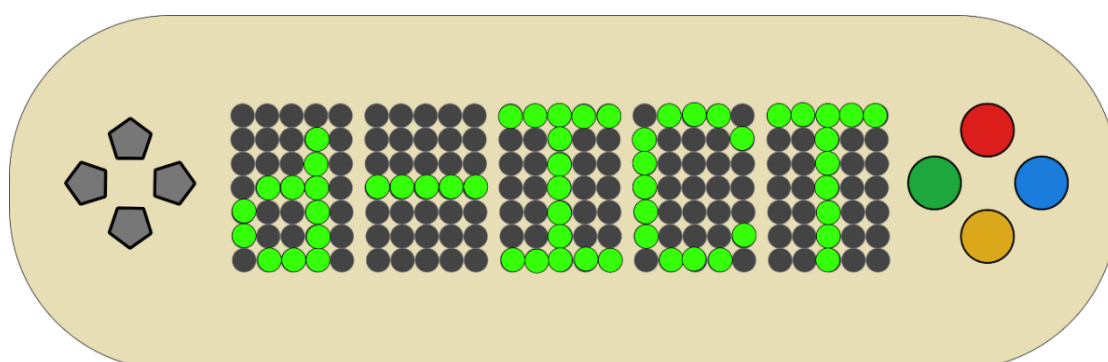




Co-funded by the
Erasmus+ Programme
of the European Union

Improving VET Distance Learning through a Gamified Asynchronous eLearning Methodology (d-ICT)



2021-1-EL01-KA220-VET-000024942

National Survey Results Report

“Improving VET Distance Learning through a Gamified Asynchronous eLearning Methodology (d-ICT)”

Version:	Author:	Date:	Place:
v.1	INFODEF	December 2022	Valladolid - Spain

d-ICT National Survey Results Report

COUNTRY: Spain

ORGANISATION: INFODEF

DATE OF PUBLICATION/RELEASE: December 2022

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Executive summary

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 drop outs. The fast-moving transition to the distance learning education during the COVID's lockdown caught the VET educators unprepared as many of them have not built the capacity to provide interactive lessons online so far. For that reason, the current 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.

To achieve this, the first project result aims to gather the lessons Learned: Exploring the taken resolutions aimed at facilitating distance learning in the COVID-19 era, which aim is the identification of:

- a) Skill gaps of VET educators on the distance teaching tools, interactive digital educational techniques, techniques to make e-classroom climate more enjoyable in order to prevent drop outs
- b) Best distance learning practices taken in each consortium country
- c) Recommendations and points for improvement in the distance learning methodology to make the distance learning experience more zestful
- d) Difficulties experienced during the COVID lockdown from both VET educators and learners
- e) Lessons learned from the COVID era about VET distance learning

To gather relevant information for PR1 “Lessons Learned: Exploring the taken resolutions aimed at facilitating distance learning in the COVID-19 era”, surveys were conducted in the countries of the participating organisations. The present report summarised the findings of the survey conducted in Spain during November and December 2022.

The survey consisted on the application of questionnaires and a focus group with VET trainers, adult educators, and specialists. In Spain, they were chosen from among the trainers who work at INFODEF or at organizations that are members of the INFODEF network.

The main results can be summarized as follows:

- **Digital resolutions taken per country:** technically speaking, the most important challenge is the digitalisation of teachers and pupils, which still has some way to go to reach an optimal point of development.

- **Digital resources:** Some of the most used tools were/are: Zoom, Skype, Microsoft Teams, eLearning platforms such as Moodle and LearnPress, Google Meet, Google Calendar, Google Drive, Microsoft office
- **Difficulties / obstacles / Challenges:** Trainers consulted agreed that the biggest challenge they have faced during this year of pandemic has been to move from fully or partially face-to-face training to fully virtual training. Challenges come from the technological and cultural aspects.
- **Digital skills in VET distance learning:** Among the digital skills, the following is a summary of the most valued: computerisation and information literacy, communication and processing, creating digital content, security, problem solving and assessment.
- **Digital skills in empowering interaction and teamwork with VET learners in distance learning:** Participants mentioned that perhaps one of the things that has been most difficult in distance learning because of the covid situation - for both students and teachers - has been learning to relate to each other virtually.
- **Correlation between gamification and distance learning:** Gamification is a useful methodological strategy to promote inclusive education, increase student participation and increase the levels of motivation and commitment of students 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.
- **Digital skills to integrate gamification in VET distance learning:** Teachers and trainers mentioned the following as the most relevant features to integrate gamification in VET distance learning (in order of relevance): autonomy and open decision spaces, randomness, learning by trial-and-error, emotional entailment, playfulness enabled, discovery.
- **Needs:** It was proposed to improve trainers' competences in digital skills, but also in assessment mechanisms in virtual environments and procedures to foster learner autonomy.

Background and objectives

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 drop outs. The fast-moving transition to the distance learning education during the COVID's lockdown caught the VET educators unprepared as many of them have not built the capacity to provide interactive lessons online so far. For that reason, the current 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, through 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 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

Survey method

People involved and their profiles

20 VET trainers, adult educators, and specialists participated in the survey. They were chosen from among the trainers who work at INFODEF or at organizations that are members of the INFODEF network.

People were invited to participate with personalized invites.

They have the following characteristics:

Sex

Female	Male	Tot
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14	6	20
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Age

23-32	33-42	43-52	53-62	> 63	Tot
6	6	7	1	0	20

Years of work experience

1-5	6-10	11-15	16-20	21-25	26-30	>30	Tot
4	5	6	4	2	1	0	20

Organisations involved

- INFODEF: 8
- Other training and consulting organizations (La Bien Paga): 9
- Freelance trainer: 3

Method of data collection

Data was collected through:

- **Focus group:** 8 trainers/adult educators/experts participated of the focus group. It was held on November 4th, in online mode on Zoom. The focus group lasted about 2 hours.
- **Questionnaire (online):** completed by 20 trainers/adult educators/experts on adult education

Survey results

Digital resolutions taken per country

The experts commented that on the national level, **Digital Spain 2026** is the strategy launched in July 2020 as the country's digital transformation roadmap, an ambitious strategy to take full advantage of new technologies and achieve stronger and more sustained economic growth.

Part of this national strategy, **the Digital VET Plan** was launched with the following objectives:

- To design new digital qualifications required by the job offer;
- To train teachers in applied digitalisation and in specialisation programmes with the highest demand for the industrial sector;
- To promote integrated centres and national reference centres in the digital sector and
- To promote innovation projects between centres and companies in the digital field.

Among the actions of this Plan, a specific module on applied digitisation will be included in all the training programmes of the vocational training degrees, and in the rest of the vocational training degrees and offers, all those elements of digitisation for a correct performance of the professional field will be included.

It was mentioned that, technically speaking, the most important challenge is the digitalisation of teachers and pupils, which still has some way to go to reach an optimal point of development.

Digital resources

During covid-19 and later, VET professionals had to adjust and learn on the go different digital tools to be able to replicate somehow the physical classroom. Some of the most used tools were/are:

- Zoom
- Skype
- Microsoft Teams
- eLearning platforms such as Moodle and LearnPress.
- Google Meet
- Google Calendar
- Google Drive
- Microsoft office

Also, they used in exceptional cases videos to explain a particular lesson to their learners, or as part of a homework where the learner had to show a specific action.

They mentioned that the PPT presentations had to be more appealing and complete.

Difficulties / obstacles / Challenges

The trainers consulted agreed that the biggest challenge they have faced during this year of pandemic has been to move from fully or partially face-to-face training to fully virtual training.

One of the trainers consulted acknowledged that the confinement forced many teachers to improve their technological skills and to "lose their fear of integrating these tools" into their day-to-day work. And it seems that they succeeded, judging by her assessment: "Many of these strategies are here to stay and will complement classroom training, enriching it and making it more versatile".

Another trainer, who is convinced that the transition from face-to-face to digital training has meant "a complete redefinition of the organisational elements of the teaching-learning process, among which the role of the online teacher has stood out. It was not a question of doing the same old things using technology, but of promoting a change in learning methodologies based on values and skills, and, above all, in the ways of assessing".

The most pressing difficulty for all is the technological challenge as there is a lack of technical equipment from both the side of the teacher/centre and from the students, as not everyone has a laptop or tablet at home, and to follow a lecture from the mobile can be very tiring. "Many centres have had to adapt by leaps and bounds to replace face-to-face training with distance learning. And, in this sense, having the necessary tools and resources is key". On the other side, for centres with a hybrid system, the health crisis has made it possible to "test and perfect the educational platforms".

On the cultural aspect, one of the most important difficulties/challenges is the digitalisation of teachers and pupils, which is still a long way to go to reach an optimal point of development. This process requires "commitment" and "effort" on the part of students, as well as a change in their previous habits and culture.

Cultural change is needed in two ways. On the one hand, because the appearance of COVID-19 "has served to legitimise distance education among the most detractors of this methodology". On the other, because it has become clear how important it is to promote and encourage technological training, which is "an opportunity to create and adapt our degrees to train society in what the labour market is really demanding: digital profiles".

Digital skills in VET distance learning

The teachers consulted agreed that the coronavirus has highlighted the need for teacher training on digital issues. One of them mentioned that it is very clear to them

that the time has come to "lay the foundations to create a regular updating of teachers based on the competences linked to the new technological requirements". Another one also mentions that "VET teachers need continuous training and retraining in information technologies in order to be able to respond to students from different possibilities, whether face-to-face, blended or online".

Among the digital skills, the following is a summary of the most valued:

1. Computerisation and information literacy. This competence involves knowing how to identify, locate, retrieve, store, organise and analyse digital information, assessing its purpose and relevance.

2. Communication and processing. In this competence the teacher 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.

3. 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, know how to apply intellectual property rights and licences of use such as Creative Commons licences.

4. 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.

5. Problem solving. 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.

6. Assessment. Assessment Strategies, analysing evidence, feedback and planning.

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

Participants mentioned that perhaps one of the things that has been most difficult in distance learning because of the covid situation - for both students and teachers - has been learning to relate to each other virtually.

The following are considered the most relevant skills for empowering interaction and teamwork:

- To know a varied repertoire of digital technologies that allow interaction and communication to offer support and selective feedback to students.

- To select, according to the didactic context, the digital communication and interaction technologies.
- To offer support and guidance during learning, using digital technologies.
- To use digital technologies to obtain immediate feedback on student activity and on the difficulties encountered in the learning process in order to intervene when necessary.
- Accessibility and Inclusion (To ensure accessibility to learning resources and activities for all learners)
- Actively engaging learners (To use digital technologies to foster learners' active and creative engagement with a subject matter)

The following are some concrete ways or tools for fostering interaction in VET distance learning that were proposed:

- **Discussion Forums:** These enable students 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.
- **Activities that occur at the same time:** Synchronous activities are becoming increasingly popular in educational technology. Synchronous activities (webinars and video conferencing, etc.), allow students to communicate in real time with one another and with an instructor, who will answer questions during these periods through chat sessions or live presentations from experts in various industries.
- **Creating Opportunities:** Students' 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. Teaching and Learning

Correlation between gamification and distance learning

Gamification is a useful methodological strategy to promote inclusive education, increase student participation and increase the levels of motivation and commitment of students 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 presents different constituent elements such as rules, objectives, challenges, rewards, avatars, levels, etc. from which teachers can choose to configure their gamified dynamics.

Digital skills to integrate gamification in VET distance learning

Teachers and trainers mentioned the following as the most relevant features to integrate gamification in VET distance learning (in order of relevance):

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. Randomness i.e. a model based not on strong cause-effect relationships but containing surprises.
3. Learning by trial-and-error i.e. allowing failure (not punishment or prosecution) many times until the learner-player succeeds.
4. Emotional entailment i.e. involving the VET learners emotionally with the use of characters, stories and aesthetics.
5. 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.
6. 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)

Needs

It was proposed to improve trainers' competences in digital skills, but also in assessment mechanisms in virtual environments and procedures to foster learner autonomy. To achieve this, it is proposed:

- to adjust the curriculum,
- personalise learning opportunities and tutorial action,
- foster peer learning for the exchange of good practices in distance education.

Appendices

Appendix 1: Questionnaire d-ICT¹

The responses to the 20 questionnaires can be found [here](#)

1. Male Female

Use visualizations to show data

2. Please indicate your age:

23-32 years old	<input type="checkbox"/>
33-42 years old	<input type="checkbox"/>
43-52 years old	<input type="checkbox"/>
53-62 years old	<input type="checkbox"/>
63+ years old	<input type="checkbox"/>

3. Please indicate your years of VET teaching experience:

1-5 years	<input type="checkbox"/>
6-10 years	<input type="checkbox"/>
11-15 years	<input type="checkbox"/>
16-20 years	<input type="checkbox"/>
21-25 years	<input type="checkbox"/>
26-30 years	<input type="checkbox"/>
31+ years	<input type="checkbox"/>

¹ Based on the *European Framework for the Digital Competence of Educators (DIGCOMPEDU FRAMEWORK)*

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)

1 2 3 4 5

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)

1 2 3 4 5

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.

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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.

1 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) **Autonomy and Open decision spaces** 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 **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.

0 1 2 3 4 5

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

0 1 2 3 4 5

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

0 1 2 3 4 5

e) **Immediate feedback** in real-time.

0 1 2 3 4 5

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

0 1 2 3 4 5

g) **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 new ones).

0 1 2 3 4 5

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

0 1 2 3 4 5

i) **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.

0 1 2 3 4 5

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

0 1 2 3 4 5

k) **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.

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

i. **Engagement questions** [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)

ii. **Exploration questions** [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)

Break [15 minutes]

iii. **Follow-up questions** [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)

iv. **Exit questions** [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**
 - i. *Organizational communication* (To use digital technologies to enhance organizational communication with learners, parents and third parties)
 - ii. *Professional collaboration* (To use digital technologies to engage in collaboration with other educators, sharing and exchanging knowledge and experience)
 - iii. *Reflective practice* (To individually and collectively reflect on, critically assess and actively develop one's educational community)

- **Digital resources**
 - i. *Selecting digital resources* (To identify, assess and select digital resources for teaching and learning)
 - ii. *Creating and modifying digital resources* (To modify and build on existing openly-licensed resources where this is permitted)
 - iii. *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**
 - i. *Teaching* (To plan for and implement digital devices and resources in the teaching progress)
 - ii. *Guidance* (To use digital technologies and services to enhance the interaction with learners, individually and collectively)
 - iii. *Collaborative Learning* (To use digital technologies to foster and enhance learner collaboration)
 - iv. *Self-regulated learning* (To use digital technologies to support learners' self-regulated learning)

- **Assessment**
 - i. *Assessment Strategies* (To use digital strategies for formative and summative assessment)
 - ii. *Analyzing evidence* (To generate, select, critically analyze and interpret digital evidence on learner activity, performance and progress)

- iii. *Feedback and planning* (To use digital technologies to provide targeted and timely feedback to learners)

- **Empowering Learners**
 - i. *Accessibility and Inclusion* (To ensure accessibility to learning resources and activities for all learners)
 - ii. *Differentiation and personalization* (To use digital technologies to address learners' diverse learning needs)
 - iii. *Actively engaging learners* (To use digital technologies to foster learners' active and creative engagement with a subject matter)

- **Facilitating Learners' Digital Competence**
 - i. *Information and media literacy* (To incorporate learning activities, assignments and assessments which require learners to articulate information needs)
 - ii. *Digital communication and collaboration* (To incorporate learning activities, assignments and assessments which require learners to use digital technologies for communication, collaboration and civic participation)
 - iii. *Digital content creation* (To incorporate learning activities, assignments and assessments which require learners to express themselves through digital means)
 - iv. *Responsible Use* (To empower learners to manage risks and use digital technologies safely and responsibly)
 - v. *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)