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

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National Survey Results Report
(Greece)

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

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Table of Contents

Executive summary

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. For instance, in Greece, VET Educators claimed to face huge difficulties in distance education, since the government educational system had never foreseen their proper preparation and training on those issues. For that reason, the following National Survey provides us with the findings of PR1 (Project Results 1), which are a mixture of three field methodologies; a questionnaire, a focus group and digital interviews. This report will point out the results of the COVID lockdown in the national educational context of Greece.

The research is based on nine thematic areas. 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 in Greece, 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.

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 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.*

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In summary, the results of this survey show that:

- *Most of VET educators in Greece 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 won't replace the traditional teaching.*

Survey method

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, 21 VET educators were approached and were asked to fill in a Questionnaire regarding distance learning. Regarding the qualitative data gathering, 8 VET Educators were approached and involved in a Focus Group, while another 5 per 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 21 VET educators through emails, calls, and social media. It was open online from 18-10-2022 to 9-11-2022. It contained 15 questions with multiple choices.

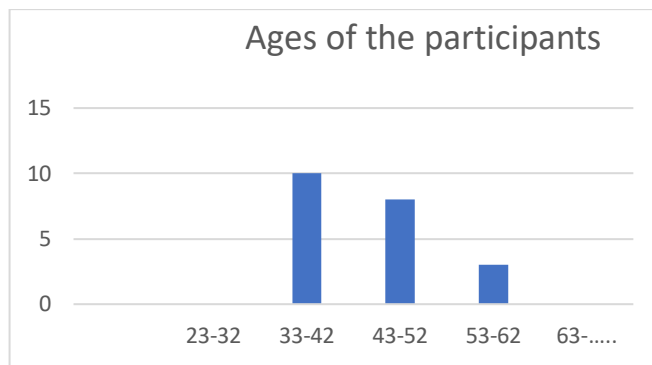*The characteristics of the 20 VET educators are as follow:*

1. Sex

Sex of the participants	
Male	11
Female	10

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Total	21

Graph 1

2. *Age of the participants*

Graph 2

3. *Years of teaching experience in VET education*

Years of teaching experience in VET education	
1-5	10
6-10	3
11-15	2
16-20	3
21-25	0
26-30	3
31-…	0

Graph 3

Focus Group

In the focus group, 8 VET educators were chosen from different specializations in VET education. It was held on November 5th, in online mode on the CISCO Webex platform. The focus group lasted 2.5 hours. During the focus group, a discussion took place, where discomfort and difficulties in the VET system due to COVID-19 surfaced.

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, fun and reduce school dropout.

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Survey results

The findings of the questionnaires and the focus group will provide us the survey results. This section is divided into 9 thematic areas. Before the analysis, general details for the participants will be presented.

First of all, twenty-one VET educators filled in the questionnaire, out of which ten were women and eleven were men. In the focus group, eight VET educators took part, of which five were men and three women.

The years of teaching experience in VET education varied. (Graph 4)
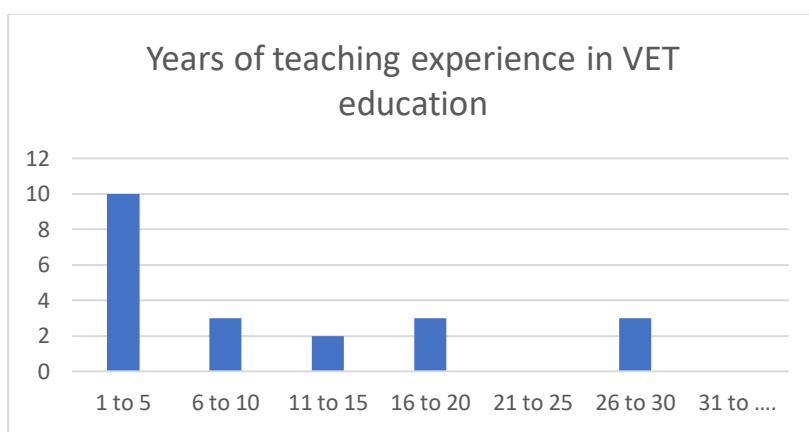
Graph 4

According to the findings of the questionnaires, six out of twenty-one of the VET educators had distance learning experience prior to the corona pandemic and in the focus group only two out of eight. The other six participants had taken part into distance learning courses, blended postgraduates and e-twinning projects.

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 (Graphs 5 &6). That means that many VET educators were forced to develop their digital skills in order to make their lessons more attractive to their students.

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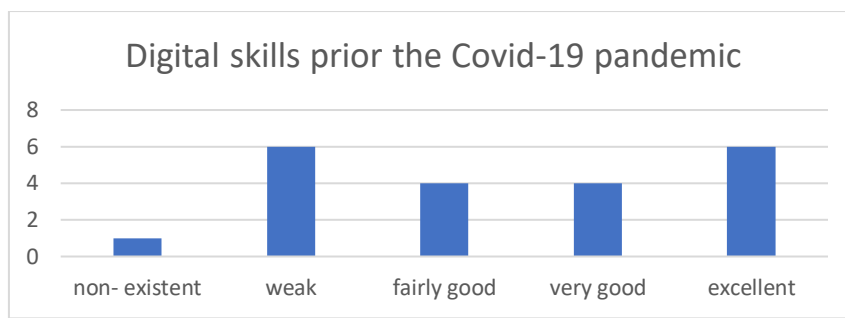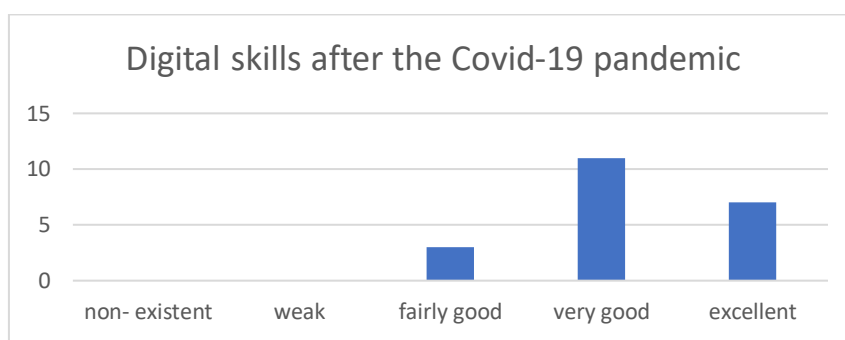
Graph 5

Graph 6

Thematic areas

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

According to VET educators, Covid-19 pandemic contributed to the faster digitization of the country. On the other hand, the Ministry of Education 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 to keep their schools alive during the corona pandemic, almost all of the VET educators weren't trained for something like that. 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.

II. *Digital resources*

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. Some of them were Google docs, Google forms, the e-class Ministry platform, the e-me Ministry platform, Zoom, CISCO Webex, Kahoot, Microsoft Powerpoint, Skype, Viber, Messenger, YouTube, animation, Padlet, etc.

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III. *Difficulties (technical, emotional, learning and teaching process)- 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 it was mentioned, all the learners did not have the same technical equipment. 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. Also, many learners had problems connecting to the internet. All these difficulties highlighted the social inequalities for which the governmental education system 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 them and their children, because at the same time they were teaching, their children were having distance lessons of their own at home. Moreover, two of the participants claimed that the size of the screens used by them and the learners were too small and caused tiredness and less self-concentration.

Emotional difficulties: During the corona pandemic, both educators and learners were very stressed. 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.

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.

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*

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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.

Generally, the majority of VET educators spent time for meliorating their digital skills and producing digital educational material.

All of the participants were positive towards the introduction of gamification in distance learning.

V. *Digital skills in VET distance learning*

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: 18 out of 21 participants have very good knowledge of how to use digital technologies to collaborate with other educators, to share and exchange their knowledge and experience, and to innovate with new pedagogic practices. (Graph 7)*
- *Digital skills in VET digital resources now: 20 out of 21 participants stated that he/she can identify, assess and select digital resources for teaching and learning (Graph 8). On the other hand, there were 4 educators who cannot modify and build on existing open-license resources and other resources where this is permitted (Graph 9).*
- *Digital skills in VET teaching and learning now: almost all participants can use digital technologies and services to enhance their interaction with learners, individually and collectively, within and outside the learning session (Graph 10) and enable learners to use digital technologies as part of collaborative assignments (Graph 11).*
- *Digital skills in VET learner assessment now: all the participants, except one, can use digital technologies for formative and summative assessment (graph 12).*
- *Digital skills in facilitating VET learners' digital competence now: 18 out of 21 participants can incorporate learning activities, assignments and assessments which require learners to effectively and responsibly use digital technologies*

10

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for communication and collaboration (graph 13) but 6 of them cannot incorporate learning activities, assignments and assessments which require learners to identify and solve technical problems, or to transfer technological knowledge creatively to new situations (graph 14).

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

25% of the participants 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 (graph 15). On the contrary, only one of them cannot use digital technologies to foster the learners' active and creative engagement with a subject matter (graph 16).

VII. *Correlation between gamification and distance learning*

All the participants in the focus group 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: Almost 85% of the participants agreed that progress assessment (i.e., feedback to learners-players through statistics, achievements, awards, status, progress) and immediate feedback in real time are features of gamification that can help distance learning (graph 17). Moreover, 16 out of 21 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) and 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) (graph 18) can also be useful in improving distance learning.*
- *Gamification features that are required in boosting the curiosity of learners VET distance learning: 18 out of 21 VET educators agreed that the most important features which could boost the curiosity of learners VET distance learning are Badges awards, Leader Boards, Levels, Teams and Play/Demo mode (graph 19).*
- *Gamification features that facilitate interactive approaches in VET distance learning: 18 out of 21 participants claimed that the most*

11

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important gamification features which facilitate interactive approaches in VET distance learning are Badges awards, Points and Avatars (graph 20).

VIII. *Digital skills to integrate gamification in VET distance learning*

The participants in the focus group 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 Group, the most important digital skills for that are the following:
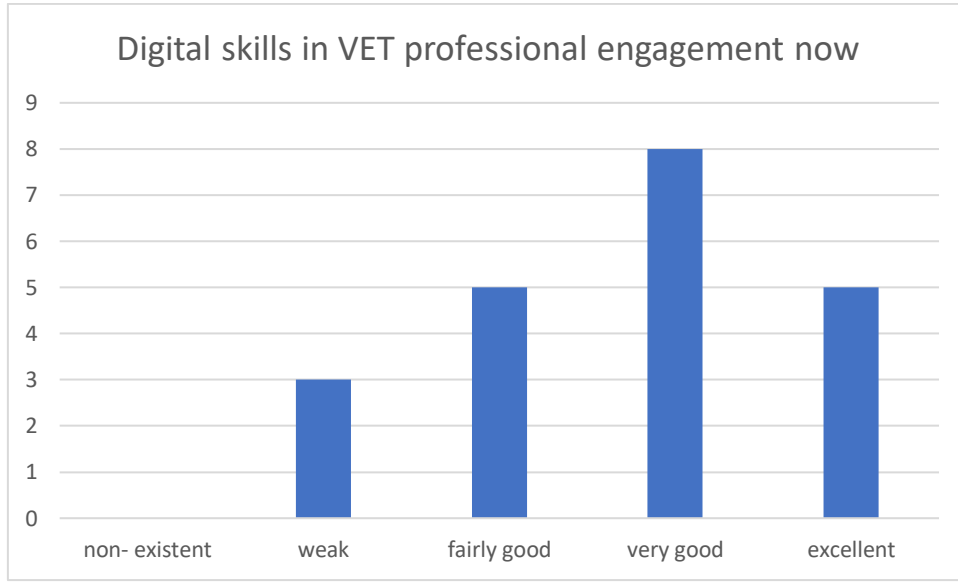
- *Creating and modifying digital resources (To modify and build on existing open-license resources where this is permitted).*
- *Actively engaging learners (To use digital technologies to foster learners' active and creative engagement with a subject matter).*
- *Selecting digital resources (To identify, 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).*

IX. *Needs (e.g. for training in digital skills and tools) - Points for improvement*

All the participants agreed in introducing a hybrid learning model which will contain gamification, provided that this will be enriched by many alternating graphics and images. In this way, school dropout may be prevented. In order to put this into practice, there must be continuous training of VET educators organized by the Ministry of Education. 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.

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Appendices

Appendix 1

Digital skills in VET professional engagement now

Graph 7

Digital skills in VET digital resources now

Graph 8

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Digital skills in VET digital resources now

non- existent	weak	fairly good	very good	excellent
1	3	9	6	2

Graph 9

Digital skills in VET teaching and learning now

non- existent	weak	fairly good	very good	excellent
0	1	8	6	6

Graph 10

Digital skills in VET teaching and learning now

non- existent	weak	fairly good	very good	excellent
0	0	9	7	5

Graph 11

15

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Digital skills in VET learner assessment now

Graph 12

Digital skills in facilitating VET learners' digital competence now

Graph 13

Digital skills in facilitating VET learners' digital competence now

Graph 14

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Digital skills in empowering VET learners now

Graph 15

Digital skills in empowering VET learners now

Graph 16

Features of gamification-Immediate feedback in real time

Graph 17

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Features of Gamification- Augmented Reality

Response	Value
I don't know	2
not at all	1
a little	1
fairly	1
a lot	8
absolutely	8

Graph 18

Features of Gamification which boost the curiosity of learners VET distance learning- Play/Demo mode

Response	Value
I don't know	1
not at all	2
a little	0
fairly	8
a lot	3
absolutely	7

Graph 19

Features of Gamification which facilutate interactive approaches in VET distance learning/ Avatars

Response	Value
I don't know	0
not at all	2
a little	1
fairly	8
a lot	5
absolutely	5

Graph 20

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Appendix 2

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	☐

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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

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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

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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

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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

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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.

                        1 2 3   4   5

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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

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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

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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

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

<div align="center">0   1   2   3   4   5</div>

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.

<div align="center">0   1   2   3   4   5</div>

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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

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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

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<u>Appendix 3</u>

Focus Group Questions

Welcome the Focus Group
   i. **<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)

   ii. **<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)

   Break [15 minutes]

   iii. **<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)

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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)

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> **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.

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*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 4

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)

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