IO3

IO3. Testing of the prototype in schools

IO3.A1.1. Research protocol for Testing Dig4Life in Schools

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Organisation: Universidad de Cádiz
Date: 02/11/2022

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1. INTRODUCTION

This document describes the research protocol for testing Dig4Life in schools with the goal that all partners will be able to conduct the evaluation of the Dig4Life game in the same way and data can be adequately gathered to analyze the feasibility for assessing digital competences of the developed tool.

2. AN OVERVIEW TO RESEARCH METHODS

Typically, research can be defined as "a process of steps used to collect and analyze information to increase our understanding of a topic or issue" (Creswell, 2008). It can also help to deepen the current understanding we already have. There are three major reasons for conducting research:

- To improve the knowledge, we have about a particular topic. Research can help address a gap in the knowledge we have about a particular topic and can also contribute to improve the practical knowledge we have about different practices.
- To improve the practice. Research can also help to develop and suggest new improvements for practice, which can aid to develop more effective professionals by providing them with new ideas for their professional practice. In this level, conducting research activities can promote also the creation of networks of professionals, who can connect with each other and test similar ideas in different locations.
- To inform policy debates. Reports coming from research results can serve as relevant inputs for policy-makers, based on which they can make informed decisions.

To undertake a research study, it is common to follow a process structured into six main steps:

1. Identifying a research problem.
2. Reviewing the literature.
3. Specifying a purpose for research.
4. Collecting data.
5. Analyzing and interpreting the data.
6. Reporting and evaluating research.

The goal of the research process is to produce new knowledge or deepen understanding of a topic or issue. This process takes three main forms: Exploratory research, which helps to identify and define a problem or question; Constructive research, which tests theories and proposes solutions to a problem or question; and Empirical research, which tests the feasibility of a solution using empirical evidence.

Dig4Life project aims at providing a serious game to test students' digital competences, so an empirical research process is the one that fits with the features of the project, since after developing the serious games, the main goal is to validate our proposal.

Focusing on empirical research processes, there are two major types of empirical research design: qualitative research and quantitative research. Researchers choose qualitative or quantitative methods according to the nature of the research topic they want to investigate and the research questions they aim to answer:

- Qualitative research, which aims to investigate a question without attempting to quantifiably measure variables or look to potential relationships between variables.
- Quantitative research, which involves systematic empirical investigation of quantitative properties and phenomena and their relationships, by asking a narrow question and collecting numerical data to analyze it utilizing statistical methods.
- Mixed research, which involves collecting, analyzing, and interpreting quantitative and qualitative data in a single study or in a series of studies that investigate the same underlying phenomenon.

Finally, in a mixed research design that is the common one carried out in the literature for conducting serious games evaluations, there are four steps that need to deal with for designing the research:

1. Define the purpose. Here, the key is carefully planning why we want to make observations. Which are the research questions we aim to answer? In our context, which are our goals and objectives when testing Dig4Life?
2. Design the study. Type of study, the research population, and who can take part (e.g. inclusion and exclusion criteria, withdrawal criteria etc.), and the expected duration of the study.
3. Describe the methodology. Procedures to be applied for data collection, instruments to collect information (questionnaires, interviews, focus group, etc.), procedures to data analysis, interpretation and reporting.
4. Prepare the materials. Spreadsheet and report templates.

Considering the objectives of Dig4Life project, after analyzing the different approaches for research method design, we agreed on following a mixed research design. Hence, the next step was to discuss and define the features of Dig4Life research method.

3. DEFINING DIG4LIFE RESEARCH METHOD

Bearing in mind the theoretical background of research methods, commented in the previous section, all partners participated in several meetings with the goal to decide and stablish the features of the research study for

evaluating Dig4Life serious game. For that, we conducted a brainstorming guided by key questions for co-designing the Dig4Life research protocol (see Figure 1).

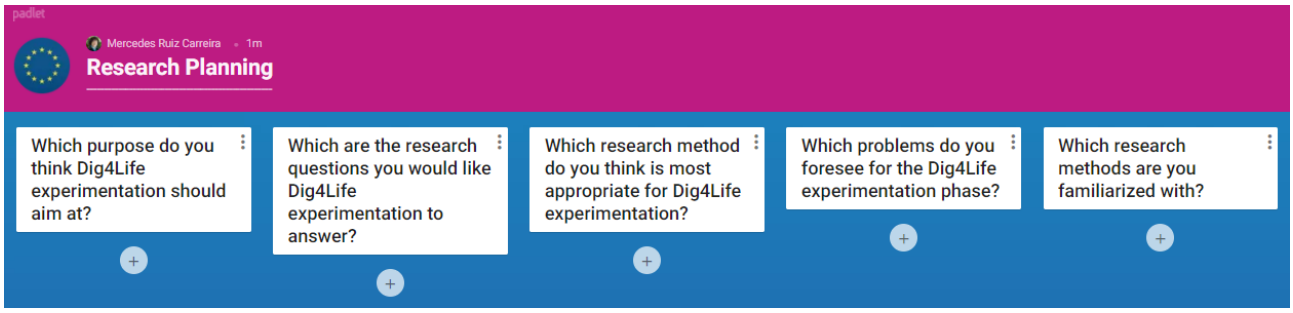

Figure 1: Questions that guided the co-design of the research protocol

Source: Own elaboration

Some answers to these questions are shown in Figure 2. As a results of the ideas, opinions, and experiences of all partners we defined the purpose and the research questions for Dig4Life experimentation research. The purpose of Dig4Life research is **to evaluate the students' motivation towards Dig4Life serious game** that will be addressed by two research questions:

- **RQ1. What has been the motivation of the students with the game?**
- **RQ2. Is the serious game fun and attractive for the students?**

After defining the purpose of Dig4Life research, we designed the study. We agreed on conducting an empirical research where participants use the Dig4Life serious game and then complete a post-questionnaire that collects data for evaluating the students' motivation in terms of usability and player experience. Moreover, we also agreed to involve teachers on the study by providing a teachers' post-questionnaire in order to collect their perception about the game experience provided to the students. The evaluation method to conduct this evaluation process, that is part of the proposed research protocol, is based on well-known models for educational serious game evaluations, MEEGA+ and MEEGA+KIDS.

The rest of this document deals with the theoretical background that support our research (see Section 4), the description of the methodology to conduct the Dig4Life research process (see Section 5), as well as the definition and preparation of the materials (see Section 6, 7, and 8).

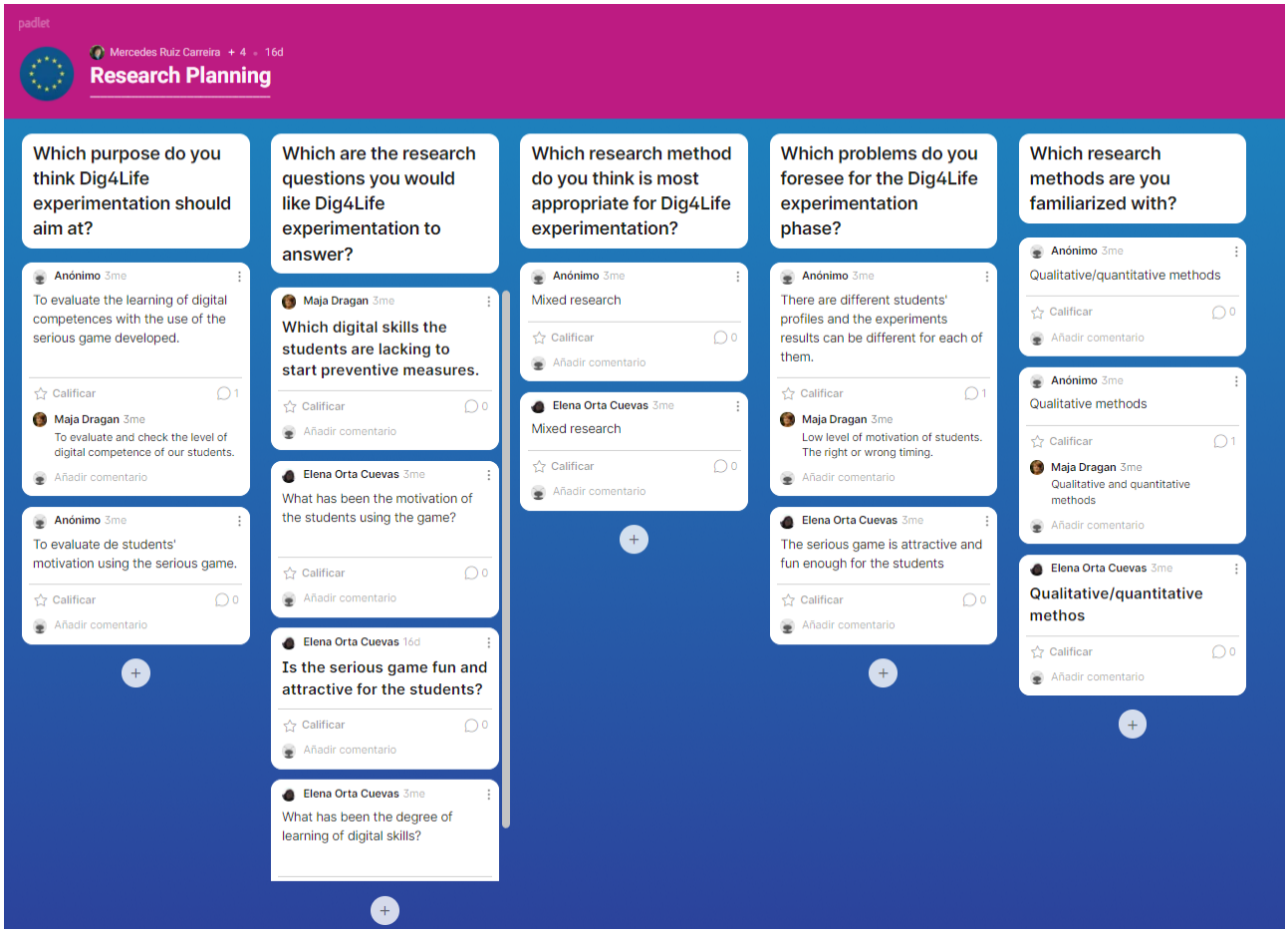

Figure 2: Answers provided for the co-design of the research protocol

Source: Own elaboration

4. THEORETICAL BACKGROUND

The research protocol for testing Dig4Life is based on the MEEGA+ model for assessing educational games for computing education (Petri, von Wangenheim, & Ferreti Borgatto, 2018b) and the MEEGA+KIDS model for the evaluation of educational games for computing education in secondary school (von Wangenheim, Petri, & Ferreti Borgatto, 2020).

The MEEGA+ method aims to provide a systematic support for the evaluation of games for computing education. It is composed of an evaluation model (MEEGA+ Model) defining quality factors to be evaluated through a standardized measurement instrument, and a scale, which classifies the evaluated game according to its quality level. The objective of the MEEGA+ model is to evaluate the quality of educational games in terms of usability

and player experience from the students' perspective in the context of computing education (Petri, von Wangenheim, & Ferreti Borgatto, 2018a). Moreover, in order to guide the application of the model, the MEEGA+ method also contains a systematic process (MEEGA+ Process) (see Figure 3) for guiding researchers in how to plan, execute and analyse the results of game evaluations (Petri, von Wangenheim, & Ferreti Borgatto, 2018b).

The MEEGA+KIDS model (see Figure 4) is an adaptation of MEEGA+ model that provides game creators, instructors, and researchers with a measurement instrument in order to evaluate the quality of educational games in secondary school (von Wangenheim, Petri, & Ferreti Borgatto, 2020).

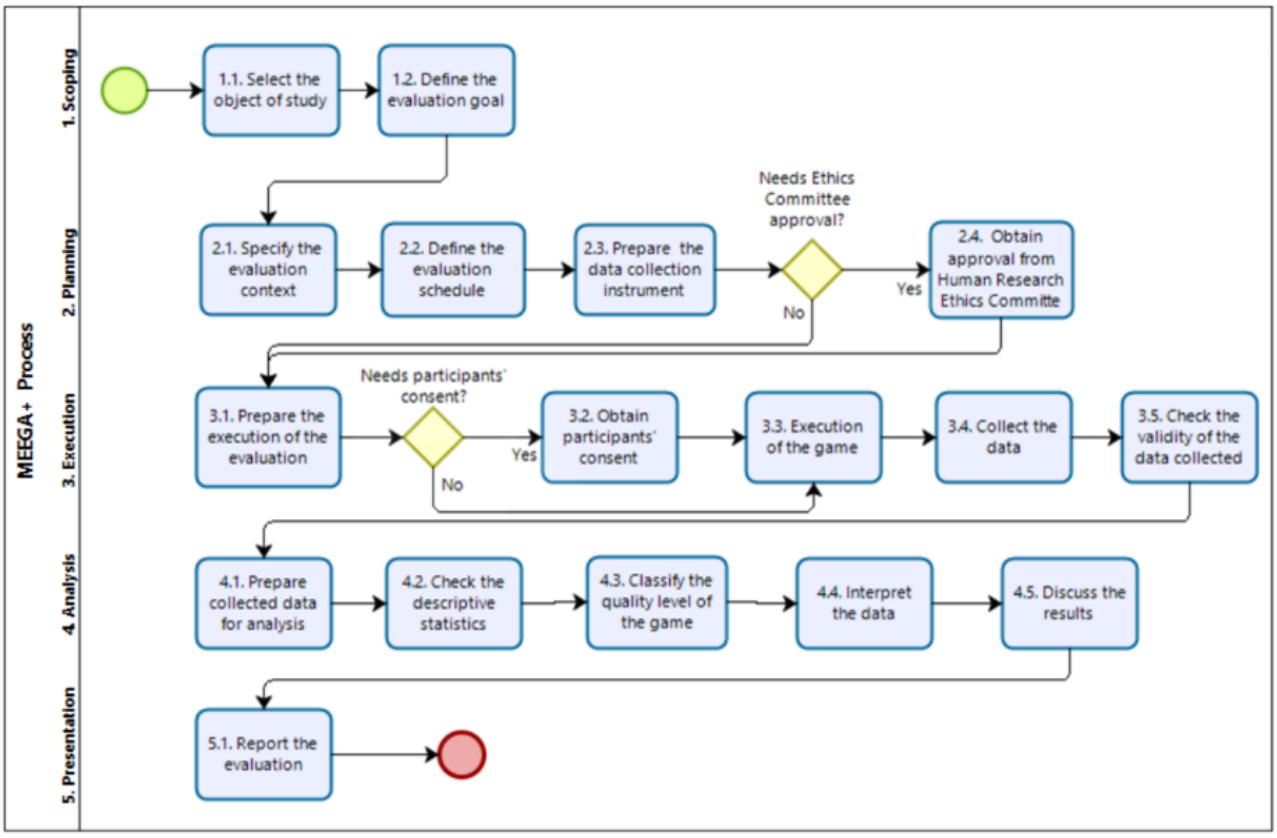

Figure 3. MEEGA+ process

Source: (Petri, von Wangenheim, & Ferreti Borgatto, 2018b)

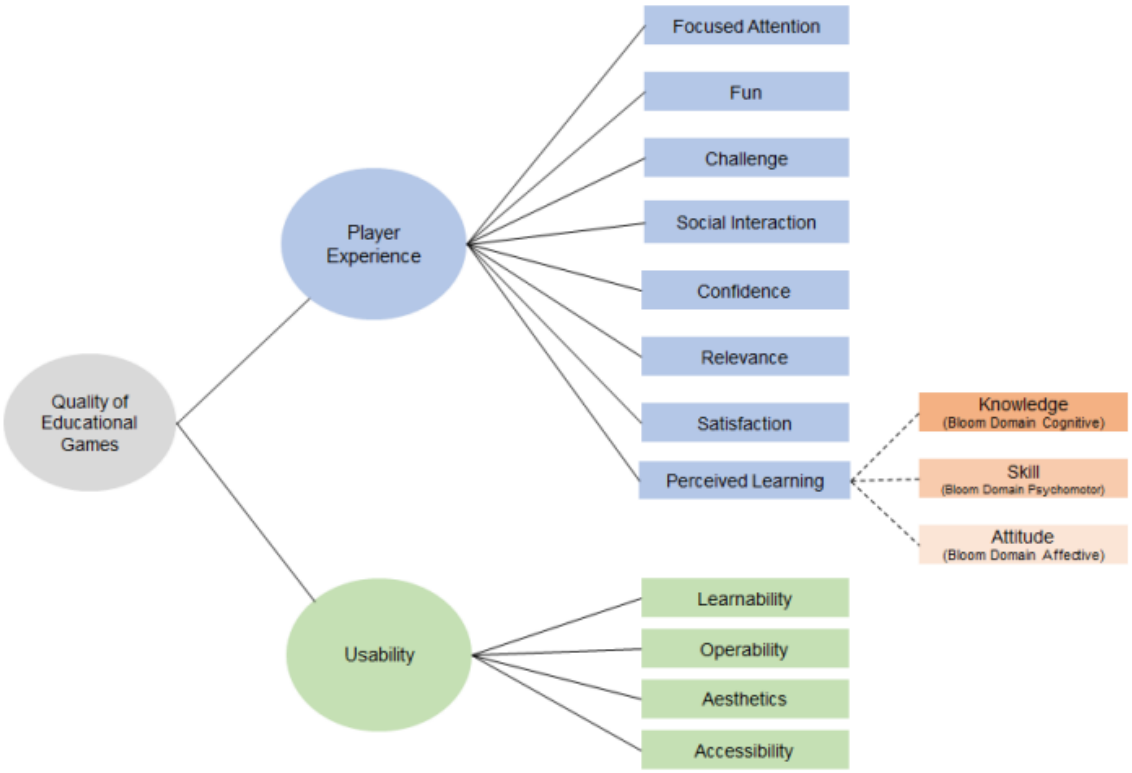

Figure 4. MEEGA+KIDS model

Source: (von Wangenheim, Petri, & Ferreti Borgatto, 2020)

5. DESCRIPTION OF THE DIG4LIFE RESEARCH PROTOCOL

The protocol for testing Dig4Life has been designed based on an empirical research process, where participants play with the Dig4Life game and complete a post-game questionnaire. This research process will allow us to test and evaluate the effects and results of the application of Dig4Life in schools in order to generate evidence of the results and the impact of Dig4Life game on the target population, as well as, reporting on the implementation and effectiveness of the project.

The target population, according to the project requirements, involved a total of 75 teachers (15 teachers per partner) and 300 students (60 students per partner). To coordinate the implementation phase of Dig4Life in schools and collecting data of the experiences in a standardized way, a three-phase process have been designed. These three phases are Planning, Execution, and Closure of the Dig4Life evaluation.

Before starting the Dig4Life process the following work products should be ready to use:

- Dig4Life game: All the episodes of the Dig4Life game must be implemented and tested in the three languages (Italian, English, and Spanish).
- Human resources: All the target population (teachers/students) must be identified.
- Measurement instrument: The post-questionnaires for the data collection must be defined.
- Guidelines for school teachers: The documentation for school teachers to guide the Dig4Life evaluation must be completed.

5.1. Planning

In the first phase of the Dig4Life process, the evaluation is planned. This phase is composed of two activities as Table I shows.

Table 1. Activities of the Planning phase

Phase 1. Planning	
Activity 1.1. Define the evaluation schedule	
Description	This activity aims to plan the evaluation schedule, defining the date, hour and place of the application of the game in the defined course.
Work Products	**Input:** Dig4Life Game; Human Resources; Measurement Instrument; Guidelines for School Teachers
	Output: Evaluation Schedule
Activity 1.2. Obtain approval from Human Research Ethics Committee (optional)	
Description	Although the evaluation of a game offers minimal risk to the participants, some educational institutions require that all research involving humans be approved by the ethics committee. Thus, before conducting the evaluation is necessary verify the requirements of the ethics committee of the institution that the evaluation will be conducted. To approve a research involving humans, an ethics committee, typically, requires the declaration of a coordinator, a research project, data collection instruments, and a consent form.
Work Products	**Input:** Dig4Life Game; Human Resources; Measurement Instrument; Guidelines for School Teachers; Evaluation Schedule

	Output: Approval of the Ethics Committee (optional)

Source: Based on (Petri, von Wangenheim, & Ferreti Borgatto, 2018b)

5.2. Execution

Once the experience for the evaluation has been planned, it is executed to collect the data to be analysed. This second phase aims to organize and define the execution of the Dig4Life evaluation for the selected participants. In this phase, data are collected to evaluate Dig4Life game in terms of usability and player experience. This phase is composed of four activities as Table II shows.

Table 2. Activities of the Execution phase

Phase 2. Execution	
Activity 2.1. Prepare the execution of the evaluation	
Description	This activity aims to prepare the materials required for the execution of the game. This activity involves to setup the experimental environment, the access to the Dig4Life game and the access to the data collection instruments, as well as, the definition of the consent form if it is needed. Moreover, in this activity Dig4Life partners should conduct the training to teacher in order to provide the guidelines for conducting the evaluation of the Dig4Life game.
Work Products	**Input:** Dig4Life Game; Human Resources; Measurement Instrument; Guidelines for School Teachers; Evaluation Schedule; Approval of the Ethics Committee (optional)
	Output: Materials; Consent form (optional); Teachers training
Activity 2.2. Obtain participants' consent (optional)	
Description	Before the execution of the game, if necessary, the consent form should be signed by all participants, indicating that they agree and accept to participate in the research.
Work Products	**Input:** Consent form (optional)
	Output: Participants' consent (optional)
Activity 2.3. Execution of the Dig4Life game	
Description	During this activity the game is applied to the participants, using the game Materials, considering the Evaluation Schedule, and following the Guidelines for School Teachers.
Work Products	**Input:** Dig4Life Game; Human Resources; Measurement Instrument; Guidelines for School Teachers; Evaluation Schedule; Materials; Teacher's training
	Output: Game executed

Activity 2.4. Collect the data	
Description	After the execution of the game, data collection takes place. Moreover, the researcher must check if the data is reasonable and that it has been collected correctly.
Work Products	**Input:** Measurement Instrument; Game executed
	Output: Data collected [Initial]

Source: Based on (Petri, von Wangenheim, & Ferreti Borgatto, 2018b)

5.3. Closure

Finally, in the closure phase of the Dig4Life process, the data collected are interpreted and analysed, and the evaluation and conclusions are reported. This phase is composed of four activities as Table III shows.

Table 3. Activities of the Closure phase

Phase 3. Closure	
Activity 3.1. Prepare the collected data for analysis	
Description	This activity is conducted in an automatic way using the post-game questionnaire resources which are allocated in Survey Monkey software.
Work Products	**Input:** Data collected [Initial]
	Output: Data collected; Descriptive statistics results; Data analysis
Activity 3.2. Interpret the data	
Description	Once the data collected are organized and characterized by descriptive statistics, it is needed to evaluate and interpret the data against the usability and game experience of the Dig4Life serious game as a tool for assessing student's digital competencies.
Work Products	**Input:** Data collected; Descriptive statistics results; Data analysis
	Output: Evaluation results
Activity 3.3. Discuss the results	
Description	This activity aims to discuss the findings identified in the evaluation results, indicating the main contribution of the use of Dig4Life as a resource for assessing students' digital competencies.

	In addition, the results of the evaluated game may be analyzed in order to assess the effectiveness of the project. Furthermore, it is important identifying threats to the study validity, as well as report mitigation strategies adopted in order to minimize the impact in the study.
Work Products	**Input:** Evaluation results
	Output: Discussion
Activity 3.4. Report the evaluation	
Description	This activity aims to produce an evaluation report describing, in detail, how the evaluation of the Dig4Life game was defined, planned, executed, and analysed.
Work Products	**Input:** Dig4Life Game; Human Resources; Measurement Instrument; Guidelines for School Teachers; Evaluation Schedule; Approval of the Ethics Committee (optional); Materials; Consent form (optional); Teacher's training; Participants' consent (optional); Game executed; Data collected; Descriptive statistics results; Data analysis; Evaluation results; Discussion
	Output: Evaluation report

Source: Based on (Petri, von Wangenheim, & Ferreti Borgatto, 2018b)

6. QUALITY FACTORS, DIMENSIONS, AND MEASURES

Dig4Life game will be evaluated in terms of usability and player experience quality factors from two perspectives: students and teachers. For that, we selected and adapted the set of items of the MEEGA+KIDS and MEEGA+ models.

6.1. Player experience

In the context of Dig4Life, the player experience covers the interaction of the students/teachers with Dig4Life game. This quality factor includes the following dimensions: challenge, satisfaction, focused attention, fun, and relevance.

6.1.1. Challenge

This dimension evaluates how much the game is sufficiently challenging with respect to the learner's competency level. The increase of difficulty should occur at an appropriate pace accompanying the learning curve. New obstacles and situations should be presented throughout the game to minimize fatigue and to keep the students interested. It is measured by the following items:

- This game is appropriately challenging for me.

- The game provides new challenges at an appropriate pace.
- The game does not become monotonous as it progresses (repetitive or boring tasks).

For evaluating teachers' perception about the challenge provided to the students, the items were adapting as follow:

- I felt that this game is appropriately challenging for the students.
- The game provided new challenges to the students at an appropriate pace.
- The game does not become monotonous as it progresses (repetitive or boring tasks).

6.1.2. Satisfaction

This dimension evaluates if students feel that the dedicated effort results in learning. It is measured by the following items:

- Completing the game tasks gave me a satisfying feeling of accomplishment.
- It is due to my personal effort that I managed to advance in the game.
- I feel satisfied with what I became aware of from the game.
- I would recommend this game to my friends.

For evaluating teachers' perception about the satisfaction provided to the students, the items were adapting as follow:

- I noticed that by completing the game tasks the students had a feeling of accomplishment.
- I noticed that it is due to the personal efforts of the students that they managed to advance in the game.

For evaluating teachers' perception about the satisfaction provided as a teacher, the items were adapting as follow:

- I feel satisfied with the things that the students became aware of from playing the game.
- I would recommend other teachers to use this game in their courses.

6.1.3. Focused attention

This dimension evaluates the attention, focused concentration, absorption and the temporal dissociation of the students. It is measured by the following items:

- There was something interesting at the beginning of the game that captured my attention.
- I was so involved in my gaming task that I lost track of time.
- I forgot about my immediate surroundings while playing this game.

For evaluating teachers' perception about the focused attention provided to the students, the items were adapting as follow:

- There was something interesting at the beginning of the game that captured the students' attention.
- The students were so involved in their gaming task that they lost track of time.
- I felt that the students forgot about their immediate surroundings while playing this game.

6.1.4. Fun

This dimension evaluates the students' feeling of pleasure, happiness, relaxing and distraction. It is measured by the following items:

- I had fun with the game.
- Something happened during the game which made me smile.

For evaluating teachers' perception about the fun provided to the students, the items were adapting as follow:

- The students had fun with the game.
- Something happened during the game which made the students smile.

For evaluating teachers' perception about the fun provided as a teacher, the items were adapting as follow:

- I would like to use this game again in my courses.

6.1.5. Relevance

This dimension evaluates if students realize that the educational proposal is consistent with their goals and that they can link content with their professional or academic future. It is measured by the following items:

- The game contents are relevant to my interests.
- This game is an adequate tool to become aware of my level of digital competence.
- I prefer using this game to find out about my level of digital competence than using other ways (e.g. survey).
- The game allowed me to set learning goals to improve my digital competence.

For evaluating teachers' perception about the relevance provided as a teacher, the items were adapting as follow:

- The game contents are relevant to the students' interests.
- It is clear to me how the contents of the game are related to the different digital competences.
- This game is an adequate method for assessing the student's digital competence.
- I prefer using this game to assess the student's digital competence than other ways (e.g. surveys).
- The game allowed me to set learning goals to improve my students' digital competence.

6.2. Usability

In the context of Dig4Life, we define usability as the degree to which Dig4Life game can be used by students to achieve specific goals with effectiveness and efficiency in digital competencies evaluation, being composed of the following dimensions: aesthetics, learnability, operability, and accessibility.

6.2.1. Aesthetics

This dimension evaluates if the game interface enables pleasing and satisfying interaction for the user. It is measured by the following items:

- The game design is attractive (interface, graphics, boards, cards, etc.).
- The text font and colors are well blended and consistent.

For evaluating teachers' perception about the aesthetics provided as a teacher, the items were adapting as follow:

- The game design is attractive.
- The text font and colors are well blended and consistent.

6.2.2. Learnability

This dimension evaluates if the game can be used by specified users to achieve specific goals of learning to use the game with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use. It is measured by the following items:

- I needed to learn a few things before I could play the game.
- Learning to play this game was easy for me.
- I think that most people would learn to play this game very quickly.

For evaluating teachers' perception about the learnability provided as a teacher, the items were adapting as follow:

- I needed to learn a few things to understand the game.
- Learning to play this game was easy for me.
- I think that most of the students would learn to play this game very quickly.

6.2.3. Operability

This dimension evaluates if the degree to which a game has attributes that make it easy to operate and control. It is measured by the following items:

- I think that the game is easy to play.
- The game rules are clear and easy to understand.

For evaluating teachers' perception about the accessibility provided as a teacher, the items were adapting as follow:

- Explaining the rules of the game was easy for me.
- The game rules are clear and easy to understand.
- It was easy to use the game in my course.
- I think that the game is easy to play.

6.2.4. Accessibility

This dimension evaluates if the game can be used by people with low/moderate visual impairment and/or color blindness. It is measured by the following items:

- The fonts (size and style) used in the game are easy to read.
- The colors used in the game are meaningful.
- The sounds used in the game are meaningful.
- The voices used in the game are easy to understand.
- I found that the speed of the speech was adequate to follow the game.

For evaluating teachers' perception about the accessibility provided as a teacher, the items were adapting as follow:

- The fonts (size and style) used in the game are easy to read.
- The colors used in the game are meaningful.
- The sounds used in the game are meaningful.
- The voices used in the game are easy to understand.
- I found that the speed of the dialogues was adequate to follow the game.

7. MEASUREMENT INSTRUMENT

We use the MEEGA+KIDS and MEEGA+ models that provide a standardized and validated measurement instrument to design the post-questionnaires for Dig4Life evaluation. As a result, we have defined two different questionnaires, one for teachers and another for students.

The questionnaire for teachers is divided into four sets of questions: 9 multiple choice questions for gathering teachers' demographic information, 10 items to evaluate the game experience provided to the students, 22 items to evaluate the game experience provided to the teachers, and 4 open questions to obtain teachers' feedback and opinions. The questionnaire for students is also divided into four set of questions: 6 multiple choice questions for gathering students' demographic information, 12 items to evaluate the usability of Dig4Life game, 16 items

to evaluate the students' game experience with Dig4Life game, and 4 open questions to obtain students' feedback and opinions. The usability and game experience items are measured using a 5-point Likert scale, from strong agreement to strong disagreement.

The post-game questionnaires for evaluating Dig4Life from both perspectives, student and teacher, are shown in the following sub-sections. Both questionnaires have been implemented through online questionnaires using SurveyMonkey software.

- SurveyMonkey link for Teacher's questionnaire: https://www.surveymonkey.com/r/MB5X3VD
- SurveyMonkey link for Student's questionnaire: https://www.surveymonkey.com/r/YRQK9QV

7.1. Questionnaire for the Teacher

Please, help us improve the Dig4Life game by answering the following questions. All information is collected anonymously and will be used only in a summarized way in the context of this game evaluation. Thank you for participating in our survey. Your feedback is important.

Demographic Information	
Country:	☐ Austria ☐ Finland ☐ Italy ☐ Lithuania ☐ Slovenia ☐ Spain
School:	_____
Age group:	☐ 20 to 30 years ☐ 31 to 40 years ☐ 41 to 50 years ☐ 51 to 60 years ☐ Over 60 years
Professional title:	☐ Engineering ☐ Hard Sciences (Mathematics, physics…) ☐ Humanities ☐ Natural Sciences ☐ Social Sciences ☐ Information and Communication Technologies ☐ Art ☐ Other: _____
Subjects taught in this academic year:	☐ Language (L1) ☐ Language (L2)

	☐ Science ☐ Philosophy ☐ History ☐ Art ☐ Music ☐ Physical Education ☐ Religion/Ethics ☐ Geography ☐ Information and Communication Technology ☐ Other: _____
Years of teaching experience:	☐ 0 to 2 years ☐ 3 to 5 years ☐ 6 to 10 years ☐ 11 to 15 years ☐ 16 to 20 years ☐ 21 to 25 years ☐ Over 26 years
Gender: how do you identify?:	☐ Man ☐ Female ☐ Non-binary ☐ Prefer not to disclose ☐ Prefer to self-describe: _____
How many serious games (digital and/or non-digital) have you already used in your classes (including in other courses)?	☐ This is the first serious game that I use. ☐ Less than 5 serious games. ☐ 5 to 10 serious games. ☐ More than 10 serious games.
Have you developed and/or customized educational games?	☐ No ☐ Yes. How many? ____

In accordance with **your perception about the game's experience provided TO THE STUDENTS, please, select an option** according to how much you agree or disagree with each statement below.

Game's experience provided to the students	
Statements	**Select an option as your evaluation**

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
There was something interesting at the beginning of the game that captured the students' attention.					
The students were so involved in their gaming task that they lost track of time.					
I felt that the students forgot about their immediate surroundings while playing this game.					
The students had fun with the game.					
Something happened during the game which made the students smile.					
I felt that this game is appropriately challenging for the students.					
The game provided new challenges to the students at an appropriate pace.					
The game does not become monotonous as it progresses (repetitive or boring tasks).					
I noticed that by completing the game tasks the students had a feeling of accomplishment.					
I noticed that it is due to the personal efforts of the students that they managed to advance in the game.					

In accordance with **your perception about the game's experience provided TO YOU (as a teacher), please, select an option** according to how much you agree or disagree with each statement below.

Game's experience provided to the teacher					
Statements	**Select an option as your evaluation**				
	Strongly disagree	**Disagree**	**Neither disagree nor agree**	**Agree**	**Strongly agree**
The game contents are relevant to the students' interests.					

It is clear to me how the contents of the game are related to the different digital competences.					
This game is an adequate method for assessing the student's digital competence.					
I prefer using this game to assess the student's digital competence than other ways (e.g. surveys).					
I feel satisfied with the things that the students became aware of from playing the game.					
I would recommend other teachers to use this game in their courses.					
I would like to use this game again in my courses.					
The game design is attractive.					
The text font and colors are well blended and consistent.					
I needed to learn a few things to understand the game.					
Learning to play this game was easy for me.					
I think that most of the students would learn to play this game very quickly.					
Explaining the rules of the game was easy for me.					
The game rules are clear and easy to understand.					
It was easy to use the game in my course.					
I think that the game is easy to play.					
The fonts (size and style) used in the game are easy to read.					
The colors used in the game are meaningful.					
The sounds used in the game are meaningful.					
The voices used in the game are easy to understand.					

I found that the speed of the dialogues was adequate to follow the game.	☐	☐	☐	☐	☐
The game allowed me to set learning goals to improve my students' digital competence.	☐	☐	☐	☐	☐

If you found this game hard to play, please tell us why:

_____

_____

_____

Please list three strengths of the game:

_____

_____

_____

Please give three suggestions to improve the game:

_____

_____

_____

Any further comments?

_____

_____

_____

7.2. Questionnaire for the Student

Please, help us improve the Dig4Life game by answering the following questions. All information is collected anonymously and will be used only in a summarized way in the context of this game evaluation. Thank you for participating in our survey. Your feedback is important.

Demographic Information	
Country:	☐ Austria ☐ Finland ☐ Italy ☐ Lithuania ☐ Slovenia ☐ Spain

School:	_____
Age group:	☐ Under 12 years ☐ 12 to 14 years ☐ 15 to 17 years ☐ 18 or over 18 years
Gender: how do you identify?	☐ Man ☐ Female ☐ Non-binary ☐ Prefer not to disclose ☐ Prefer to self-describe: _____
How often do you play videogames?	☐ Never ☐ Rarely ☐ At least once a month ☐ At least once a week ☐ Every day
How often do you play non-digital games (card or board games, etc.)?	☐ Never ☐ Rarely ☐ At least once a month ☐ At least once a week ☐ Every day

Please, **select an option** according to how much you agree or disagree with each statement below:

Usability					
Statements	**Select an option as your evaluation**				
	Strongly disagree	**Disagree**	**Neither disagree nor agree**	**Agree**	**Strongly agree**
The game design is attractive (interface, graphics, boards, cards, etc.).	☐	☐	☐	☐	☐
The text font and colors are well blended and consistent.	☐	☐	☐	☐	☐
The fonts (size and style) used in the game are easy to read.	☐	☐	☐	☐	☐
The colors used in the game are meaningful.	☐	☐	☐	☐	☐

The voices used in the game are easy to understand.					
I found that the speed of the speech was adequate to follow the game.					
The sounds used in the game are meaningful.					
I needed to learn a few things before I could play the game.					
Learning to play this game was easy for me.					
I think that most people would learn to play this game very quickly.					
I think that the game is easy to play.					
The game rules are clear and easy to understand.					

Please, **select an option** according to how much you agree or disagree with each statement below:

Player Experience					
Statements	**Select an option as your evaluation**				
	Strongly disagree	**Disagree**	**Neither disagree nor agree**	**Agree**	**Strongly agree**
This game is appropriately challenging for me.					
The game provides new challenges at an appropriate pace.					
The game does not become monotonous as it progresses (repetitive or boring tasks).					
Completing the game tasks gave me a satisfying feeling of accomplishment.					
It is due to my personal effort that I managed to advance in the game.					
I feel satisfied with what I became aware of from the game.					
I would recommend this game to my friends.					

I had fun with the game.					
Something happened during the game which made me smile.					
There was something interesting at the beginning of the game that captured my attention.					
I was so involved in my gaming task that I lost track of time.					
I forgot about my immediate surroundings while playing this game.					
The contents of this game are relevant to my interests.					
I found this game is an adequate tool to become aware of my level of digital competence.					
I prefer to use this game to find out about my level of digital competence than to use other ways (e.g., survey).					
The game allowed me to set learning goals to improve my digital competence					

If you found this game hard to play, please tell us what you found complicated:

_____

_____

_____

Please list three strengths of the game:

_____

_____

_____

Please give three suggestions to improve the game:

_____

_____

_____

Any further comments?

_____

8. GUIDELINES ON IMPLEMENTING THE TRIALS FOR DIG4LIFE PARTNERS

This document defines the research process for testing Dig4Life game, providing all the steps to plan, execute and close the evaluation of the game in terms of usability and player experience. The recommendation is that once each partner has planned their trials, they will conduct a training session with the teachers involved in the evaluation in order they can learn about the Dig4Life game, its evaluation process, and how to conduct the experience with the students.

For that, the document IO3.A1.2 collects the guidelines for school teachers with aims to serve as a guide for teachers, tutors and school mediators in their use of the Dig4Life serious game in class, providing them with support to plan and carry out the class sessions in which the students will use the serious game to assess their level of proficiency in digital competences.

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

DIG4LIFE project is co-funded by the Erasmus+ Programme of the European Union.

Consortium: Università degli Studi Roma Tre, Academia, izobraževanje in druge storitve d.o.o., Fh Joanneum Gesellschaft Mbh, Klaipėdos Universitetas, Entropy Knowledge Network s.r.l., Universidad de Cadiz, LAUREA-Ammattikorkeakoulu oy

Associated partner: Dites research center at Link Campus University

How to cite this report: Ruiz M. Calderón A. Orta E. Hurtado N. Gómez N. García MT., DIG4LIFE Consortium, *Research protocol for Testing Dig4Life in Schools. Manual,* version 1. DIG4LIFE Consortium, Rome, 2023. Available at: https://dig4life.eu/outputs/