities) and others.
- the e-class and the e-me Ministry platform,
- Zoom,
- CISCO Webex,
- Kahoot,
- Microsoft PowerPoint,
- Skype, Viber, Messenger,
- YouTube for sharing lessons and self-produced video tutorials,
- animation,
- Padlet,
- BigBlueButton,
- Miro,
- Moodle,
- Online libraries and databases.

Although there is a consensus about the digital resolutions and the absence of a dynamic and interactive digital tool supporting both teachers and students in this transitionary period, however, the Pandemic and the emergency circumstances (lockdown, remote working, social distance…) pushed trainers, individually, to find alternatives, to create their own "toolboxes" and to adapt their practices and pedagogy.
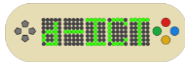
III.   Difficulties and obstacles

Based on the participants' statements, distance learning began abruptly and without any kind of organization. Thus, there were many difficulties which they had to deal with.

Technical difficulties: As previously mentioned, all the learners did not have the same technical equipment. The majority of the trainers working for the public sector shared the experience of old-fashioned hardware, which made and still makes the delivery of online courses impossible. This problem usually arises together with the lack of software and digital tools that could facilitate the learning experience. Many learners, especially in evening high schools, did not even have smart phones in order to participate in the lessons and, as a result, only few learners could attend the lesson. The free digital tools are basic; the cost of paid versions is high, no specific/planned budget was available in their organizations to cover these extra costs. Also, many learners had problems connecting to the internet. All these difficulties highlighted the social inequalities for which the state education system for each country did not give essential solutions. Additionally, some of the participants who have children reported that the computers they had in their house were not enough for both of them and their children, because at the same time they were teaching, their children were having distance lessons of their own at home. Moreover, a few of the participants claimed that the size of the screens used by them and the learners was too small and caused tiredness and less self-concentration.

Emotional difficulties: During the corona pandemic, both educators and learners were very stressed and emotionally frustrated, leading most of the times to substandard teaching results. While the

majority of VET educators were unknowledgeable in digital skills and digital tools, they came under pressure in order to organize their lessons in short time. Psychosocial support was not given to the learners by the Ministry's agencies. According to VET educators, most of the students developed adjustment and behavioural problems when they returned back to their actual school environment and classroom lessons. Also, because of the lack of physical contact, the educators did not have instant feedback from their trainees.

Learning and teaching difficulties: All of the participants claimed that distance learning is not suitable for every subject. For instance, subjects such as mechanical engineering, nursery, hairdresser etc. cannot be taught through distance learning, but only in class. Also, there was not any suitable software for every subject and if there was, it was not open-license. When the VET educators turned to e-books, they realized that the traditional books were not compatible with e-books. Moreover, the VET educators had to produce educational material every time, which was very exhausting for them. Concerning the assessment, the participants said that it was very difficult to assess the learners through distance learning, because, regardless of the tools they used, none of them were valid and reliable. Another commonly referred obstacle was the unwillingness of most of the learners regarding the active attendance on the online classroom. Most of them did not open their cameras, using various excuses and instead of that they found the opportunities to play video games, to use coffee machines, to walk, or to talk to others while teaching. Additionally, it was pointed out that there was the absence of feedback from the students. Some educators reported that most of the time their lessons were a monologue not a dialogue.

To sum up, the main obstacles which VET educators had to face during the corona pandemic were the lack of equipment, the lack of digital tools and the lack of digital skills.
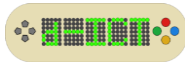
IV. Ways to overcome the obstacles

During the corona pandemic, VET educators made good use of their existing digital skills and found out digital tools that they hadn't even known existed. According to the focus group, the VET educators came up with many ideas in order to make their lessons more interesting and to prevent students from dropping out of school. Most of them used digital tools such as PowerPoints, Google docs, Google forms, exercises in the e-class platform, videos from YouTube, Kahoot, online polling, tutorials from universities, e-books, animation, etc. Some of them produced 10-minute educational videos, others used the chat inbuilt in the CISCO Webex platform in order to keep learners alert. A few of them tried to "warm up" the online classes, to maintain those social and human interactions which are typical in face-to-face learning, such as an online coffee break or live informal chats. Also, some educators focused on collaborative learning strategies, for example they invited the learners to carry out online researches and share their findings with the class group. Generally, the majority of VET educators spent time for meliorating their digital skills and producing digital educational material.

Furthermore, some of the participants suggested that in the future there should be a budget allocation, allowing investments in new hardware and software materials, creating digital skills, methodologies and protocols that would make the learning experience stimulating and enjoyable for the learners.

It is noteworthy that all of the participants found the idea of gamification a sustainable resolution.

V.   Digital skills in VET distance learning

Both qualitative and quantitative data show that general competency in VET distance learning digital skills was increased after the pandemic outbreak. It is noteworthy that older trainers who lacked advance digital skills prior to the pandemic confessed that they would not have improved their technological competency, if the pandemic context had not required it.

As mentioned above, the majority of VET educators have improved most of their digital skills during the corona pandemic.

More specifically:

Digital skills in VET professional engagement:

Chart 3

Question 7a-7c: Knowledge of the following digital skills in VET professional engagement now:
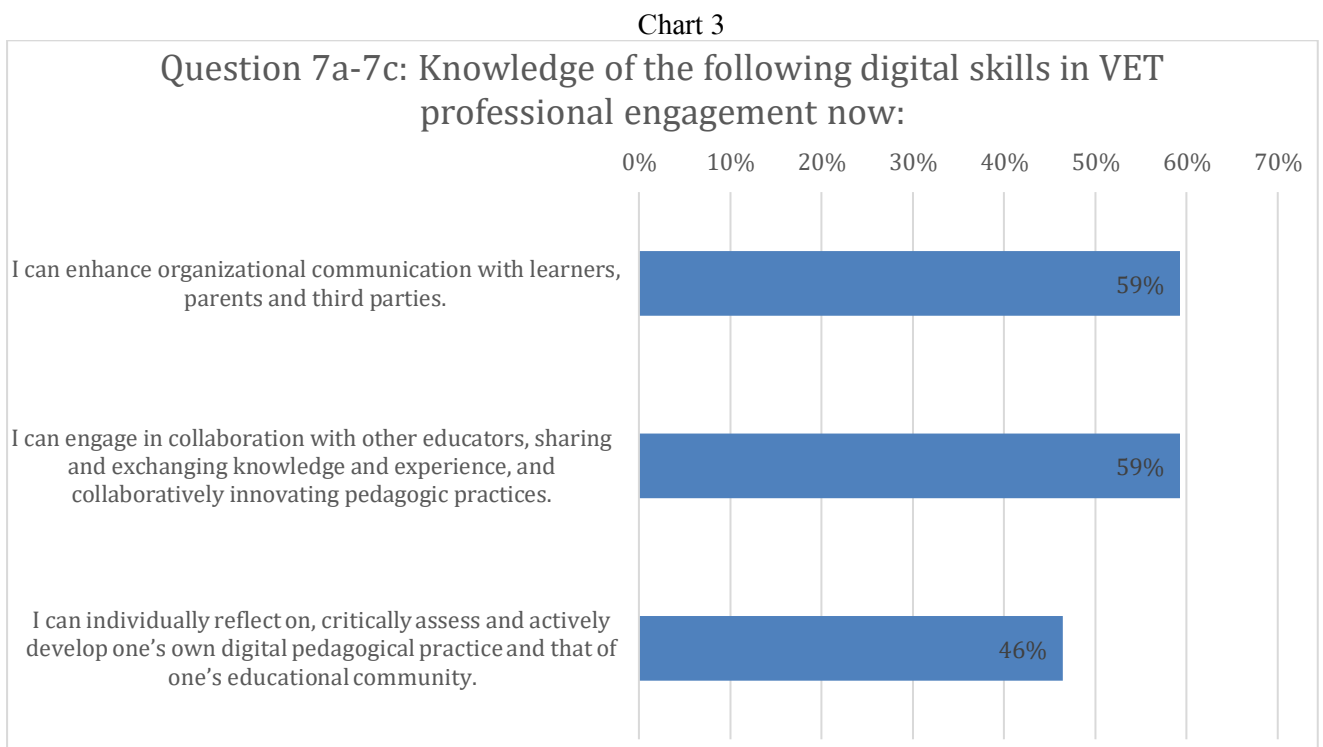
According to Chart 3, 59% of the participants have enhanced the organizational communication with learners and parents. Also, the same percentage of VET educators have improved their digital skills in order to collaborate with other educators in sharing and exchanging knowledge, experience and innovating pedagogic practices. In the Focus Groups, the VET educators admitted that through collaboration with their colleagues they were able to make their virtual classrooms more engaging for their students.

Digital skills in VET digital resources now:

Chart 4

Question 8a-8c: knowledge of the following digital skills in VET digital resources now:

I can use digital sources and resources for continuous professional development. — 65%

I can identify, assess and select digital resources for teaching and learning. — 59%

I can modify and build on existing openly-licensed resources and other resources where this is permitted — 41%

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Chart 4 shows us that 65% of the respondents can use digital resources for continuous professional development. Moreover, 59% of them declare that they can identify, assess and select digital resources for teaching and learning. On the other hand, there are not many educators who can modify and build on existing openly-licensed resources and other resources where this is permitted. As we can see, the pandemic forced the majority of the participants to develop digital skills in digital resources for teaching and learning.

Digital skills in VET teaching and learning now:

Chart 5

Question 9a-9d: knwledge of the following digital skills in VET teaching and learning now

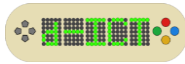|	
I can plan for and implement digital devices and resources in the teaching process.	48%
I can use digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session.	45%
I can enable students to use digital technologies in collaborative tasks.	56%
I can use digital technologies to support learners' self-regulated learning, i.e. I can enable learners to plan, monitor and reflect on their own learning, provide evidence of progress, share insights and come up with creative solutions.	31%

According to Chart 5, 56% of the respondents can enable students to use digital technologies in collaborating tasks. About half of the participants can plan for and implement digital devices and resources in the teaching process. They can also use digital technologies to enhance the interaction with learners individually and collectively within and outside the learning session. Only 31% of the VET educators can use digital technologies to support learners' self-regulated learning. i.e. to plan, monitor and reflect on their own learning, provide evidence of progress, share insights and come up with creative solutions. In the Focus Groups, most of the participants stated that they have integrated digital technologies now into their courses and they encourage their students to do the same.

Digital skills in VET learner assessment now:

Chart 6

Question 10a-10c: knowledge of the following digital skills in VET learner assessment now
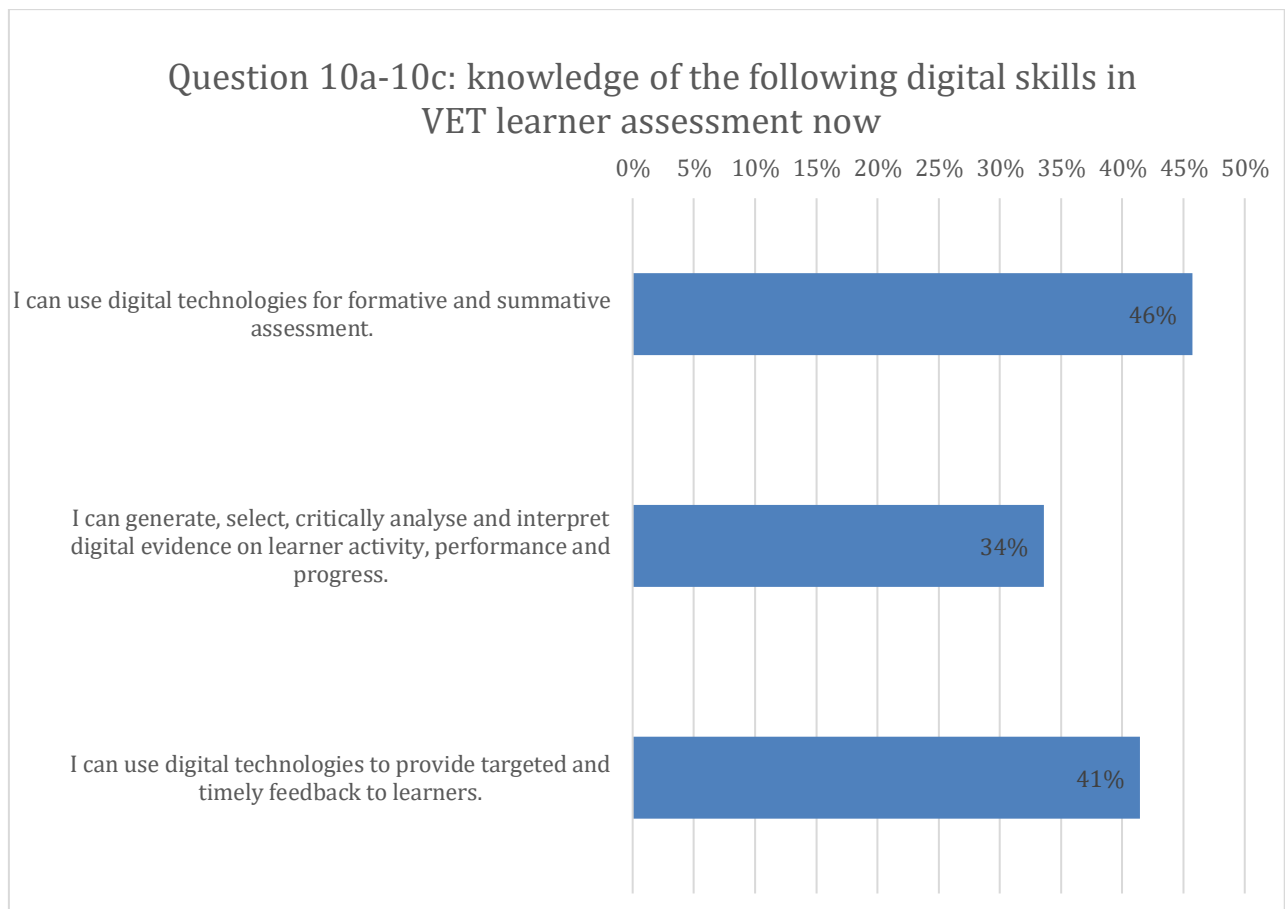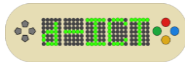
In Chart 6 we can observe that less than half of the participants have digital skills in VET learner assessment. This is because most of them believe that digital technologies are not reliable for the assessment of the learners, so they do not have to acquire specialized digital skills for that. What we can see from Chart 6 is that 46% of the respondents can use digital technologies for formative and summative assessment. 41% of them can use digital technologies to provide targeted and timely feedback to learners and only 34% of the participants can generate, select, critically analyze and interpret digital evidence on learner activity, performance and progress.

Digital skills in facilitating VET learners' digital competence now:

Chart 7

Question 12a-12d: knowledge of the following digital skills in facilitating VET learners' digital competence now
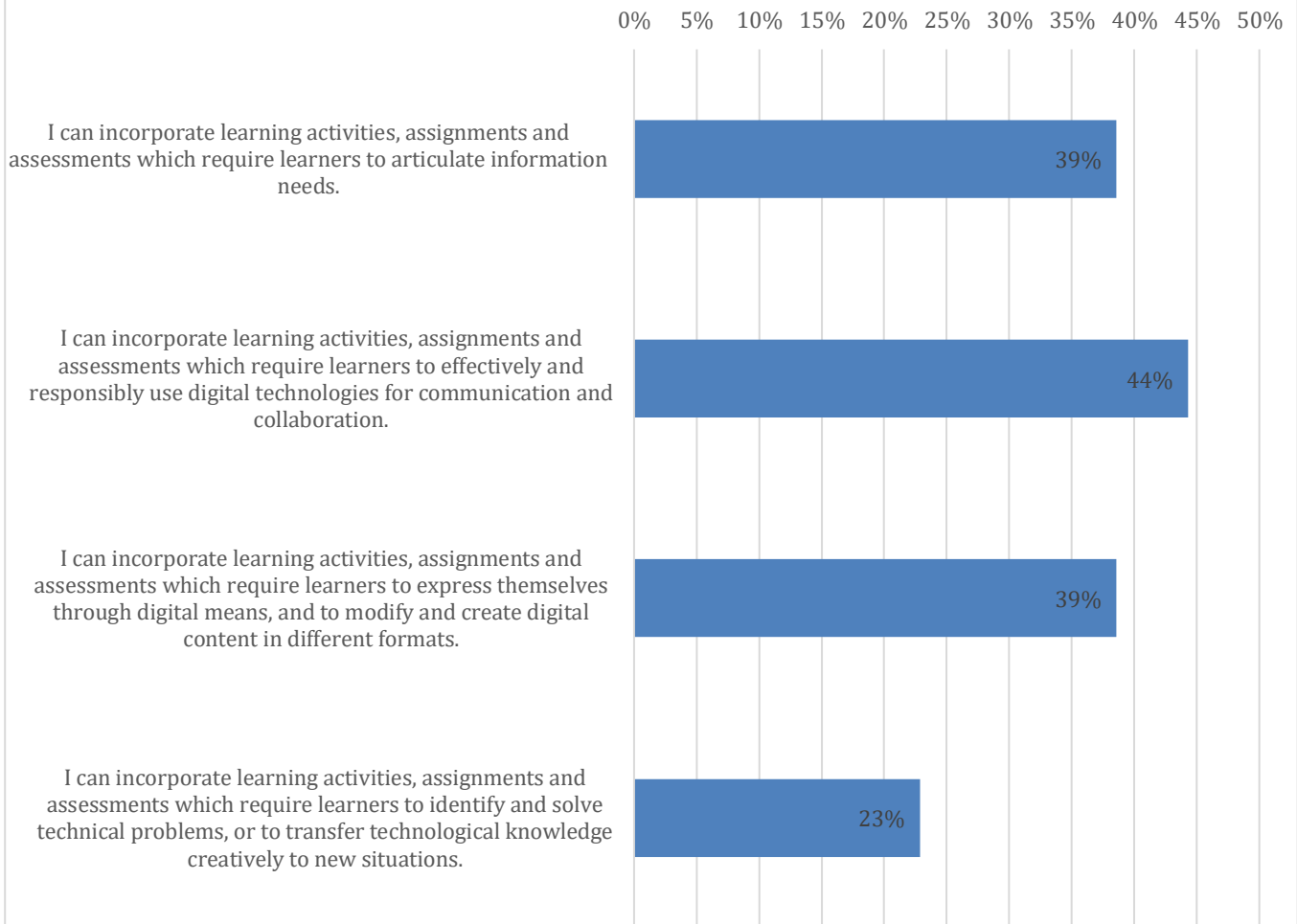
Chart 7 shows us that 44% of the participants can incorporate learning activities, assignments and assessments which require learners to effectively and responsibly use digital technologies for communication and collaboration. 39% of them can incorporate learning activities, assignments and assessments which require learners to articulate information needs, to express themselves through digital means, to modify and to create digital content in different formats. Only 23% of the respondents can incorporate learning activities, assignments and assessments which require learners to identify and solve technical problems or to transfer technological knowledge creatively to new situations. As we can see in Chart 7, we conclude that there are not many VET educators who have enhanced digital skills in facilitating VET learners' digital competence. The only explanation that can be given is that the majority of the VET educators focused in meliorating other digital skills.

VI. Digital skills in empowering interaction and teamwork with VET learners in distance learning

Chart 8

Question 11a-11c: knowledge of the following digital skills in empowering VET learners now

0%   5% 10% 15% 20% 25% 30% 35% 40% 45% 50%

I can ensure accessibility to learning resources and activities. **45%**

I can incorporate learning activities, assignments and assessments which require learners to express themselves through digital means, and to modify and create digital content in different formats. **28%**

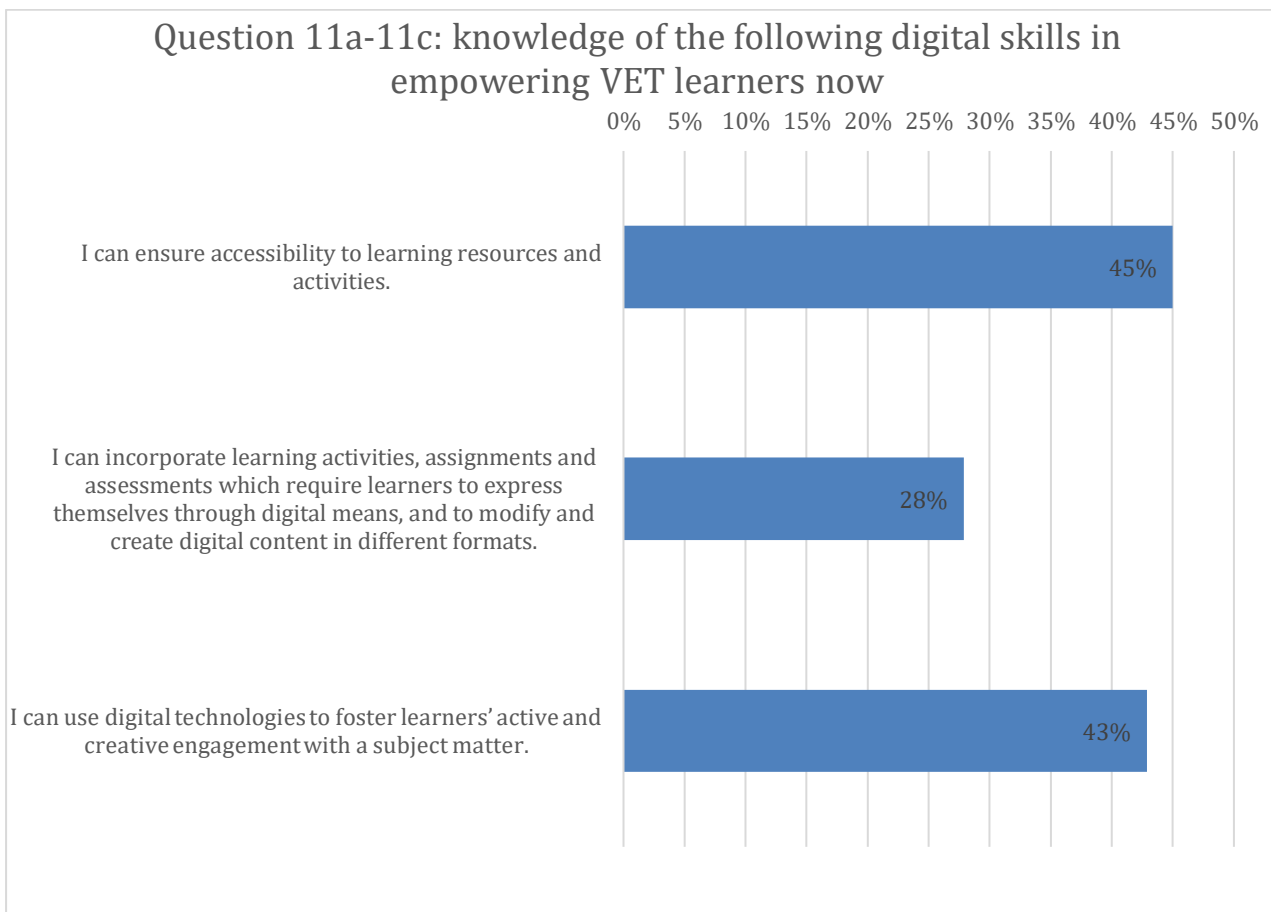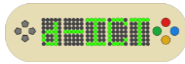I can use digital technologies to foster learners' active and creative engagement with a subject matter. **43%**
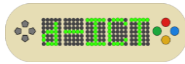
According to Chart 8, 45% of the participants can ensure accessibility to learning and activities. 43% of them can incorporate learning activities, assignments and assessments which require learners to express themselves through digital means and to modify and create digital content in different formats. Only 28% of respondents can use digital technologies to foster learners' active and creative engagement with a subject matter.

So, data suggest that trainers seem to be more competent in having accessibility to learning resources and in using digital technologies to foster their active and creative engagement with a subject matter.

Almost all of the participants stated that digital skills are useful in empowering interaction and teamwork, however it was mentioned that non-verbal communication plays an important role in the training process that remote learning could not substitute it. Face-to-face is an integral part of the training process, it is about posture, practice, doing more than listening. The collective dimension and team dynamics are crucial during a training process; remote learning will not replace them totally. Informal and individualized follow-up are of great importance, they could be partly done online but surely not entirely.

According to Focus Groups, the digital skills considered useful in empowering interaction and teamwork are:

- Digital resources: Creating and modifying digital resources.
- Professional Engagement: Professional collaboration.

- Teaching and Learning: Collaborative Learning (To use digital technologies to foster and enhance learner collaboration).
- Empowering Learners: differentiation and personalization; Actively engaging learners.

Approximately 1/4 of the participants in the Focus Groups were unable to use digital technologies to address the learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives.

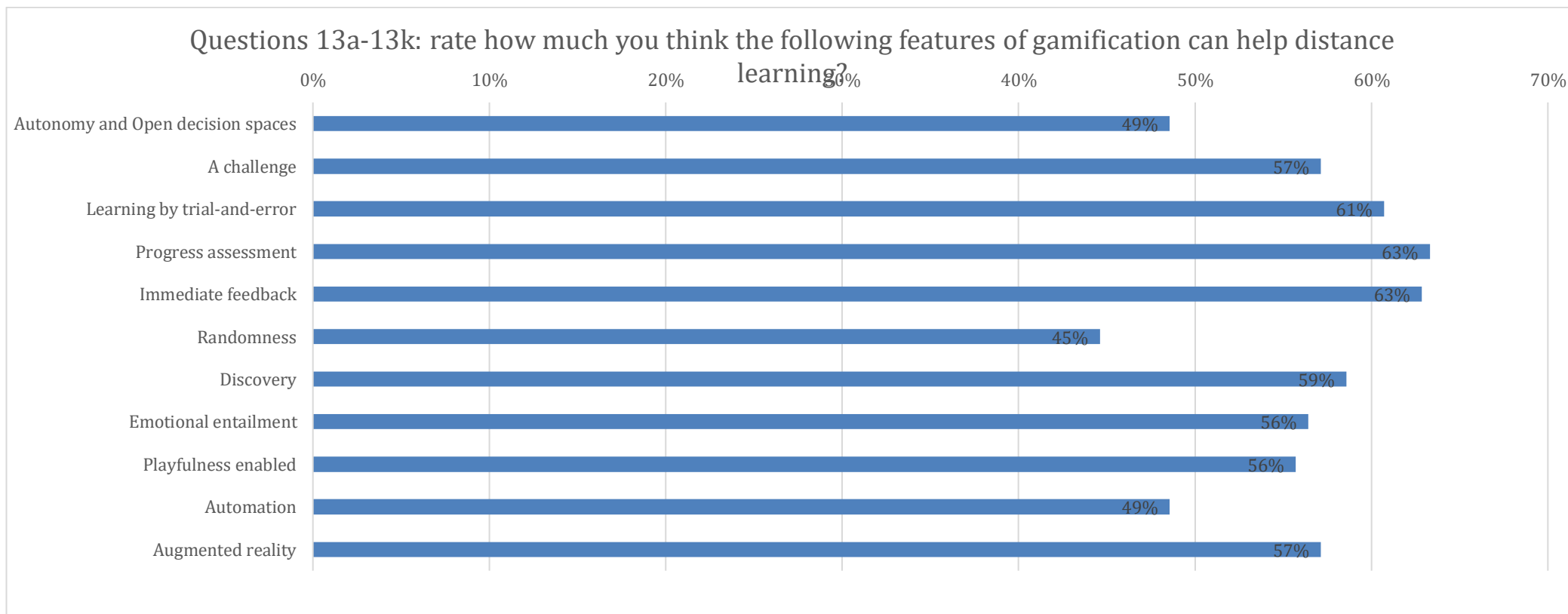## VII. Correlation between gamification and distance learning

As participants underlined the need for a more attractive and engaging distance learning experience, which will motivate the trainees to get the most out of VET, the solution of gamification appears as a potential that definitely has to be explored. Some trainers shared their experience with gamification apps like Kahoot, which is common now in VET trainings and training of trainers. The VET educators claimed that using gamification in asynchronous distance learning would not consume teaching time and it could replace the traditional homework approach. In particular, gamification can be useful in distance learning if it is used continuously over time: not a single "game", but a collective adventure.

Almost all the participants agreed that gamification could help distance learning. Actually, this can also be confirmed by the answers that the VET educators had given in the questionnaire about the features of the gamification.

Features of gamification that can help distance learning:

Chart 9

Questions 13a-13k: rate how much you think the following features of gamification can help distance learning?

Feature	Percentage
Autonomy and Open decision spaces	49%
A challenge	57%
Learning by trial-and-error	61%
Progress assessment	63%
Immediate feedback	63%
Randomness	45%
Discovery	59%
Emotional entailment	56%
Playfulness enabled	56%
Automation	49%
Augmented reality	57%

Almost 61% - 63% of the participants agreed that *progress assessment* (i.e. feedback to learners-players through statistics, achievements, awards, status, progress), *immediate feedback in real time* and *learn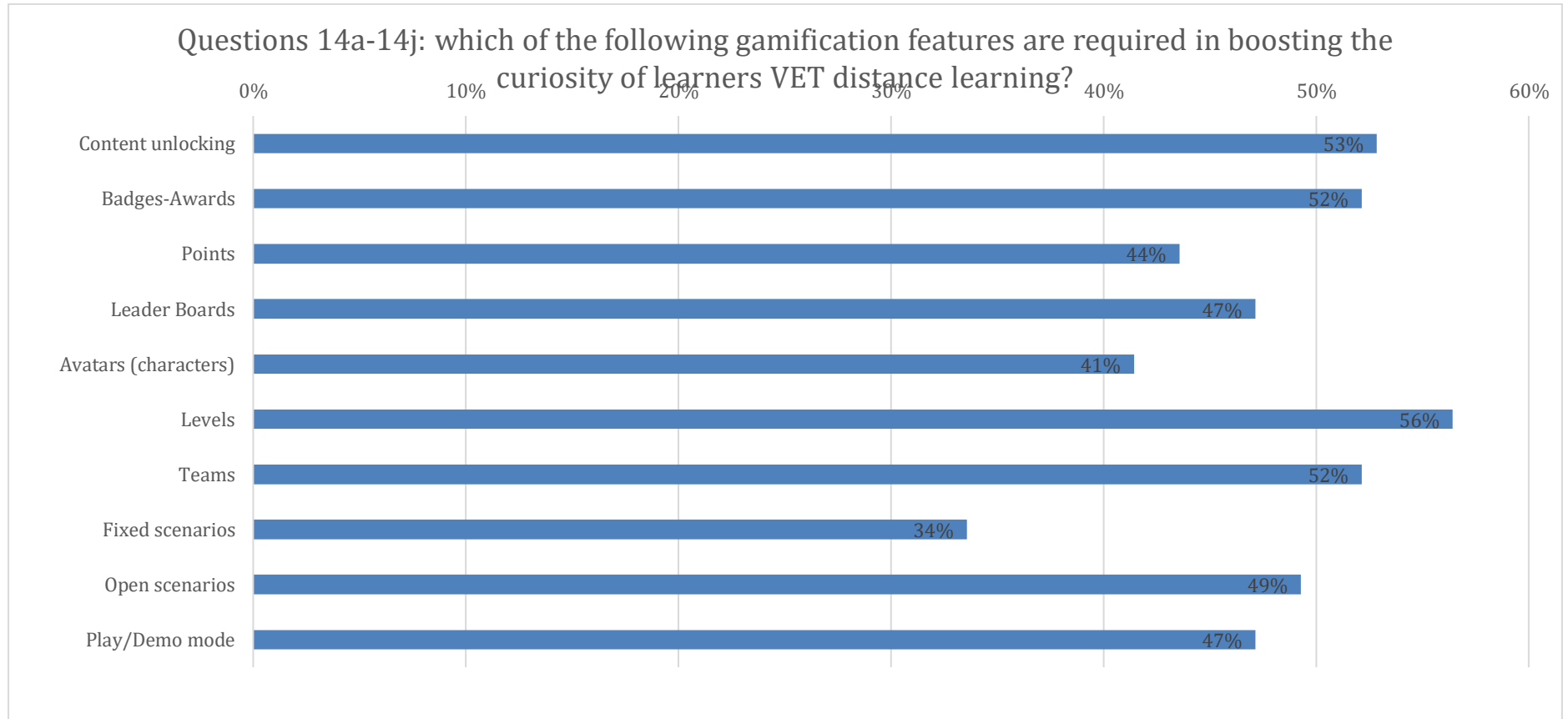ing by trial and error* (i.e. allowing failure not punishment or prosecution many times until the learner-player succeeds) are features of gamification that can help distance learning. Moreover, less than half of the participants claimed that features of gamification such as *discovery* (i.e. new content at an adequate rate based on previous content through various methods e.g. unlocking), *playfulness-enabled* (i.e. the gamified activity's versatility to be used as a toy without focusing on any specific goal and instead aiming to arouse the VET learner's curiosity and experimentation), *augmented reality* (i.e. an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information), a *challenge* (i.e. a subtle balance between incremental difficulty design of a gamified task on one hand and the learner's ability on the other), *emotional entailment* (i.e. involving the VET learners emotionally with the use of characters, stories and aesthetics), *automation* (i.e. the level of human intervention required to produce responses to VET learners' inputs), *autonomy and open decision spaces* (i.e. the gamification's environment possibility for different possible decisions by learners, experimentation and different possible outcomes) can also be useful in improving distance learning.

Gamification features that are required in boosting the curiosity of learners VET distance learning:

Chart 10

Questions 14a-14j: which of the following gamification features are required in boosting the curiosity of learners VET distance learning?

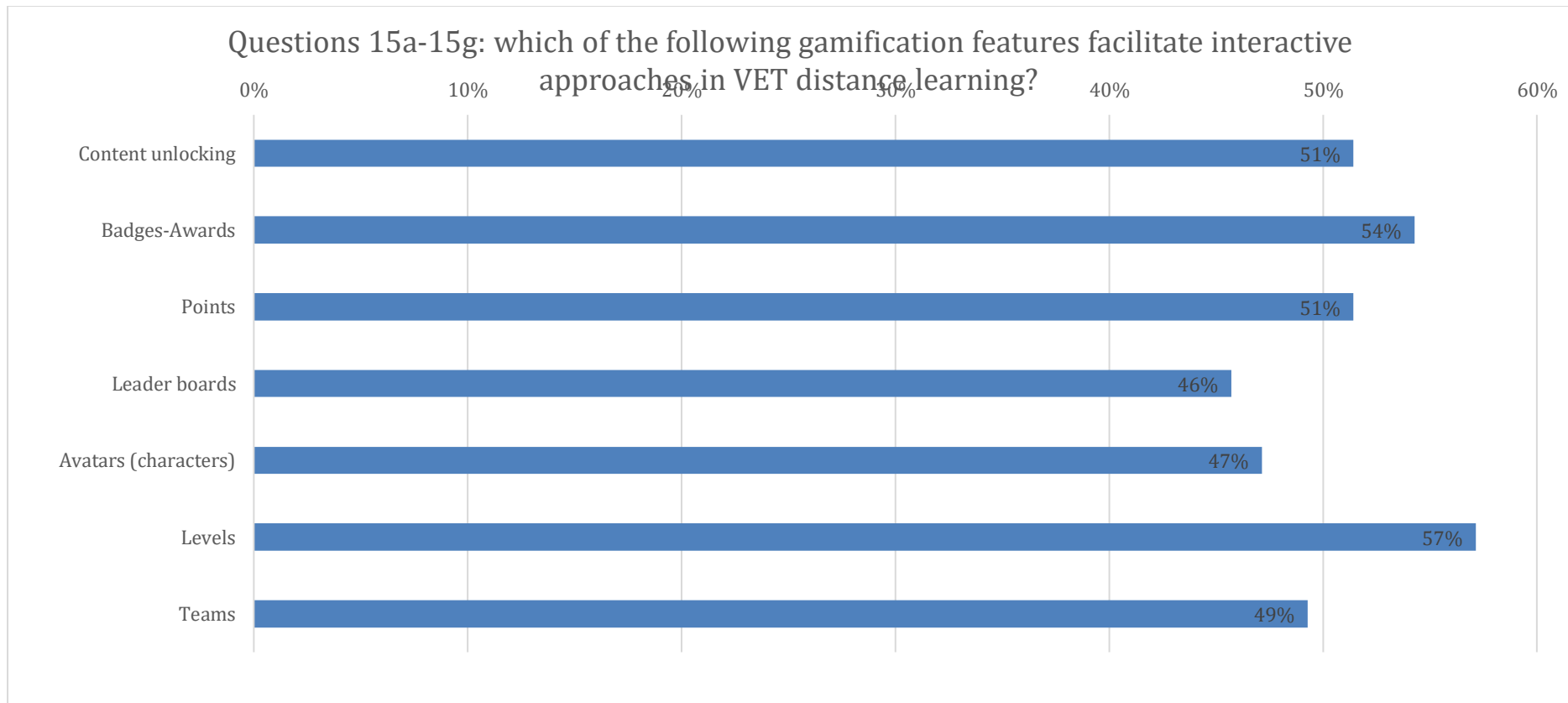| Feature	Percentage
Content unlocking	53%
Badges-Awards	52%
Points	44%
Leader Boards	47%
Avatars (characters)	41%
Levels	56%
Teams	52%
Fixed scenarios	34%
Open scenarios	49%
Play/Demo mode	47%

Co-funded by the European Union

According to Chart 10, the most popular gamification features which can boost the curiosity of learners VET distance learning are Levels, Content Unlocking, Badges awards, Teams, Open scenarios, Leader Boards and Play/Demo mode.
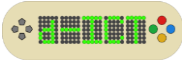
Gamification features that facilitate interactive approaches in VET distance learning:

Chart 11

Questions 15a-15g: which of the following gamification features facilitate interactive approaches in VET distance learning?

Feature	Percentage
Content unlocking	51%
Badges-Awards	54%
Points	51%
Leader boards	46%
Avatars (characters)	47%
Levels	57%
Teams	49%

According to the participants, the most important gamification features which facilitate interactive approaches in VET distance learning are Levels, Badges awards, Content Unlocking, Points and Teams.

VIII.   Digital skills to integrate gamification in VET distance learning

The majority of the participants in the focus groups believe that there is a need for integration of gamification in VET distance learning through meliorating specific digital skills from DigiCompedu. According to VET educators who took part in the Focus Groups, the most important digital skills for that are the following:
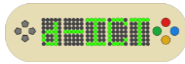
- Creating and modifying digital resources (To modify and build on existing open-license resources where this is permitted).
- Actively engaging learners (To use digital technologies to foster learners' active and creative engagement with a subject matter).
- Selecting digital resources (To identify, assess and select digital resources for teaching and learning).
- Digital communication and collaboration (To incorporate learning activities, assignments and assessments which require learners to use digital technologies for communication, collaboration and civic participation).
- Reflective practice (To individually and collectively reflect on, critically assess and actively develop one's educational community).
- Guidance (To use digital technologies and services to enhance the interaction with learners, individually and collectively).
- Feedback and planning (To use digital technologies to provide targeted and timely feedback to learners).
- Differentiation and personalization (To use digital technologies to address learners' diverse learning needs).
- Digital Problem Solving (To incorporate learning activities, assignments and assessments which require learners to identify and solve technical problems).

However, few of the trainers believe that gamified learning materials do not require advanced digital skills. On the contrary, they seem to assume that a gamified learning approach requires less advanced digital skills than a typical online learning platform needs. That very fact made them believe that gamification will have a positive impact on the prevention of learner dropouts.
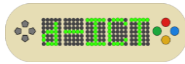
IX.   Needs – Points for improvement

All the participants agreed in introducing a hybrid and integrated learning model which could achieve a holistic approach for every discipline and apply it to all fields. Of course, this learning model will contain gamification, if this will be enriched by many alternating graphics and images. Most of the participants suggest that gamification should be used in asynchronous mode, so in that way no didactic time will be consumed in class and also it could work as an alternative homework. In this way, school dropout may be prevented. In

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order to put this into practice, there must be continuous training of VET educators organized by the Ministry of Education in order to advance their digital skills. Moreover, VET educators need to have free access to most of the educational software which exists. Finally, traditional educational books must be enriched and become compatible with e-books.

6. Proposal of Learning Modules

According to the data gathered from the surveys conducted by the consortium, the following modules are proposed to be developed and incorporated into the d-ICT e-Toolkit and the Gamified asynchronous eLearning experience.

MODULE 1: Introduction to VET distance learning

This module consists of a short presentation of different digital resources used by VET educators during the COVID-19 pandemic in order to make the lesson more interesting and motivating and to facilitate communication between educators and learners. The digital resources are classified by tasks as follows:

- *Collaboration (offline):* Loop, Dropbox, Google drive, Google Workspace, Mockplus, Smartsheet, Pastel
- *Collaboration (online):* Microsoft office 365, Google docs, Miro, Zoho WorkDrive, Dropboc paper
- *Create slideshow presentations:* Microsoft PowerPoint, Prezi
- *Digital repository based on course management systems (CMS):*
- -the e-class Ministry platform (Greece)
- -the e-me Ministry platform (Greece)
- *Quizzes and online questionnaires:* Google forms, Kahoot
- *Student engagement and interaction:* Padlet
- *Team communication:* Slack, Zoom, CISCO Webex, Microsoft Teams, Skype, Viber, TypeTalk, Flock, Troop Messenger, Facebook Messenger
- *Training/Project management:* Trello, Asana, Wrike, Airtable, ProjectHuddle, Zapier, ClickUp, Redbooth, Miro, Monday.com
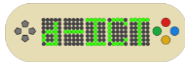
MODULE 2: Digital skills in VET distance learning

The pandemic has permanently refocused traditional frameworks and approaches to education. As a consequence, in any digitally transformed environment, digital skills are crucial for the educators who need to take a new approach to not only the curriculum design but also learning assessments and educational outcomes.

Among the digital skills mentioned by the consortium survey research, the following is a summary of the most valued:

- *Computerisation and information literacy*. This competence involves knowing how to identify, locate, retrieve, store, organise and analyse digital information, assessing its purpose and relevance.
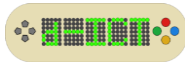
- *Digital communication and collaboration*. In this competence, the educator should know how to communicate in digital environments, share resources through online tools, connect and collaborate with others through digital tools, interact and participate in communities and networks. In addition, the educator should know how to incorporate learning activities, assignments and assessments which require learners to use digital technologies for communication, collaboration and civic participation.
- *Creating digital content*. This competence is about creativity, content curation, but also knowing how to create and edit new content, integrate and rework previous knowledge and content, produce artistic productions, multimedia content and computer programming, knowing how to apply intellectual property rights and licenses of use such as Creative Commons licenses.
- *Selecting and modifying digital resources*. To identify, assess and select digital resources for teaching and learning. To modify and build on existing open-license resources where this is permitted. Criteria to choose a relevant tool/resource: The ease of use, the variety of functions, Security, Integration & Compatibility with the existing and already used tools and programmes.
- *Actively engaging learners*. To use digital technologies to foster learners' active and creative engagement with a subject matter.
- *Reflective practice*. To individually and collectively reflect on, critically assess and actively develop one's educational community.
- *Guidance*. To use digital technologies and services to enhance the interaction with learners, individually and collectively.
- *Feedback and planning*. To use digital technologies to provide targeted and timely feedback to learners.
- *Differentiation and personalization.* To use digital technologies to address learners' diverse learning needs.
- *Security*. Another key digital competence, dealing with aspects such as personal protection, data protection, protection of digital identity, use of security, safe and sustainable use.
- *Digital Problem solving*. This focuses mainly on identifying digital needs and resources, making decisions when choosing the appropriate digital tool, according to the purpose or need, solving conceptual problems through digital means, solving technical problems, creative use of technology, updating one's own and others' competence. To incorporate learning activities, assignments and assessments which require learners to identify and solve technical problems.
- *Assessment.* Assessment strategies.

MODULE 3: Methodologies and tools to enhance learners' interaction and teamwork in VET distance learning

Collaboration, team cohesion, self-efficacy, and digital literacy within online distance learning, have emerged as keys to maximize learning outcomes during the pandemic. Technology is a key tool to promote and enhance collaboration skills and learning to work with others is a life skill that everyone needs to have.

The following are some concrete ways or online tools to foster interaction in VET distance learning:

- *Google Classroom.* To collect and disseminate work. Allowing users to edit and modify both content and structure collaboratively.
- *Discussion Forums.* These enable learners to ask questions and discuss ideas with their peers in an open environment. There should always be explicit limits for participation, such as posting frequency and responding before you publish something relevant.
- *Wikispaces.* Where the VET Educator/trainer can track what the learners/trainees are doing, send messages and schedule deadlines, and monitor changes in real-time.
- *Creating Opportunities:* Learners' learning experiences can be enhanced by allowing them to collaborate on assignments. Projects can be completed in person or online, depending on personal inclination and the availability of resources such as expertise from professors who will serve as mentors throughout this experience.

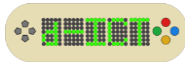# MODULE 4: Methodologies and tools to enhance learners' motivation in VET distance learning

In order to improve and empower interactions and teamwork with learners/trainees, it is necessary to:

- Provide personalized feedback;
- Introduce storytelling;
- Ensure the usefulness of the training course, so the learners/trainees can make better and more efficient use of their time (for example in asynchronous sessions the learner/trainees have an independent use regarding the activities they have to do);
- Create dynamic exercises: a) about the contents transmitted by the trainer; b) activation exercises, that prepare the ground for learning, so the trainee really understands how useful training can be (anticipation exercises);
- Ensure that communication is always clear, objective, and contextualized so that it is understood by all;
- Have several learning styles combined: visual, auditive and written;

MODULE 5: Gamification in distance learning I
(pros and cons of the different features)

Gamification is a useful methodological strategy to promote inclusive education, increase learner participation and increase the levels of motivation and commitment of learners to their learning. This pedagogical method consists of introducing game elements in an educational

context, thus taking advantage of the curiosity, enjoyment, satisfaction or involvement generated by the game in order to improve the teaching-learning process.

Gamification will improve distance learning, preferably if it is asynchronous. An asynchronous gamified experience can be used as an alternative approach to homework. Moreover, gamification can be useful in distance learning if it is used continuously over time: not a single "game", but a "collective adventure".

Features of gamification that can help distance learning:

- A gamified digital tool with the following features considered as especially beneficial (can help distance learning):
- *Immediate feedback* (in real time because learners need feedback as a learning tool);
- *Learning by trial-and-error*;
- *Progress assessment* (i.e., feedback to learners-players through statistics, achievements, awards, status, progress);

The participants agreed that the following features of gamification can also be useful in improving distance learning:

- *discovery* (i.e., new content at an adequate rate based on previous content through various methods e.g. unlocking);

- *playfulness-enabled* (i.e., the gamified activity's versatility to be used as a toy without focusing on any specific goal and instead aiming to arouse the VET learner's curiosity and experimentation);
- *augmented reality* (i.e., an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information);
- *autonomy and open decision spaces*;
- *emotional entailment.*

Features of gamification that can boost the curiosity of learners in VET distance learning:

- Badges-Awards
- Leader Boards
- Levels
- Content unblocking
- Teams and Play/Demo mode

Features of gamification that facilitate the interactive approach in VET distance learning:

- Teams
- Leader boards
- Points and Avatars

Moreover, one way to create more interactive content in online distance learning is by breaking the content while using gamification, which helps the content to be easily understood, so the learners/trainees can have fun and interactive experiences while learning. This shows that having learners/trainees actively enjoying what they are learning, can help to lower the rate of dropouts.

MODULE 6: Gamification in distance learning II (useful strategies for integrating gamification in VET distance learning)

In order to integrate Digital Skills in gamification, there are some strategies that were classified as more important:

- *Use of emotions* - Humanization; Derived behaviour from emotions; Gives a purpose to the game;
- *Immediate Feedback* - Feedback as a guide: short (whether got it right or wrong), medium-term (if you're on the right track) and long-term feedback (whether you won or lost the game);
- *Discovery* – Human Curiosity; Power of discovering (by playing a game you can discover new things);
- *Open decision spaces* – Allows to explore of the real needs of the learner/trainee;
- *A challenge* - If a game is too easy, it is not going to be motivating for the learner/trainee;
- *Context* – it is what turns a gamification process into something that fulfils a certain learning necessity.

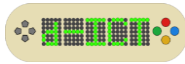## MODULE 7: Assessment tools for distance learning

Develop valid, reliable and effective online assessment tools for VET distance learning to:

- improve trainers' competences in assessment mechanisms in virtual environments and procedures;
- stimulate learners' interest and foster learner autonomy.

7. Conclusions and Recommendations

The qualitative and quantitative data from PR1 were derived from the following:

- 160 questionnaires which were filled out by VET educators from 7 European countries,
- 8 Focus Groups in which a total of 64 VET educators participated, and
- Over 30 teacher digital interviews.

The questions were mainly about the period of the pandemic and focused on the difficulties they faced and on the actions which VET educators took to make their digital classroom warmer. Also, VET educators were asked about the digital skills they were forced to develop in order to rise to the challenge of distance learning. Finally, the trainers made suggestions for making distance learning more attractive and interesting for the learners.

As we can see from the VET educators' responses, their digital skills improved a lot after the end of the pandemic period. It is worth mentioning that the authorities from the seven countries, such as the Ministry of Education, did not offer sufficient help, like appropriate software or enough digital technology. So, the VET educators applied the mutual aid method, where each teacher offered his/her digital skill to the others. Almost all of the participants agreed that the introduction of gamification in VET distance learning would enforce the curiosity and the interest of the learners. However, they highlighted that gamification should not be used as a game itself but as a means to make distance learning more attractive. It was also pointed out that if gamification is going to be applied in VET distance learning, it should be done with a more careful design, i.e. colourful graphics and more image changes. Moreover, the respondents suggested the features of gamification which would help distance learning, boost the curiosity of the learners and facilitate interactive approaches in VET distance learning.

The data of PR1 will be used by PR2 in order to create the theoretical part of the project. Thus, the theory will be based on the PR1 foundings and it will be categorized in seven Modules. Each partner, except ISQe, will take over one Module on which they will draft an e-Curriculum, an e-book and an e-Toolkit.

The deliberations of PR1 and PR2 will be taken into consideration by ISQe, which is responsible for PR3, and it will create a repository of resources of digital gamification strategies, where every VET educator would have free access. As a matter of fact, the aim of the project is not to offer a multisectoral software, suitable for covering every aspect of any discipline, but a repository where every educator could rely on making constructive and interesting games used in asynchronous distance learning.

Taking into consideration the fact that digitalization of VET will be a permanent feature, the d-ICT project comes to fill the aforementioned gaps by combining the assets of distance learning and the engagement of gamification, creating, thus, a unique interactive distance learning methodology that:

- enhances VET learner's engagement,
- enhances Experiential Learning,
- increases the learning experience and reduces drop outs.

Apart from that:

- Consortium organizations will have in their possession an innovative gamified asynchronous eLearning tool that can be applied to a plethora of offered trainings.
- Digital skills of the consortium's VET educators will be strengthened as they will learn innovative distance learning material.
- VET educators will be capable to produce interactive online learning material.
- Consortium organizations and VET educators will be given an E-Toolkit as a repository of resources of digital gamification strategies, interactive distance learning and digital education methodologies and tools to create a warm e-classroom.

Drawing upon the valuable experiences and perspectives shared by VET educators, it is pertinent to offer a series of strategic recommendations aimed at addressing the challenges and maximizing the opportunities identified within the realm of Vocational Education and Training (VET). These recommendations could serve as actionable pathways toward fostering enhanced digital skills development, optimizing distance learning methodologies, and cultivating a dynamic and resilient educational landscape:

Governmental Support: Educational authorities should prioritize providing comprehensive support to VET educators, including access to appropriate software, digital technology, and training programs. This support can help ensure that educators are equipped with the necessary tools and skills to effectively facilitate distance learning.

Professional Development: Institutions and organizations involved in VET should invest in ongoing professional development opportunities for educators, focusing specifically on digital literacy and instructional technology. This can include workshops, online courses, and mentorship programs to continuously enhance educators' digital skills.

Collaborative Learning Communities: Encourage the establishment of collaborative learning communities among VET educators, where they can share best practices, resources, and digital skills with one another. This can foster a culture of mutual support and innovation within the sector.

Integrating Gamification: Explore the integration of gamification into VET distance learning programs, while ensuring that it is implemented thoughtfully and with careful design considerations. This may involve collaborating with instructional designers and technologists to develop engaging and effective gamified learning experiences.

Research and Evaluation: Conduct research and evaluation studies to assess the impact of digital skills enhancement initiatives and the integration of gamification in VET distance learning. This can help identify best practices, challenges, and areas for improvement, ultimately informing future policy and program development efforts.

Stakeholder Engagement: Engage stakeholders, including educators, learners, industry partners, and policymakers, in discussions and decision-making processes related to digital skills development and the use of technology in VET. By involving diverse perspectives, we can ensure that initiatives are relevant, inclusive, and responsive to the needs of all stakeholders.

By implementing these recommendations, stakeholders can work together to strengthen digital skills among VET educators, enhance the quality of distance learning experiences, and ultimately empower learners to succeed in today's digital world.

8. Appendices
Appendix 1: Questionnaire d-ICT

1. Male ☐   Female ☐

Use visualizations to show data

2. Please indicate your age:

23-32 years old ☐

33-42 years old ☐

43-52 years old ☐

53-62 years old ☐

63+ years old ☐

3. Please indicate your years of VET teaching experience:

1-5 years ☐

6-10 years ☐

11-15 years ☐

☐

16-20 years

21-25 years ☐

26-30 years ☐

31+ years ☐

4. Prior to the corona pandemic, did you have any experience with distance learning?

Yes ☐   No ☐

DIGITAL SKILLS

5. From a scale of 1 to 5, what would you say your knowledge of digital skills was *before* the corona pandemic:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

6. From a scale of 1 to 5, what would you say your knowledge of digital skills was *after* the corona pandemic:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

7. From a scale of 1 to 5, please rate your knowledge of the following digital skills in VET professional engagement *now*:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

a. I can use digital technologies to enhance organizational communication with learners, parents and third parties.

1   2   3   4   5

b. I can use digital technologies to engage in collaboration with other educators, sharing and exchanging knowledge and experience, and collaboratively innovating pedagogic practices.

1   2   3   4   5

c. I can individually reflect on, critically assess and actively develop one's own digital pedagogical practice and that of one's educational community.

1   2   3   4   5

8. From a scale of 1 to 5, please rate your knowledge of the following digital skills in VET digital resources *now*:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

a. I can use digital sources and resources for continuous professional development.

1   2   3   4   5

b. I can identify, assess and select digital resources for teaching and learning.

1   2   3   4   5

c. I can modify and build on existing openly-licensed resources and other resources where this is permitted.

1   2   3   4   5

9. From a scale of 1 to 5, please rate your knowledge of the following digital skills in VET teaching and learning *now*:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

a. I can plan for and implement digital devices and resources in the teaching process.

1   2   3   4   5

b. I can use digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session.

1   2   3   4   5

c. I can enable learners to use digital technologies as part of collaborative assignments.

1   2   3   4   5

d. I can use digital technologies to support learners' self-regulated learning, i.e. I can enable learners to plan, monitor and reflect on their own learning, provide evidence of progress, share insights and come up with creative solutions.

1   2   3   4   5

10. From a scale of 1 to 5, please rate your knowledge of the following digital skills in VET learner assessment *now*:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

a. I can use digital technologies for formative and summative assessment.

1   2   3   4   5

b. I can generate, select, critically analyse and interpret digital evidence on learner activity, performance and progress.

1   2   3   4   5

c. I can use digital technologies to provide targeted and timely feedback to learners.

2 3   4   5

11. From a scale of 1 to 5, please rate your knowledge of the following digital skills in empowering VET learners *now*:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

a. I can ensure accessibility to learning resources and activities.

1   2   3   4   5

b. I can use digital technologies to address learners' diverse learning needs, by allowing learners to advance at different levels and speeds, and to follow individual learning pathways and objectives.

1   2   3   4   5

c. I can use digital technologies to foster learners' active and creative engagement with a subject matter.

1   2   3   4   5

12. From a scale of 1 to 5, please rate your knowledge of the following digital skills in facilitating VET learners' digital competence *now*:

(1 = Non-existent, 2 = Weak, 3 = Fairly good, 4 = Very good, 5 = Excellent)

a. I can incorporate learning activities, assignments and assessments which require learners to articulate information needs.

1   2   3   4   5

b. I can incorporate learning activities, assignments and assessments which require learners to effectively and responsibly use digital technologies for communication and collaboration.

1   2   3   4   5

c. I can incorporate learning activities, assignments and assessments which require learners to express themselves through digital means, and to modify and create digital content in different formats.

1   2   3   4   5

d. I can incorporate learning activities, assignments and assessments which require learners to identify and solve technical problems, or to transfer technological knowledge creatively to new situations.

1   2   3   4   5

CORRELATION BETWEEN GAMIFICATION AND DISTANCE LEARNING

13. From a scale of 0 to 5, please rate how much you think the following features of gamification can help distance learning:

(0=I don't know, 1 = Not at all, 2 = A little, 3 = Fairly, 4 = A lot, 5 = Absolutely)

a) <u>Autonomy and Open decision spaces</u> i.e. the gamification's environment possibility for different possible decisions by learners, experimentation and different possible outcomes.

0   1   2   3   4   5

b) A <u>challenge</u> i.e. a subtle balance between incremental difficulty design of a gamified task on one hand and the learner's ability on the other.

0   1   2   3   4   5

c) <u>Learning by trial-and-error</u> i.e. allowing failure (not punishment or prosecution) many times until the learner-player succeeds.

0   1   2   3   4   5

d) <u>Progress assessment</u> i.e. feedback to learners-players through statistics, achievements, awards, status, progress.

0   1   2   3   4   5

e) <u>Immediate feedback</u> in real-time.

0   1   2   3   4   5

f) <u>Randomness</u> i.e. a model based not on strong cause-effect relationships but containing surprises.

0   1   2   3   4   5

g) <u>Discovery</u> i.e. new content at an adequate rate based on previous content through various methods e.g. unlocking (i.e. finishing some levels before being able to play new ones).

0   1   2   3   4   5

h) <u>Emotional entailment</u> i.e. involving the VET learners emotionally with the use of characters, stories and aesthetics.

0   1   2   3   4   5

i) <u>Playfulness enabled</u> i.e. the gamified activity's versatility to be used as a toy without focusing on any specific goal and instead aiming to arouse the VET learner's curiosity and experimentation.

0   1   2   3   4   5

j) <u>Automation</u> i.e. the level of human intervention required to produce responses to VET learners' inputs.

0   1   2   3   4   5

k) <u>Augmented reality</u> i.e. an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information.

0   1   2   3   4   5

14. From a scale of 0 to 5, please indicate which of the following gamification features are required in boosting the curiosity of learners VET distance learning:

(0=I don't know, 1 = Not important at all, 2 = A little important, 3 = Fairly important, 4 = Very important, 5 = Absolutely/crucially important)

a) Content unlocking

0   1   2   3   4   5

b) Badges-Awards

0   1   2   3   4   5

c) Points

0   1   2   3   4   5

d) Leader boards

0   1   2   3   4   5

e) Avatars (characters)

0   1   2   3   4   5

f) Levels

0   1   2   3   4   5

g) Teams

0   1   2   3   4   5

h) Fixed scenarios

0   1   2   3   4   5

i) Open scenarios

0   1   2   3   4   5

j) Play/Demo mode

0   1   2   3   4   5

15. From a scale of 0 to 5, please indicate which of the following gamification features facilitate interactive approaches in VET distance learning:

(0=I don't know, 1 = Not important at all, 2 = A little important, 3 = Fairly important, 4 = Very important, 5 = Absolutely/crucially important)

a) Content unlocking

0   1   2   3   4   5

b) Badges-Awards

0   1   2   3   4   5

c) Points

0   1   2   3   4   5

d) Leader boards

0   1   2   3   4   5

e) Avatars

0   1   2   3   4   5

f) Levels

0   1   2   3   4   5

g) Teams

0   1   2   3   4   5

Appendix 2: Focus Group Questions

Welcome the Focus Group

<u>**Engagement questions**</u> [16 minutes]

Tell us a bit about yourself.

How many years do you work as a VET?

What do you generally think about distance learning VET?

Have you ever had any experience in distance learning VET before Covid-19?

(These questions will take approximately 2 minutes for each educator)

<u>**Exploration questions**</u> [30 minutes]

During the pandemic, what kind of difficulties did you face as a VET educator?

Did you overcome them? How?

Are you a fan of distance learning VET? Why?

(These questions will take approximately 3 minutes for each educator and the group will have 6 minutes to comment on others' responses)

<u>**Break**</u> [15 minutes]

<u>**Follow-up questions**</u> [80 minutes]

Look at List A (a list of digital skills will be given). Which of the following digital skills do you believe that a VET educator would need in distance learning? Why? Which of them do you have?

What kind of digital tools do you think that you need in order to empower interaction and teamwork between classmates under distance learning circumstances?

Do you think that introducing gamification (i.e. digital tool which educators apply game design elements to an educational setting) would reduce the drop-out rate in distance learning? How?

Look at List B (a list of gamification features will be given). Pick one or two of the following features of gamification that in your opinion can help distance learning. Why?

Look at List A (a list of digital skills will be given). According to DigiCompEdu, which of the following digital skills should a VET educator have in order to use gamification in distance learning?

(These questions should take approximately 9 minutes for each educator and the group will have 8 minutes to comment on others' responses)

<u>Exit questions</u> [0-4 minutes]

Is there anything else on this topic you would like to add?

(This question is addressed to the whole group and should take 0-4 minutes)

Thank the Focus Group

List A

DigiCompEdu

Professional Engagement

Organizational communication (To use digital technologies to enhance organizational communication with learners, parents and third parties)

Professional collaboration (To use digital technologies to engage in collaboration with other educators, sharing and exchanging knowledge and experience)

Reflective practice (To individually and collectively reflect on, critically assess and actively develop one's educational community)

Digital resources

Selecting digital resources (To identify, assess and select digital resources for teaching and learning)

Creating and modifying digital resources (To modify and build on existing openly-licensed resources where this is permitted)

Managing, protecting and sharing digital resources (To organize and to protect digital content and make it available to learners, parents and other educators)

Teaching and Learning

Teaching (To plan for and implement digital devices and resources in the teaching progress)

Guidance (To use digital technologies and services to enhance the interaction with learners, individually and collectively)

Collaborative Learning (To use digital technologies to foster and enhance learner collaboration)

Self-regulated learning (To use digital technologies to support learners' self-regulated learning)

Assessment

Assessment Strategies (To use digital strategies for formative and summative assessment)

Analyzing evidence (To generate, select, critically analyze and interpret digital evidence on learner activity, performance and progress)

Feedback and planning (To use digital technologies to provide targeted and timely feedback to learners)

Empowering Learners

Accessibility and Inclusion (To ensure accessibility to learning resources and activities for all learners)

Differentiation and personalization (To use digital technologies to address learners' diverse learning needs)

Actively engaging learners (To use digital technologies to foster learners' active and creative engagement with a subject matter)

Facilitating Learners' Digital Competence

Information and media literacy (To incorporate learning activities, assignments and assessments which require learners to articulate information needs)

Digital communication and collaboration (To incorporate learning activities, assignments and assessments which require learners to use digital technologies for communication, collaboration and civic participation)

Digital content creation (To incorporate learning activities, assignments and assessments which require learners to express themselves through digital means)

Responsible Use (To empower learners to manage risks and use digital technologies safely and responsibly)

Digital Problem Solving (To incorporate learning activities, assignments and assessments which require learners to identify and solve technical problems)

List B

Features of Gamification

*1. **Autonomy and open decision spaces*** i.e. the gamification's environment possibility for different possible decisions by learners, experimentation and different possible outcomes,

*2. **A challenge*** i.e. a subtle balance between incremental difficulty design of a gamified task on one hand and the learner's ability on the other.

*3. **Learning by trial-and-error*** i.e. allowing failure (not punishment or prosecution) many times until the learner-player succeeds.

*4. **Progress assessment*** i.e. feedback to learners-players through statistics, achievements, awards, status, progress.

*5. **Immediate feedback*** in real time

*6. **Randomness*** i.e. a model based not on strong cause-effect relationships but containing surprises.

*7. **Discovery*** i.e. new content at an adequate rate based on previous content through various methods e.g. unlocking (i.e. finishing some levels before being able to play ones)

*8. **Emotional entailment*** i.e. involving the VET learners emotionally with the use of characters, stories and aesthetics.

*9. **Playfulness enabled*** i.e. the gamified activity's versatility to be used as a toy without focusing on any specific goal and instead aiming to arouse the VET learner's curiosity and experimentation.

*10. **Automation*** i.e. the level of human intervention required to produce responses to VET learners' inputs.

*11. **Augmented reality (AR)*** i.e. the integration of digital information with the user's environment in real time.
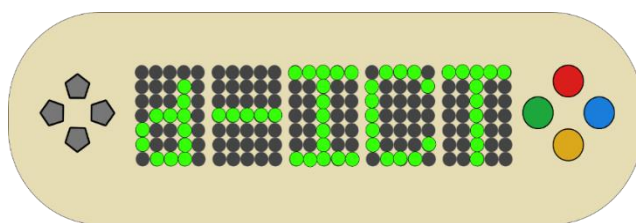
Appendix 3: Digital Interview Questions

1. Can you describe a great time you had during the distance learning in the time of covid-19 pandemic?

2. How did you react to distance learning challenges?

3. Would you suggest distance learning and why?

(These questions should take approximately 2 minutes for each educator)

d-ICT

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