Sparks

GAMIFICATION AND GAME-BASED LEARNING

BEST PRACTICES AND REQUIREMENTS FOR DIGITAL ENVIRONMENTS

Final Report

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

Sparks

Strategic Partnership for Digital Education Readiness
Co-funded by the Erasmus+ Programme of the EU

Game-based Learning: best practices and requirements for digital environments

FINAL REPORT

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

Sparks

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

Project Information

Project title	Sparks
Project number	2020-1-IT01-KA226-VET-008813
Key Action	KA220 Strategic partnerships for Digital Education Readiness
Project website	www.projectsparks.eu
Project Coordinator	Lascò SRL [IT]
Project Partners	Bexley C-Level IT [RO]
	Center for Innovative Education [PL]
	ECOS-Cooperativa de Educação, Cooperação e Desenvolvimento, CRL [PT]
	Femxa Formación S.L.U. [SP]
	Kyttaro Enallaktikon Anazitiseon Neaon-KEAN [GR]

This project has been funded with support from the European Commission under the Erasmus+ Programme. This document reflects the author's views only, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

INDEX

INTRODUCTION

The Sparks project

The COVID-19 pandemic had a significant impact on the delivery of Education and Training all over the world: almost 1.6 billion learners from pre-primary to tertiary education, including VET, were affected (UNESCO, "COVID-19 Impact on Education", 2020), while education and training providers have been forced to adapt to digital tools to maintain services to learners. The pandemic caused to students a significant loss due to the difficulty in re-engaging with education activities; their demotivation as they fall further behind; the curbing of their educational aspirations due to the uncertainty of the learning environment (OECD, "Education and COVID-19: Focusing on the long-term impact of school closures", 2020).

At the same time, the pandemic accelerated an ongoing reformulation process about how education should reflect the challenges students face in the global and digitalised world of today. As a result, the traditional educational methods need to be challenged, and there is an effort to be made by education providers and policymakers to provide students with the resources and tools that will allow them to achieve the practical skills required to enter the world of work.

In this context, **Sparks**, a Partnership for Digital Education Readiness project, co-founded by the Erasmus Plus Programme of the European Union and implemented by six organisations from Greece, Italy, Spain, Poland, Portugal and Romania, aims to develop a new Conceptual Framework for Game-Based e-Learning Programs and E-Learning platform to let VET providers deliver innovative online learning experiences with the use of gamification, and boost their learners' motivation and engagement in learning.

Game-based learning and Gamification: innovation in learning

The use of emergent technologies in education has transformed and evolved at a fast pace during the last years. Students of the beginning of the 21st century do not relate to the same social, political, and cultural issues that today's students face.

VET providers and educators need to adjust teaching to **the reality of the digital natives** of 2021, and education and training for employment entities must adapt their methods to include the digital competencies required in the workplace not to fall behind. *"These students want to be challenged, engaged, and motivated through a learning process, which connects them to a different learning experience. This has become a challenging task for educators due to the student profile and characteristics. Although to achieve the learning outcomes necessary for the 21st century, educators are adapting approaches suited for these learners, involving game theory, video games, and gamifying instruction. Two of these approaches are Gamification and Game-Based Learning (GBL)."*[1]

Game-based learning is defined as "training that uses game elements to teach a specific skill or achieve a specific learning outcome. It takes your core content and objectives and makes it fun. Gamification is the application of game mechanics in a non-game context to promote desired behaviour and drive learning outcomes"[2]. Both are approaches that have proved to be

[1] *Jorge F. Figueroa-Flores* .Gamification and Game-Based Learning: Two Strategies for the 21st Century Learner. World Journal of Educational Research Vol. 3, Nº 2 , p. 506 (2016) ISSN 2375-9771 (Print) ISSN 2333-5998 (Online)

[2] John Findlay. *Game-Based Learning vs. Gamification: Do You Know the Difference?* August 12, 2016. Available at: https://trainingindustry.com/

incredibly valuable to engage students. Therefore, the Sparks project aims to create a platform that suppor VET providers to implement gamification and game-based learning methods into their classrooms.

The transnational research of Best Practices and requirements in digital environments

The transnational research developed during five months of the Sparks project, from June 2021 to October 2021, gathers best practices and requirements for Digital Environments of game-based learning and gamification across the six European countries: Spain, Greece, Poland, Italy, Romania, and Portugal.

The research led by Femxa S.L.U has followed three phases. The first phase was the **identification and collection of 48 best practices** in game-based learning and gamification experiences, following a common set of criteria designed specifically for the Sparks Project. In the second phase, the consortium developed **an online survey as a quantitative research** tool to validate the key game mechanics, dynamics, components, and game features found as success factors of the best practices collected. The survey was disseminated in the six countries to collect the input of 304 experts in education and training, validating the best practices with incredibly successful results. None of the key elements included in the survey received an average below an 83% of high ratings (4 or 5).

In the third phase, **ten Focus Groups** were implemented, aiming at gathering the requirements and needs in digital environments of the VET providers and learners. The activities were celebrated with 144 educators and learners from different backgrounds of the VET community from the six EU countries that hosted 24 participants each. Lastly, the best practices and validated game features and the results of the discussions developed during the Focus Groups were comparatively analyzed by the expert researchers of the six organizations, concluding in this transnational final report.

The transnational research team will use the results to identify the process and system features and the game elements to transfer into a **Conceptual Framework for Gamified e-Learning Programs.**

BEST PRACTICES IN GAME-BASED LEARNING AND GAMIFICATION

Methodology for the identification of best practices

The desk research developed simultaneously in the six EU countries follows a common model for the identification of the best practices in game-based learning and gamification that has been designed to identify innovative, transferable, and effective practices from experiences incorporating game elements, features and strategies across the different learning systems of the six countries.

All researchers have jointly used common criteria to identify best practices based on general characteristics to assess in specific game-based learning experiences to consider them as Best Practices. Nevertheless, the practices identified belong to offline and online learning experiences of initiatives and projects implemented by public institutions or private entities, such as companies and non-governmental organizations.

The designated essential characteristics are **effectiveness, transferability, usability, and playability**. In addition, the research team defined a set of criteria related to the characteristics the Consortium seeks to integrate into the outputs of the Sparks project: **inclusiveness, innovation, efficiency, and diversity of ecosystems.**

The researchers have followed **a standard template** (Annex 1) to collect all the relevant and contextual information regarding each best practice. The template included a section for the rating of each characteristic of the criterion for identification: using a 5-point Likert scale, the researchers developed a second evaluation aimed to corroborate that the best practices identified complied with the essential and desired characteristic.

The desk research results consist of 48 best practices from game-based learning and gamification experiences from offline and online environments, eight best practices from each of the EU countries of the Sparks consortium.

Best practices in game-based learning and gamification across Europe

The desk research results consist of **48 best practices from game-based learning and gamification experiences** of offline and online environments, eight best practices from each of the EU countries of the Sparks consortium. The following is an analysis of the most noticeable aspects of each of the eight best practices gathered by each country.:

Best practices from Italy – Lascò Srl

Allianz the game_was an initiative of Allianz and their technical partner AllitleB to create an interactive and immersive experience to effectively teach agile management, open leadership, and other soft skills to the 4.500 Allianz employees. The experience proved to be highly successful, with more than 2.000.000 visitors in eight months of duration. The training experience structure is based on a team's competition with a personalized scenario and levels division.

The game revolves around learning objectives, tied to specific types of self-consistent learning resources, with modularity, availability, reusability, and interoperability, which allow them to be

used in different contexts. The way the different learning resources were structured is very effective in achieving the learning goals by allowing to adapt the gaming experience depending on the users and their needs. Furthermore, the modules created remain available to be repeated or combined as needed.

The elements of this experience were also found in many of the good practices researched, not only in the case of Italy but also in the case of other countries in the consortium, such as the use of a ranking system through points, prizes, levels with progressively increasing difficulty and a team's competition. Apart from the mentioned, the Allianz game experience had some other elements that contributed to becoming an innovative and very successful experience, with the quality of the graphics and personalized content, ensured by an algorithm. These elements are the open badges to certificate specific skills, the canals for social interaction in the platform between users, the possibility of players to place bets on their results, but overall, the simple and highly playable game mechanics that allow creating an extremely approachable game, while reaching without difficulties, the established learning objects thanks to microlearning and interactive resources.

TIM's **My Campus** proved to be highly engaging and impactful on employees too. It was a platform created to provide a social learning environment for Call Centres operators in 2008. This collaborative learning community fulfilled its objective of providing adequate space for collecting and managing internal company knowledge through the mutual exchange of *know-how* and data. In addition, offering a channel for successfully informing operators on key trends and new content. Although the variety of game dynamics in the experience is relatively small, the experience managed to successfully create a usable and engaging platform where every user had a profile where they could share their skills and continue to improve them through simple exchange with other users or by participating in challenges and quizzes to keep improving. The more the user engages and shares, the more recognition obtains. Using a simple social strategy and basic game elements to create a valuable training experience is enough. Also, the platform incorporated special badges to reward, for example, the users that shared more in conversations "Coffee Points".

Another transferable and very user-friendly element is the incorporation of mini-tutorials so that newcomers could easily adjust to the functioning of the social space and make the interface instantly familiar.

In the near past, 2020 and 2021, learning and training solutions are needed to grow towards innovative solutions quickly to adjust to the challenges of the COVID-19 pandemic. The **Talent Factory** was one of those successful experiences that managed to increase productivity in more than 80 companies in Italy, though incorporating a gamified platform to the training of employees. The pedagogical approach was focused on learning and career-oriented paths with "the learning by doing" and "continuous learning" processes. Furthermore, we highlight the very effective reward system based on fringe benefits and rewards that proved to motivate employees and the possibility of customising the platform depending on the company's needs and taking an AGILE approach to obtain the desired customisation

Also recently, **Ferrara Play and Go**, part of the EIT Climate-KIC European project entitled "Landscape Metropolis: time for action!", stands out for its ability to engage citizens in a long-lasting game and effectively achieve their objective. The game aims to decrease the use of cars, moving on foot, by bike or perhaps even by boat, to collect as many "sustainable kilometres" as possible to help the environment and collect points "Green leaves" and pick up rewards. The rewards could be cash by achieving a certain amount of points, but there was a visible ranking where participants could visualise the profiles of the users with the most points. The platform used aesthetically pleasant graphics and simple game mechanics and dynamics, allowing users to cash prizes in local business by using green transport and engaging in healthy

competition. This is a clear example that games elements can successfully help people engage in an activity by making the experience more fun and playable.

The fifth experience chosen as a best practice is a simulation game **WATCHOUT!**, targeting the inspectors of the Bank of Italy, that follows the structure of a classic graphic adventure game, as players make visual/textual choices that will affect their progress. The goal is to carry their work with the maximum level of efficiency, which will be scored and translated into various benefits (or otherwise disadvantages). The game is divided into levels that grow in difficulty as the user advances, the different mechanics available are multiple-choice selection, analysis of the situation and quizzes. The gamification features of this product are easily identifiable thanks to the accurate transposition of an actual working environment and its dynamics through game-based and parameterised mechanics; the project proved to be a helpful self-assessment and training tool for inspectors during their training process, by making the inspection procedure more interactive.

The following experience was developed between 2018 and 2021 and stands out for its usability:, **Summit 2030**. Its design and learning paths can convey information and concepts simply and effectively. Moreover, it has the dynamics and mechanics of a classic board game, which aims to raise awareness and actively involve decision-makers, civil society organisations, and citizens on the "localisation" of the 17 objectives of the 2030 Agenda for Sustainable Development. The game process is based on bringing the SDGs indicated in a role card to the highest level in the debate, that is, on top of the "priority scale" depicted on the right side of the board, and then to discuss the issue with all players. After all rounds, points are tallied.

Using the board game mechanics highly contributed to engaging all participants, creating a comfortable environment for discussion and exchange, and making concepts and information less complex and more understandable and exciting.

The game was developed within the scope of "Shaping Fair Cities", a project funded by the European Commission's DEAR in Modena. The Municipality integrated the game into the learning paths centred on education for global citizenship entitled "Modena Calls the World", providing primary and secondary schools in the Modena area with the game.

Pacific Review, the next selected best practice in game-based learning, is innovative in its ability to generate a powerful impact and growing appeal in an area and an environment in which gamification still struggles to be used regularly in training programs. This simulation game targets the students of the "Movie Industry" course as part of the master's degree course in Economics and Management in Arts, Culture, Media, and Entertainment at Bocconi University. Pacific Review, coded in Unity 3D, is an adventure game combining elements of corporate strategy and elements of negotiation, starting from a real case study, namely the acquisition of Pixar by Disney. In the game, each student is required to act as a reporter tasked with uncovering the details of the transaction. Through the experience, they will develop the needed skills for the labour market in a more interactive and motivating way. Users can choose between different research paths and work individually or in teams depending on the phase of the game.

In general, the experience is user-friendly and simple. The dynamics, mechanism, and components implemented are basic but effective when achieving the learning objectives. The results show an increase in students' analytical skills, soft skills, and motivation to learn.

The last best practice recorded in Italy for the Sparks project is another simulation game, named **uManager**, proving that the structure of a simulation combined with basic game elements can have a high success rate in training. uManager is a management/construction game designed to enhance the development of entrepreneurial skills and competencies of Secondary School students. It is versatile and can be personalised according to the specific needs of each class and its teachers. The student can play solo or in groups to compete in a common market. Teachers can plan the experimental activity, break the class down into groups, and set out the game model in detail. As mentioned before, it has proven to be a very effective teaching tool in

the framework of the "school-work balance" initiative. The elements we must highlight are increasing difficulty levels, which are unlocked by decision making levers, towards an end goal that each user will try to achieve. Throughout the game, users must face several micro-goals related to the skills to train the user. The game progresses based on two interconnected parameters: time and the game's level of difficulty and active decision-making levers. The game follows a constant narrative, a storyline that helps to keep users engaged and contribute to the usability and playability of the experience.

On another note, the game implements a data analytics system to monitor students and provide teachers with feedback as needed to act. The analysis of progress and results of students has been present in multiple of the experience recorded, such as in Allianz the game, where the responses to video extract of the user were analysed, or in My Campus, where forms were available, to practice the analytical evaluation of training and behavioural deficiencies. Therefore, proving the success of combining game-based learning elements and data analytics processes to create effective and efficient experiences in training.

Best practices from Romania – BCLIT

The research developed by BCLIT focuses on Erasmus+ initiatives in game-based learning to find best practices that will be incredibly useful to the development of the Sparks project. As a result, many sustainable and inclusive practices that are easily transferable to our project were found.

GAMIFY results from an Erasmus+ project of 2017 developed by a consortium from Romania, Greece, Lithuania, UK, Italy, Poland, and Spain. The game is based on a needs analysis and integrated with didactic material. It includes seven scenarios about different topics of entrepreneurship -divided into modules- that are recommended not to act interchangeably. The game stands out for being easily transferable in many of its elements, structure, and process and successful in balancing knowledge and playability.

The game starts with the challenge of starting one's business, competing to be a top player or with themselves to satisfactorily pass all challenges. Each scenario represents a topic of the game and has different challenges for the students. Once succeeded, the player can unlock the next level related to the next topic and so on. The game's main mechanics are challenges related to learning goals, a points system, and ranking shown in a scoreboard. It is especially worth highlighting the use of avatars to allow users to personalize their profiles and incorporate a "Didactic Manual", where they find all the information needed to understand the game's rules, making the experience user-friendly and attractive at the same time.

In 2020, a project based on game-based learning was developed by a Romanian partner, with considerable success receiving more than 95.000 visitors from 159 different countries and territories. **Online Training Courses for E+ Youth Workers** was born to develop proper tools to train youth workers in youth programs, especially Erasmus+, in a specific and flexible timeframe. Therefore, the course contents are very specific, but the structures, dynamics and mechanics implemented are effective, innovative, and easily transferable.

The storyline is fluent and immersive, as the users testified. The main character has gone for a treasure hunt, the users, as they go through the course material discover elements of a superhero outfit. The game has been built as a web-based interactive game working in an online mode using Moodle. It integrates a badge system. To get all the badges available, the user needs to complete the whole course, although all the content is unlocked and accessible, without any specific start point. The competition aspect is provided by a scoreboard where the users with more points (superhero outfit elements) acquired are shown. The game has the component of the easter eggs, elements to be found by completing the actions related to the

learning objectives. In addition, the different elements found to contribute to completing the superhero outfit.

Also, there is additional information available, educational content structured in e-books for each chapter. Finally, there is concluding information at the end of some modules, including the key learning points.

Ready4Impact (ALL IN project) is a learning experience to stimulate a multidisciplinary and collaborative framework for increasing the working quality of adult education practitioners, to be adapted to the needs of adults with disabilities in the light of the United Nations Convention on the Rights of People with Disabilities – UNCRPD. The game consists of a board game structure with four different levels related to the learning objectives necessary for creating a social enterprise. Once a level is finished with a successful quiz, the user gets to the next level and so on. The game is simple, and the mechanics are basic, but it lets users engagingly achieve the learning objectives, which are the main point of innovation in the experience. In addition, it shows the importance of contributing to the community, helps to understand what makes social enterprises succeed or fail and promotes inclusiveness, a characteristic that, independently of the area of the practice, should be pursued at some level by the developers of a game-based learning experience.

Among the multiple practices recorded by BCLIT, **PATH FOR CAREER** was developed using Unity to improve the skills of 16 trainers from partner organizations to deliver quality training in career management and soft skills. The game is based on the challenge of helping robots, and it takes place in a call centre, being the end goal in the game to get a job. Once again, we see some of the basic yet effective game dynamics and mechanics, for example, the unlocking of levels using challenges to get points and progress in the game and showing the ranking with the top players to promote the competition.

The online **BEWARE! Game** was designed in the form of a guide to help teenagers gain knowledge about the importance of cyber safety. Throughout the game, teenagers are tested through different scenarios such as cyberbullying, how to stay safe when posting online and how to identify and deal with online aggressors. The "BEWARE!" toolkit (the Guide and the game) has proven to be a modern and helpful tool in working with young people by integrating game elements. It is necessary to highlight the presence of a guide bot, MIIST, which accompanies players during the game. It appears every time there is a risky situation. This element is easily transferable and very relevant when targeting lower ages target groups.

The next practice stands out for not relaying in the competition and ranking system elements that are used in a great amount of game-based learning experiences, as they have shown to contribute greatly to the playability and the ability of keeping users from abandoning the game due to lack of motivation. **ACBC** ACBC successfully provides a learning and fun experience while reaching its objective of spreading consciousness about the implications of cyberbullying.

The serious game presents 11 scenarios with the 11 most common forms of cyberbullying. For each scenario, there are 4-6 dilemmas for the students, in which they need to make choices. The choices are connected to the Big-5 personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism). These five personality traits are relatively stable across age groups and cultures and have enough accuracy and reliability in researching human behaviour. The scores obtained are related to the five personality traits, but there is no perfect score for the traits; there is no real competition. Nevertheless, the users continue to play for the rewarding experience without the need to win a prize.

The **MAKE A LIVING** online game assures the fun of playing the games and the usefulness of learning life skills and competencies at the same time. The game aims to raise awareness and provide practice-oriented development of essential life skills of young people to assure a successful transition to an independent life for residential care leavers and help achieve successful integration into society.

The game successfully combines learning units with assessment games. These are True or False, General Knowledge, Quiz, Letter Pile, Choose the correct answer. It is simple but efficient in achieving users' immersion and providing evaluation over the learning objectives.

The **Learn Tourism 4 All** videogame is an online application that works as a gamified virtual assistant during the learning process about the digital skills required to promote and manage a tourist destination. Users will be able to revise all topics covered in the modules in a fun and motivating way. It is worthy of highlighting the possibility of playing collectively and the avatars. Users can choose from several characters, which will make the users feel identified with them. Experts remark that, in general, this practice includes several of the most reliable and necessary gameplay elements: collecting badges, unlocking levels, the ability to play in teams, and storytelling elements throughout the game to help users immerse themselves in the experience - experts note.

In addition, it includes tutorials so that any user or educator wishing to use the game in their learning activities understands the different features and functionalities of the game. The idea of including tutorials has been present in multiple successful best practices recorded, proving to help include users who are not familiar with the digital skills needed and providing a fun learning experience.

Best practices from Poland – CIE

"Language games and activities" is an initiative of Iwona Stempek centred on helping introduce game-based learning activities in language classes for non-experience teachers and students. Some of the recommended experiences are Board games, introducing board games recognizable by everyone or going and step further and taking the structure of a board game and creating your own; role-playing, as it allows us to simulate reality, forces students to act and express their own opinions and develops their social skills; applications with interactive quizzes, which are perfect for repetition of lessons as well as evaluation of learning lessons. These quizzes are very well received not only by the younger generation of our students.

The **MENTOR program** consists of five topical modules, which complement each other and are developed during a workshop with teachers. All of them are based on an innovative approach capitalising on the latest achievements in theory and practice of developing self-motivation, identifying talents, applying neuroscience to education, and responding to challenges from a changing global labour market. This best practice successfully incorporates face-to-face game-based learning activities as part of the learning path of the competencies described. Furthermore, the game activities implemented can easily improve and be transferable to an online setting.

The following experience recorded, **Appeal**, incorporates the learning objectives of a theatre class to the international and widespread game "Mafia", a role-playing game in which the interaction between players, the ability to convince and bluff are essential. It is about the players united, discovering who belongs to the mafia. The game has two sides that are constantly trying to unmask their opponent. The practice records a successful experience of using a classic game to learn heroes of plays, being the model easily adapted to offline and online settings, and achieving different learning goals.

The fourth best practice identified is the challenge called **"Search and Rescue" (SAR)**, performed during the FOLM "From Outdoor learning to the Labour Market" project expeditions. In a controlled environment, a trainer disappears, the group needs to organise themselves and start the search. Participants can implement their ideas for finding a lost person, with each

subsequent attempt, they experience failure (they verify that their initial ideas were wrong), and the key to solving the situation is the ability to draw conclusions from failures on an ongoing basis to develop a method (tactic) of the effective search for a lost person. Teamwork and problem-solving skills are critical to the exercise, another simulation activity that can be transferable and improved with other mechanics and dynamics such as competition, rewards, a ranking system, even levels, and more developed narrations to increase playability.

The Trainers Academy of CIE developed a training exercise for Outdoor learning trainers based on a simulation game where the player needs to solve sudden and dangerous situations, such as an emergency wheel change, organise a camp in a different area, find water, or construct a shelter. In this case, the game-based learning experience is used as a training and evaluation technic proven to be successful.

Pirate was also a successful experience that used the narrative of a pirate treasure hunt to motivate primary school students in a math course. In the setting of a pirate expedition, each student received a map with the stages of the expedition marked, and on the back of the map, there was a description of the tasks assigned to each stage. The users advance by finalising tasks that give them a set of points, and each level increases the difficulties of the task. The activities were undertaken in teams.

Best practices from Greece – KEAN

The first Greek best practices recorded by our research is a very successful and awarded platform created in 2016 but still in progress incorporating news features. **Ellinopoula** is an educational platform catering to the needs of children and adults of the Greek diaspora, mainly focused on building and maintaining Greek language ability by using a unique combination of interactive educational activities and videos based on the most recent advances in linguistic and educational research. The game designs a unique Learning Path for each user, so every user starts at a different level and continually improves, overcoming the next level. The platform also provides support and guidance during the whole experience.

They structured their curriculum and content to motivate learners to stay on the path of learning. That is why they continuously create new fun videos, games, and interactive activities with beautiful, colourful animations and loveable characters children can relate to.

The reward system is based on the self-improvement and unlocking of level, together with original badges such as the "Student of the Month" who receives a congratulatory diploma award. The platform also incorporates mini-games, highlighting for its pedagogical value the "Reading to Learn" quizzes. Lastly, it stands out for its innovative approach, the Speak Up feature, for helping learners practice speaking Greek; it is based on cutting edge voice recognition software that enables learners to interact with the app by speaking Greek. The way it works is Speak Up prompts learners to read a word or phrase out loud. If learners get it right, they move on to another word. If they get it wrong, Speak Up prompts them to try again.

StaEllinika is an initiative of the General Secretariat for Greeks Abroad and Public Diplomacy at the Ministry of Foreign Affairs. The practice offers more than 30.000 learners, profiles and performance visualization for learners, teachers and parents while also delivering engaging lesson materials, videos, quizzes, and rich interactive experiences. The experience is notable for its adaptability for different age groups, using the same structure to teach concepts and skills according to the player's age.

The experience progresses through levels while relying on the metaphor of exploration, with the learners exploring and facing challenges in ancient Greece as a customisable character. Introductory videos present an animated narration of various ancient Greek myths, while the

learning experience reflects the hero's journey by gradually unlocking and completing minor subunits/levels. The reward system is based on points and the unlocking of powers, following the theme of heroes or explorers.

The following best practice recorded is an invention of Margarita Rouva launched in 2017: **Brainy.gr** is a modern study tool, an educational platform addressed to children 10 to 16 years old, focusing on improving performance and reducing study time. The platform offers multiple functions. It is worth emphasising the specially designed multiple-choice tests attached to every unit, which highlights the weaknesses of each child, points where the student has gaps in fulfilling and provides exercises to continue the study. Furthermore, the platform perfectly combines an organised path of units through a classic textbook with competition and fun games, allowing to analyse the students' results. Even more important, it is a channel for communication with expert teachers where students are urged to ask questions daily.

Since 2014, OPAP has been standing beside NGOs across Greece, supporting children in need through initiatives such as the "**Contribution squad**". This initiative aims to help contribute to a more significant social effort. The games offer children entertainment and opportunities to develop knowledge and analytical skills while contributing to their social needs with the needed resources. In 2020, 245,775 people downloaded the app, which due to the pandemic, was consistently updated with fun games, competitions and valuable nutritional and psychological content to support people during the difficult times of the lockdown.

Another app selected as a best practice for its success is **Connect your city**, , a local app for volunteering for Athens. Through creative play and non-formal learning, the app provides opportunities to gain knowledge of responsibility, creativity, teamwork, flexibility, equality, tolerance, and honesty. The structure is simple: points that can be cashed in local businesses are awarded for completing the volunteer actions shown in the app. Using the simple reward elements for actions, individuals or teams help the city learn new skills and are rewarded with prizes.

In addition to the priorly described experiences, other recorded best practices in game-based learning in Greece include:

- the **Robotonio** project, a very successful experience that teaches students how to cope with robotics while reinforcing competencies such as skill-building in logic, problem-solving or systems thinking;
- **Acropolis**, a platform that helps children understand their history and heritage while learning skills in art, history, and multiple soft skills;
- **Quizdom**, renowned trivial app that has expanded worldwide, whose dynamics and mechanics can be a perfect example of playable and innovative game elements to be implemented in the learning experiences within the Sparks project.

Best practices from Spain – FEMXA SLU

The **Revenge of the Hacker** is a virtual escape room targeted to master students at the Spanish university UDIMA. The experience aims to encourage students to improve students' motivation, implication, attention, cooperation, and collaboration through a game-based learning experience.

By using multiple digital tools, CEF and UDIMA created an immersive experience. The tools were: Genially (hosting the escape room), Canva (edition and layout of images), Zoom (online communication during the game and breakout rooms for participants), YouTube (dissemination of the presentation video of the game), and DaVinci Resolve 16 (video editing).

Some of the dynamics and mechanics that stand out were creating groups with different positions, being the leader the only one who could watch the scenarios, and the consequent narrative maintained until the finalization of the game and accompanied by visuals, images, and sounds. The teams competed with a time limit, and their times are shown on a total ranking.

During the research, another escape room experience was recorded: the **Digital Scape Room 2019**. It was a one-day event organized by primary school teachers that were internationally successful. The SIMO awarded game had different riddles per each level, corresponding with different school subjects. It is proof that the experience can be motivating and engaging with no other competitor than time.

Following the best practices identified in Spain, the UDIMA and CEF collaboration presented another experience: **The Selection process**, a serious game based on a simulation that perfectly complies with the best practice criteria in game-based learning. The experience is based on a simulation of different hiring processes (group dynamics, role-playing and competency interview). Therefore, we can highlight the importance of creating the different scenarios following a tailor-made pedagogical methodology to adjust the situation to reality and give the tools for achieving the objectives set. In addition, the possibility of improvement following the users' feedback is key to creating a game that successfully prepares participants to enter the workplace.

Save the World has been recorded for its great value in achieving the curricula learning objective and the competencies of problem-solving and ethical thinking. The game is placed in the context of the Second World War, where students will learn Social Science, Physics, Chemistry, Biology, Spanish and English. The aim is to make students aware of the events and show them the different points of view of the different sides in the war while they delve into the evolution of the laws of physics. The game is divided into 12 episodes, from chapter 1, Stephen Hawking, to chapter 12, End of the war. Each episode has a different structured, evaluation strategy and users will play individually or in teams.

The players will receive points and participate in a total ranking while also being awarded special badges such as Unnoticed Badge Observer or Conscientious Observer badge, that reward different types of behaviours.

Capture the Flags uses the Facebook game to create a competition between the students of the degree of Computer Science of Rey Juan Carlos University. The users need to complete simulation tasks related to their degree to get points and conquer countries. Some of the critical points for the success were choosing a free and open-access platform, as well as easily manageable, mature and in constant improvement, and considering that the solution to the problems and the evaluation criteria should be specific. Another key factor is to consider an order when participants play to assure a gradual increase in difficulty, essential to keep students engaged and not feel defeated or bored because the challenges are too complex or easy at that moment.

The next best practice recorded is **CLAN ADVENTURE**, where we are presented with a symbolic and aesthetic framework based on Prehistory and the Ancient Age. Students will become Palaeolithic beings who must survive and advance as a civilization, going through different history stages until reaching the Ancient Age. The experience uses multiple game components, such as avatars from the class dojo, teams, unlocking levels, insignias, time limits for specific tasks. The combination of all these components provided an immersive online and offline experience for the users. The combination of the online component, the website, where users can find the rules, the scoring and evaluation materials, links to the google classroom, the blocks of content of each clan, and their badges is especially remarkable. It also includes a physical component, a board in the classroom where students record their progress.

Another combination of online and offline for a successful game-based learning experience is **FISCAL RE-GAME**, which transforms the tax system subject of an Administration degree into an entire game. The main points that stand out are the ability to record the progress in the subject since its beginnings to encourage students to keep working. Furthermore, the combination of team tasks and individual learning was vital for students to dedicate more time to the subject and be more motivated to improve by themselves and work in teams to pass a final evaluation task. Lastly, the maintenance of the same narrative helped the students be involved in the game and see their company and their recognitions (insignias) upgrading in level.

Best practices from Portugal – ECOS

MI.MOMO.FARO uses the structure of Minecraft, available on https://www.minecraft.net/. The best practice is a heritage education project that aims to recreate emblematic buildings of modernist architecture in the municipality of Faro on the Minecraft Education platform by students in the 3rd cycle of primary education. Applying the known mechanics and dynamics of the popular game between kids and youngsters, the project aims to strengthen their heritage education and raise awareness of the importance of communication, creativity, curiosity, and complex problem-solving through the educational approach of project-based learning.

MILAGE LEARN+ APP is a very successful Portuguese educational platform that provides students with high-quality educational content and guidance. It incorporates gamification features with different levels of complexity of exercises to support students with more significant difficulties in learning and includes more advanced students. The MILAGE platform is an example of how to build an attractive and innovative community of teachers' producers of content, according to the Portuguese national curriculum, which remains available for free for students.

As we have recorded in the case of other countries, such as Ferrara Play and Go in Italy and Connect your City in Athens, Greece, in Portugal, we have another practice that has proved that game elements are successful when aiming to engage citizens in different activities to improve their city. **iRec**, an innovative pilot project developed by Cascais Ambiente in partnership with the Nova School of Business and Economics (SBE), to challenge all consumers to return empty beverage containers and insert them once again in the production cycle of new packaging or products, offering benefits to those who embrace this challenge. The use of the machines for recycling is easy to use, and the rewards are given through an app that helps exchange the compiled points in diverse cultural activities in the city or local ecological businesses.

The need to engage youth in their political and social reality, and teach them about European citizenship is a task that can be challenging to engage students with. **Gamify.EU** aims at making information and news about the EU available through innovative media channels in multiple languages by involving young people through an online simulation gaming platform and APP. One of its games, Empower, consist of a storytelling exercise where the players must complete and send a proposal to the EU Parliament following its actual procedure.

The result of an Erasmus+ initiative of 2016 developed by seven entities from six European countries was the innovative game **Global**, which aims to address the reinforcement of EU micro and SME's managers' skills in the process of internationalization and final year Higher Education students that can potentially become entrepreneurs, planning to start up their own companies. The storyline is based on the central character of an entrepreneur that wants to internationalize their company into a specific market (e.g., Europe, Brazil).

The gameplay style is based on a mix of a point and clicks graphic adventure, a visual novel, and an RGP. The game design style is based on photo-realistic backgrounds and rendered 3D models of characters and objects. Together with a structure and innovative methodology in

entrepreneurship, these elements resulted in this successful best practice in game-based learning.

The research in Portugal also led to other recorded practices such as the **Triple Europe Game Project**, which developed a roleplay and a board game, or **Escape2Educate**.

SURVEY FOR BEST PRACTICES IN GAME-BASED LEARNING VALIDATION

The creation of an online questionnaire responds to the need to validate the best practices identified and collected during the desk research developed by the organisations of the SPARKS consortium in six European countries: Spain, Italy, Greece, Romania, Portugal, and Poland.

The best practices have been selected following the same criteria by all the organisations. The criteria have been developed specifically to identify successful, replicable, and innovative experiences of game-based learning.

The following validation responds specifically to two objectives:

1. Analyse the overall **competence level of VET experts** in digital skills and ICT tools, and more specifically, their level of competencies in **game-based learning and gamification**.

2. Validate the best practices collected through a tailor-designed set of questions about the game-based elements found as the key to a successful game-based learning experience. The analysis of the data collected from the VET experts has provided us with the **second evaluation of the best practices** identified, the first one the evaluation conducted by the Sparks' partners during the desk research.

The consortium organisations have disseminated the online questionnaire (Annex 2) to **304 VET education experts** with similar results. After discussing which definition, we will consider when defining what an expert in VET means. The consortium decided the following:

"VET educators of entities considered as VET by the National Agency of each country of the consortium or any VET providers de facto or relevant stakeholders, that provide similar service to the VET community in their country."

A list of game elements was designed in terms of which elements were found to be the key to elaborate successful GBL experiences that are engaging and motivating for students while effectively achieving the established learning objectives. The following list includes the most reiterated game dynamics, mechanics, and components and pedagogical strategies for the modelling of knowledge, found in the total of 48 best practices identified.

- *Establishing the game's objective and the rules and explaining them to students before starting the experience.*
- *Defining the possible roles of users in the experience previously and, if relevant, including the possibility of having different roles: active and passive (observer); leader and followers.*
- *Using platforms and digital tools for the game-based learning experiences that are commonly used and recognizable by teachers.*
- *Including an attractive narrative and, if possible, maintaining the storyline defined during the game and till its finalization.*
- *Establishing clear levels in the game experience that gradually became more difficult, with the aim of continuing to challenge users.*

- *Including the possibility of feedback between students and educators during the game, especially at the end of a challenge or level.*
- *Include challenges and tasks that must be done individually and in teams, to foster both teamwork and autonomous work.*
- *Adding the option for the user and the educator of viewing the progress during the game or gamify experience since the beginning (i.e., using avatars or profiles to identify each user and show their progress)*
- *Including access to educational material or additional information in the hosting platform of the experience (e.g., videos, tutorials, curricula)*
- *Including graphics, visual elements, music, and videos that are stimulating and attractive for the students.*
- *If the objective of the experience requires it, including simulation scenarios (i.e., job interviews) to foster learning by doing.*
- *If the objective of the experience is to evaluate students, previously establishing the criteria and make the students aware of the chosen criteria and objectives.*
- *Establishing a reward system (e.g., Points system, ranking, badges, insignias) that motivates students, but also rewards different qualities such as behavioural attitudes (curiosity, helping other students, devoting more time).*

The online questionnaire was the last step in our research of best practices, to obtain a framework of what are the most successful experiences, which best fit the requirements of our Project, and what have been the keys, from a pedagogical perspective, for the effective results of these experiences in GBL.

Methodology

The research work followed three main phases:

1. Design of the quantitative research tool;
2. Fieldwork;
3. Data Analysis;
4. Final document elaboration.

Phase I: Design of the quantitative research tool

The chosen method was categorisation, creating blocks linked to main general research questions and developing more specific research questions inside each block. The development of the survey as a research tool for validation was implemented as follows:

1. all the Best Practices collected by the consortium were reviewed;
2. a log was created to perform an in-depth comparative analysis of the key elements of the practices collected;
3. research questions related to the main points that needed validation from the best practices were developed;

4. the survey questions were developed, based on a 5-point Riker scale, for each research question determined;
5. the survey questions were finally validated by the consortium.

Phase II: Fieldwork

Once elaborated, the online survey was disseminated by the partners. In Italy, 50 responses were collected.

Phase III: Data Analysis

1) *Recollection* of the data obtained with the survey.
2) *Disposition* of the data. In this Report, the responses obtained were organised to be further analysed in the Final Report of the research, comparing the results of the six countries of the consortium.
3) *Data Analysis*, considering the set objective of the research. The analysis was performed with a block-based classification system ("*Categorization*") to identify each specific survey question with the general and specific research questions.
4) *Organization and presentation* of the results in a visual and graphical way.
5) Drawing *conclusions* based on the results of data interpretation.

Phase IV: Final Document elaboration

The last phase of our comparative research is developed in this Final Report, where the consortium collected the analysis of the results of the desk research in Best Practices in Game-Based Learning, together with the results of the validation survey administered and the results on the Focus Groups implemented..

Validation of the best practices in game-based learning identified

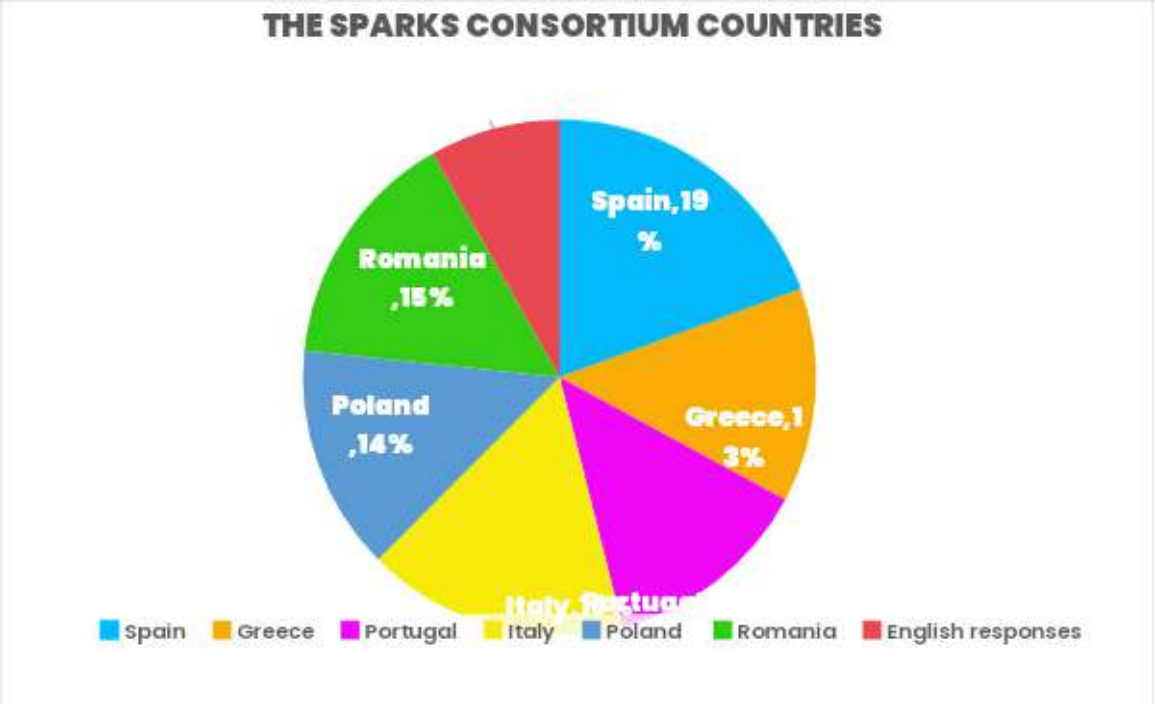
Characteristics of the population surveyed

This section analyses the data collected regarding the characteristics of the population surveyed, and how these characteristics are related to their responses.

The total number of VET education experts participating in the online survey for validation purposes was 304, divided between the 6 EU countries of the partners of the SPARKS projects. The minimum number that needed to be achieved by each organization in their respective country was 40 experts, which was satisfactorily surpassed in every country.

The recording of answers led to having 8% of the responses filled in English. Therefore, the responses have been considered as part of the total number but not as part of the responses from a particular country.

The responses of each country supposed a similar percentage in relation to the total of responses, being that percentage between 13% and 19 % of the responses, in the case of all the countries.



The average time taken to complete the survey was 6.31 minutes, an average that tallies to the initially calculated length of 5 to 7 minutes.

The first block of questions aimed at collecting information regarding the participants on the survey, who were required to respond to three essential points to be able to answer the objectives of the validation survey:

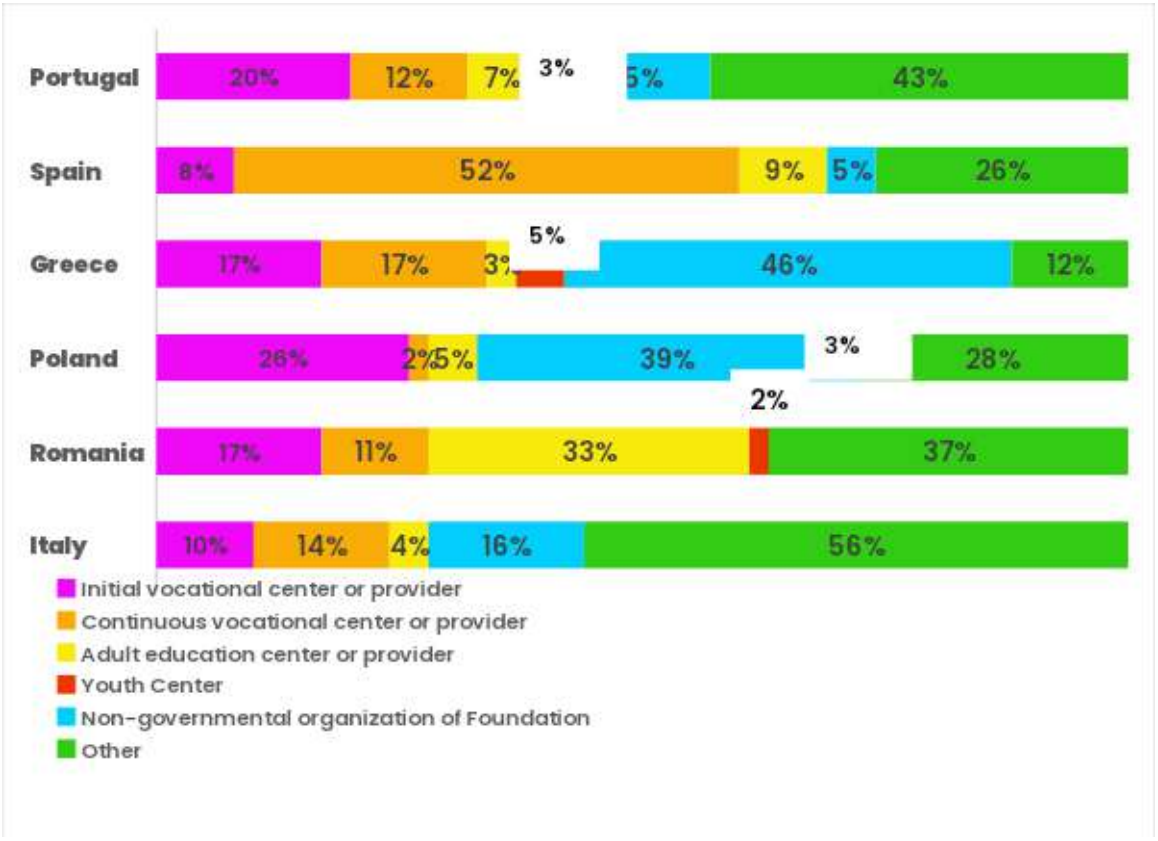
The *country* of the participant.
The *type of institution* where they work.
The type of *job position* occupied.

The results portray that the level of ICT competencies and GBL and gamification skills of education experts in VET, following the self-evaluation of those skills by the participants themselves, do not present relevant differences depending on the country, job position or type of institution the VET expert belongs to.

Regarding the survey's main objective, the validation of the key point for the success of the best practices in game-based learning identified during the transnational desk research, the responses do not present appreciable changes due to the three values recorded from the population assessed through the survey.

Some of the disparities observed relate to the differences in the type of institution and the type of position held by the survey participants depending on the country, being the percentage of these characteristics very different depending on the nationality. In this respect, we have concluded that the most likely cause is the diversity of backgrounds each consortium organisation belongs to, whether a public or private body, training providers, NGOs et al. This led to the fact that, in each case, the survey has been disseminated among VET educators belonging to each organisation's sphere of influence, so that in every country, the type of institution and position of participants is very different.

TYPES OF ENTITIES



Regarding the choice of the place of work, in consideration of the significant differences in the type of division and nomenclature given to VET institutions, as well as the VET system as a whole, from one country to another, the categories chosen to describe the type of institution where

vocational education is provided are the closest representation to the diverse realities of the different European countries, their VET systems, and the main collaborators and audiences of the six organisations in the field of vocational education providers.

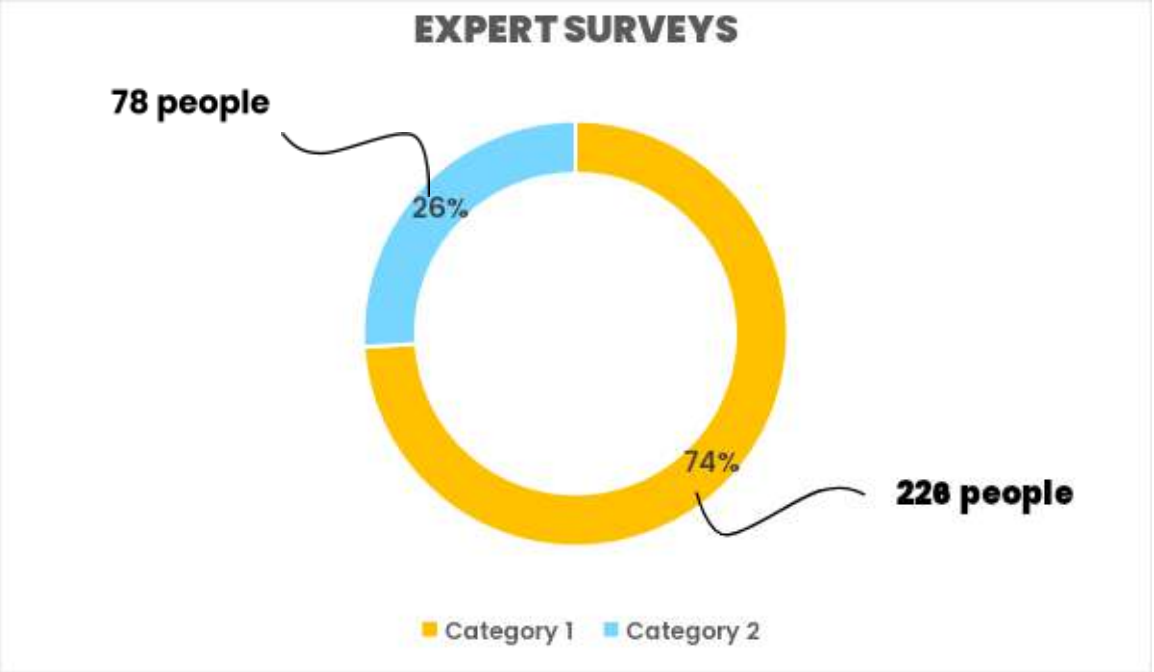
The results shown below portray the reality of the diverse backgrounds where education for employment takes place.

Regarding the job position occupied by the VET experts surveyed, most of them are teachers, precisely 143 out of 304, accounting for 47% of the total people participating in the survey.

The experts' surveys are part of the education for employment system in different ways. Nevertheless, we chose to divide them into categories given the multiple positions and job titles that VET providers receive.

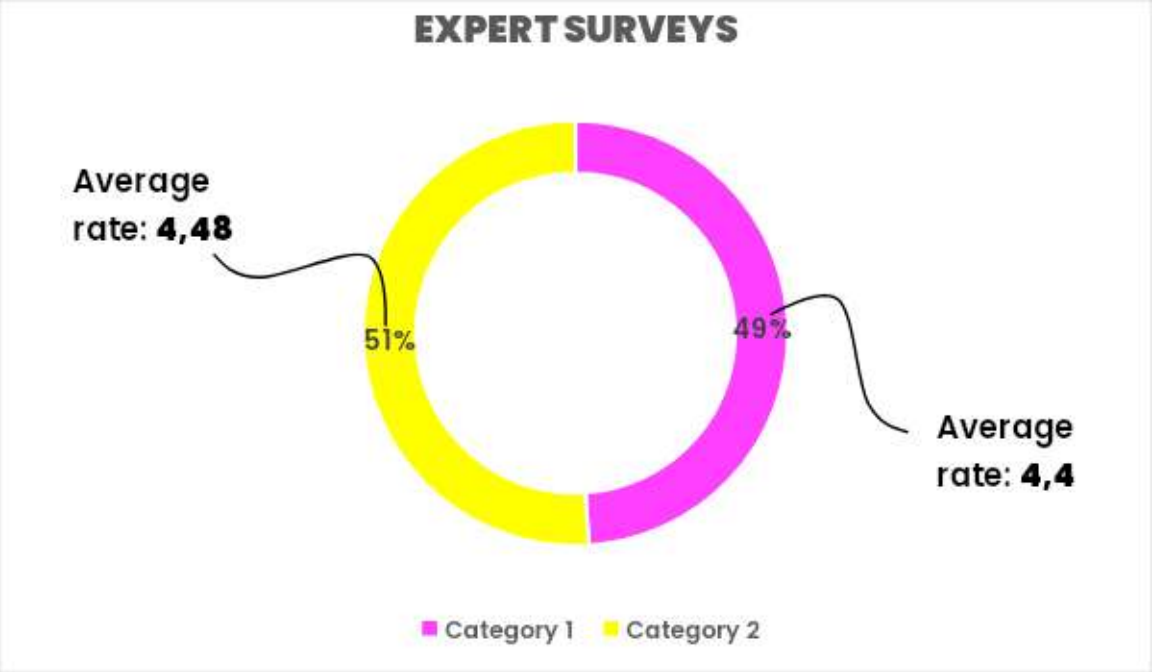
The first category includes teachers, coaches and mentors, trainers, social educators, and social workers; the category is in direct contact with the students in most cases.

The second one is formed by management and administrative staff roles in the diverse education providers institutions, where the survey was disseminated. It was decided to include them in the research as their input is also precious, and thus, having the perspective of experts in the management of the educative institution, together with the educators view from category 1. The "other" category aim at including the multiple job titles in the different countries given to professionals that work in the field of vocational education, that we cannot include in the survey because of the significant amount of them, the responses of its individuals where analyse as part of the second group.



It was analysed if the answer given to the survey differs based on the job title, specifically between the two categories created, and we can conclude that there is no apparent difference in the opinion of the experts surveyed about the importance of the game aspects included for

validation, nor in their general GBL and ICT competences, depending on the category they belong to.



The same minimal variation between the rating given by categories 1 and 2 is repeated in each of the individual game elements for validation.

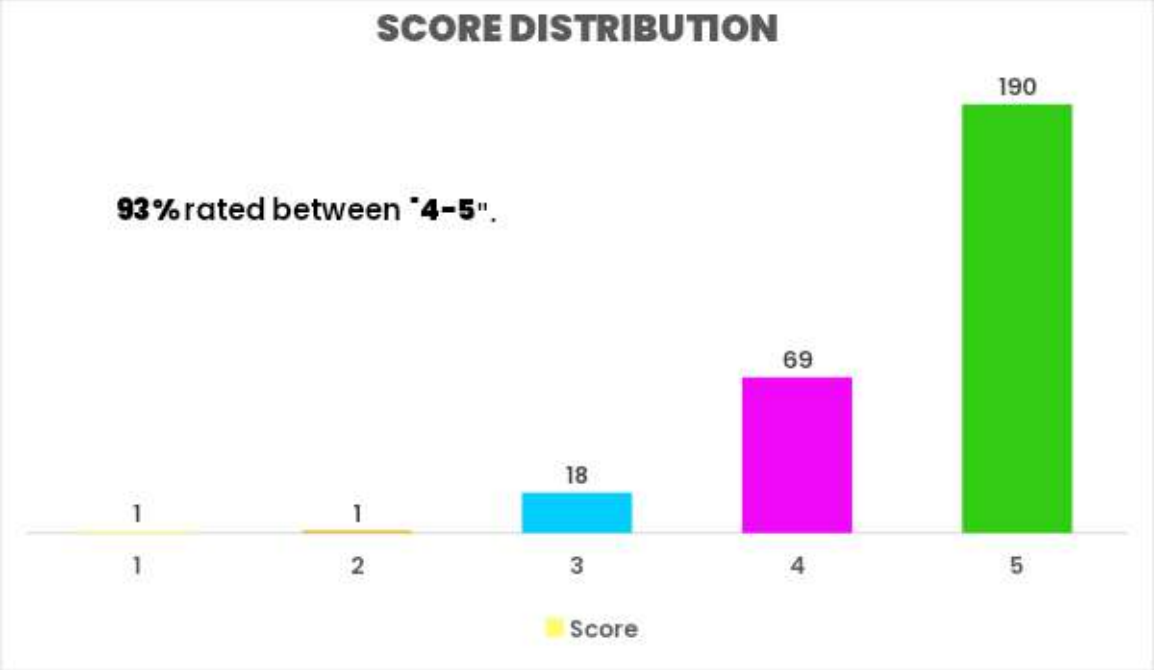
The general competencies of VET education experts in ICT, game-based learning, and gamification.

One of the survey objectives was to obtain a general picture regarding the skills of VET educators in digital environments. It is essential to determine to what extent VET educators have an adequate general knowledge about ICTs and gamification. On the other hand, it is also relevant to understand to what extent educators and education providers feel that ICTs, gamification skills and game-based learning experiences are important to be found in educators and their teaching goals. Therefore, the next research questions were answer by analysing the survey results:

"Are digital competencies valued by VET education experts?"
"What is the general level of competencies of VET experts in ICTs?"
"What is the knowledge in Game-Based Learning, and gamification VET experts have?"

In addition, it is crucial to consider the level of validation provided by the education experts who took part in the online survey since the validation can be interpreted differently if the respondents' level of digital competencies is not sufficient.

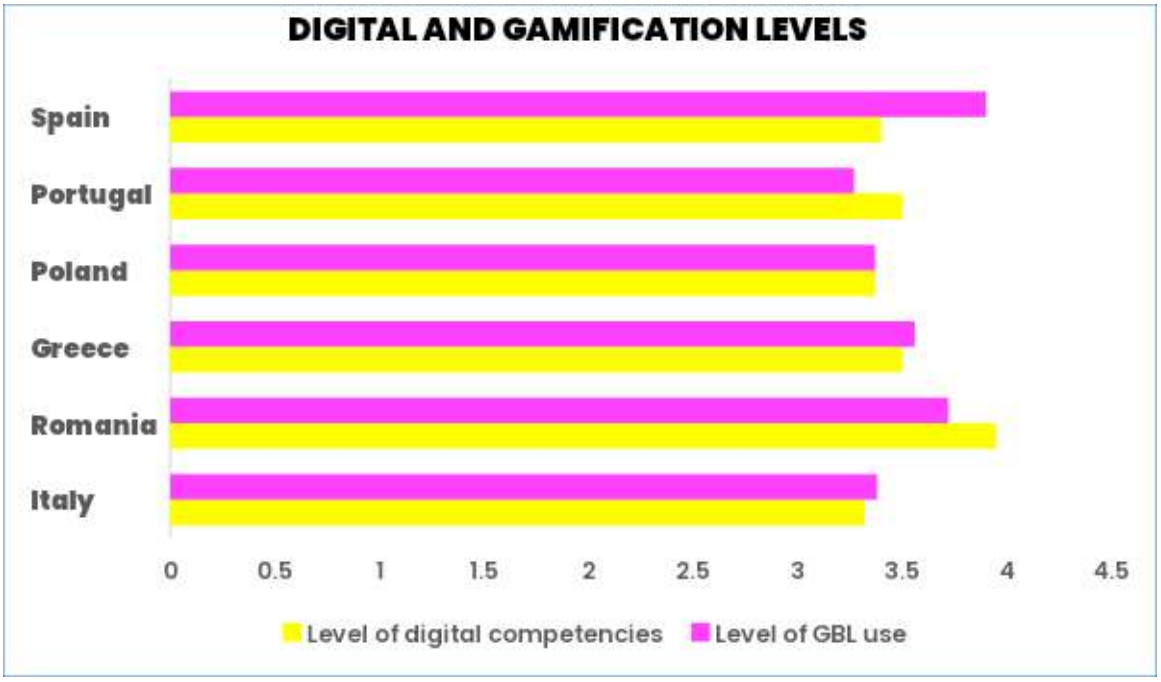
FFirst, after a careful analysis of the survey results, we observed that the value given to the ICT competencies of VET educators is very high, with an average of 4.58 out of 5. The education experts believe that nowadays, these competencies are very relevant, essential for teaching. 93% of the survey participants rated the importance of digital skills in training with a 4 or 5.



It is worth mentioning that there is a clear difference between the high recognition of the importance of these digital competencies, the education experts, and reality do not doubt that. The percentage of answers between high and very high values (4-5) regarding the statements on their knowledge of the subject is lower in comparison, precisely 41% less on average. This data shows that, although the importance of digitalization is not in doubt nowadays in the educational community, educators' skills and competencies can be improved although sufficient.

We also found an acceptable level of confidence in gamification and game-based learning skills, with 58% of the survey participants answering with a 4 or 5 on whether they implement GBL activities with their students. This indicates that a good number of participants implement GBL regularly, although many implement them less frequently or not at all.

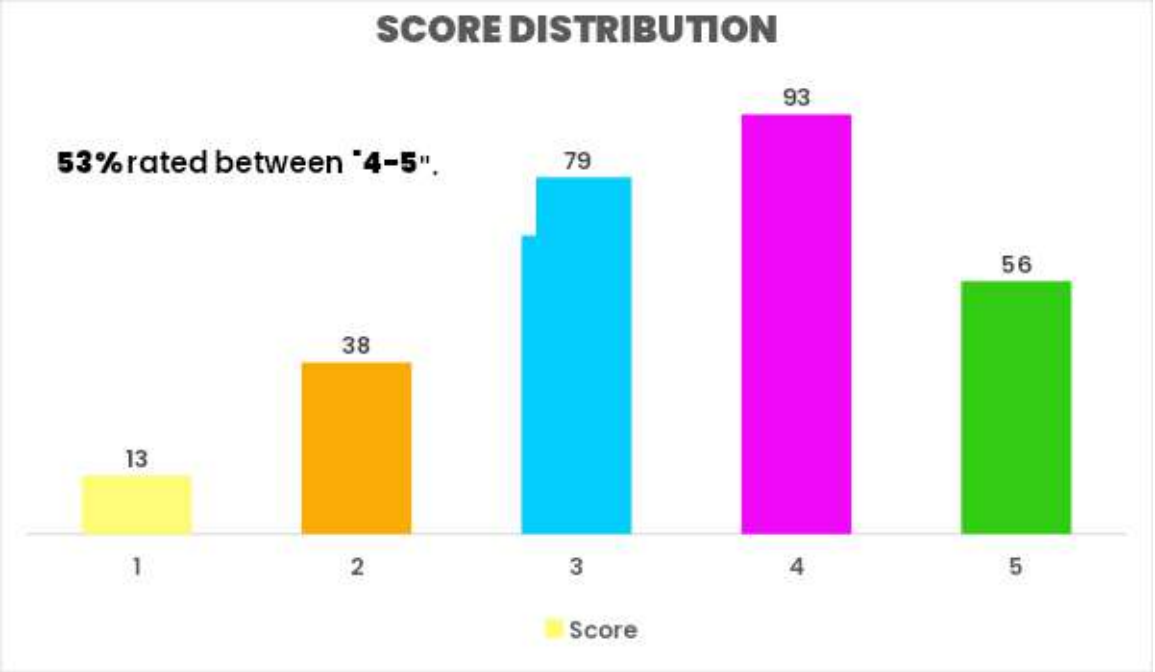
It was considered the possibility of different competencies and experience with gamification and game-based learning and digital skills, depending on the country the educator belongs to. However, the data gathered shows no significant difference level of skill depending on the country where the survey was disseminated, as is visible in the following graphic:



Therefore, the results indicate two things: on the one hand, that the level of both digital and GBL skills is acceptable for more advanced development of GBL in digital environments, and on the other hand, that it is necessary to continue working in this area and obtain results that are within everyone's reach, aiming to foster the implementation of game-based learning activities more often and reach more students.

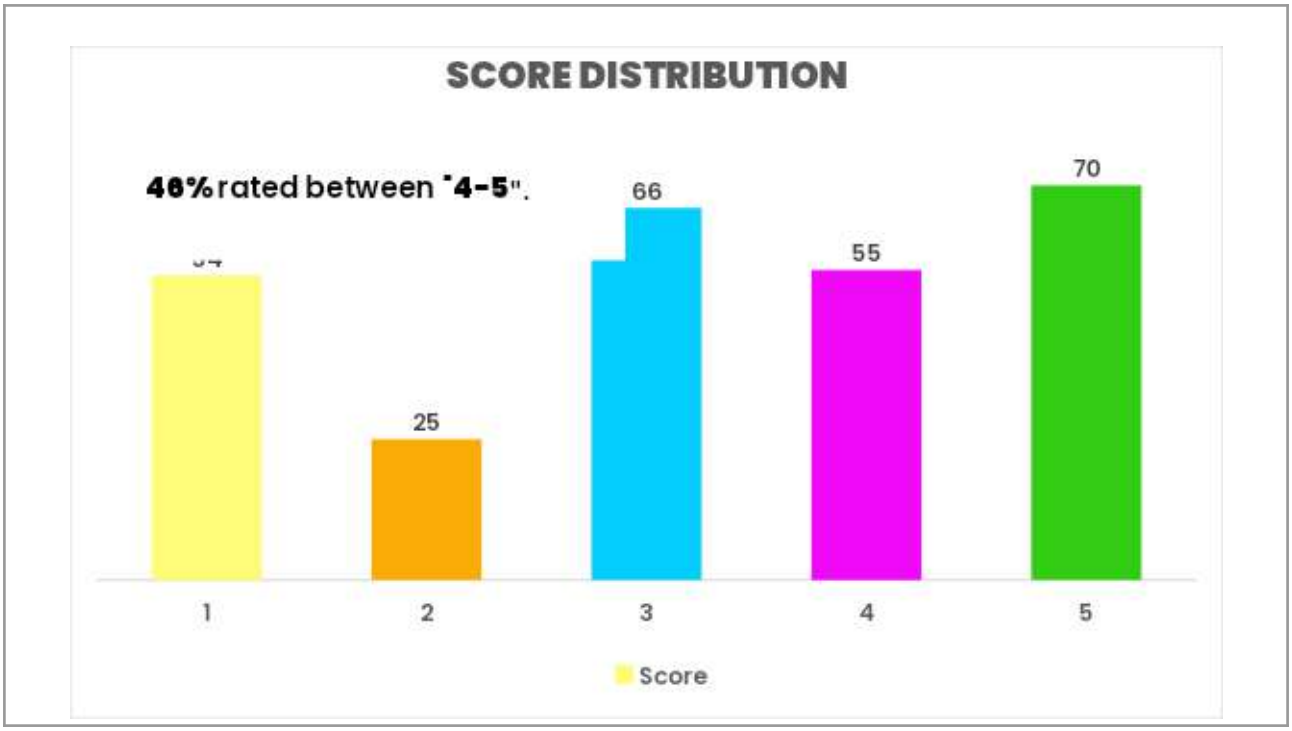
In conclusion, it is necessary to try to contribute to a joint effort to match the importance we give to digital skills with the reality of VET educators.

STATEMENT 2: I feel confident that the competencies of educators (including myself) in digital competencies is sufficient to incorporate ICTs into teaching



STATEMENT 3: I often implement game-based elements in my teaching/training to assess students or increase their involvement during classes.

STATEMENT 4: I do not use gamification into teaching, but I would like



Finally, the level of knowledge in digital skills and tools and the educational methodologies of gamification and game-based learning is more than sufficient. Therefore, it is possible to state that the level of knowledge is sufficient to consider the opinion given by the VET education experts regarding the elements of success identified in the best practices as more than adequate.

Key game elements to develop a successful game-based learning experience

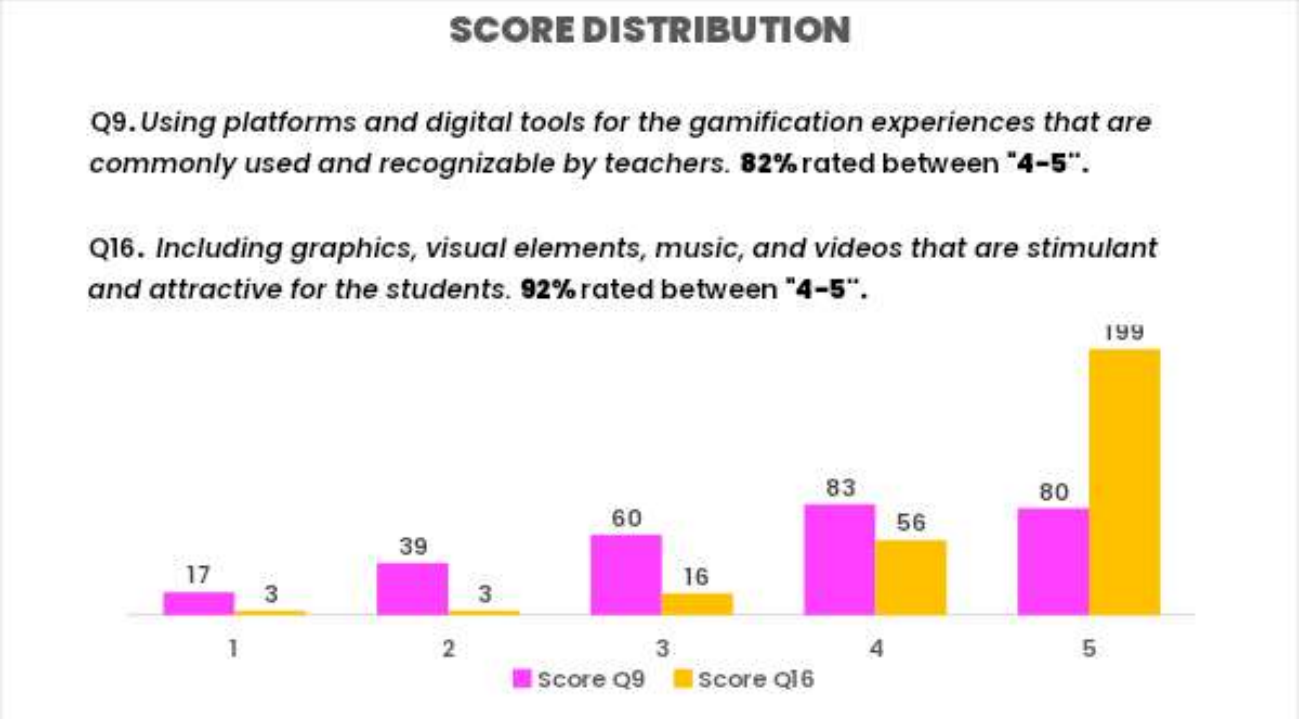
The results of the validation survey were exceptionally successful, fulfilling our expectations on the value that VET experts would place on the key elements of the best practice identified in game-based learning experiences.
The punctuation given to the total of 13 specific game dynamics, mechanics, components, and pedagogical approaches analysed in the 48 best practices collected in the six European countries: Spain, Greece, Italy, Portugal, Romania, and Poland; was 4.43 out of 5.

The 304 experts in VET education that took the survey had an average acceptable level of knowledge and competencies in ICT and GBL of 3,54 on a scale of 5 by their appreciation, validated with more than satisfactory results the elements recognised as best practices by the consortium researchers.

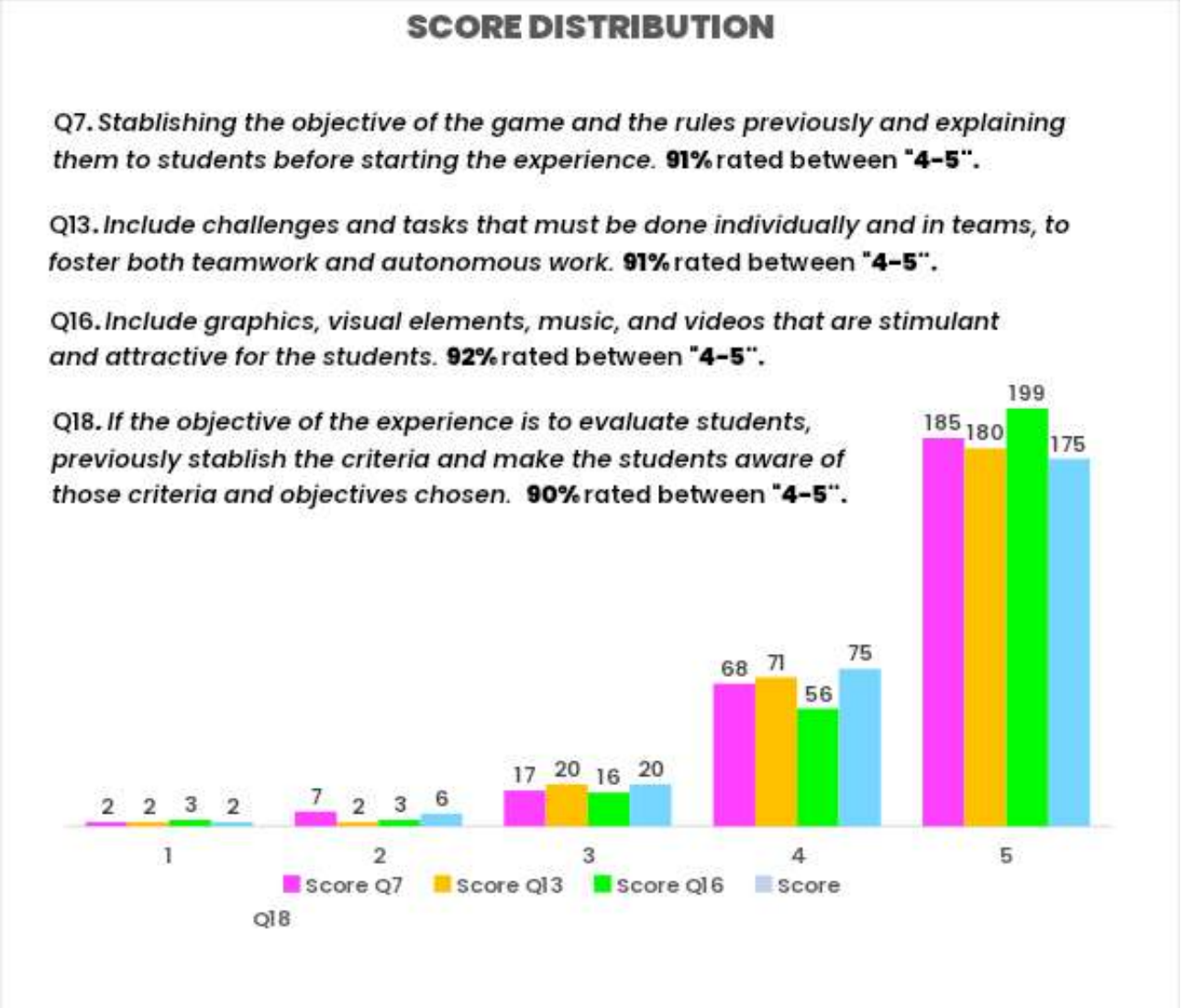
In addition, the criteria established for identifying best practices in game-based learning experiences were validated as well, given the satisfactory quality of game elements collected that received, as mentioned before, an average of 4.43 points of a total of 5.

Every single one of the game elements (dynamics, mechanics, and components) and pedagogic strategies for modelling knowledge in game-based activities that were part of the 13 statements included in the online survey received a rating higher than 4.

The percentage of responses with a high score (4 or 5) is in no case less than 80%, ranging from 82% for the least accepted item (no. 9), to 92% for the most accepted item (no. 16), the difference being very small.



The remaining statements with a percentage of high ratings (4 or 5), superior to 90%, will be considered elements that must be included in the gamified learning program templates and e-learning platform, if appropriate for the activity. Nevertheless, all the statements will be considered recommendations to develop successful game-based learning activities. The graphics below show the ratings of the statements with the highest acceptance (90% or more):



As the rating is so high for every one of the statements, each of the game elements included in the survey statements will be considered in the SPARKS project when developing an e-learning platform for game-based learning activities.

These elements have been evaluated and tested multiple times:

1. They have been tested with satisfactory results by implementing what we have established as a best practice, being part of more than one of the GBL experiences collected in the research with successful results.
2. The researchers of our project organizations have chosen them as they were present in multiple of the best practice while complying with the research criteria, such as its innovative approach, effectiveness when reaching the learning objectives, the transferability potential and others.
3. Three hundred four experts have validated them in VET (educators and key staff) of institutions offering vocational education across six European countries with an outstanding reception.

Participants' comments

The survey participants had the opportunity to leave a comment to reflect their experience with game-based learning. One hundred of the participants surveyed answered the question.

Considering that around 25% of the responses were "No", the **comments of the VET experts** can be divided into three categories:

1. The comments that **recommended gamification or digital tools.** Some of the most mentioned were: Genially, Kahoot, quizzizz, Scratch, Minecraft and Socrative.

2. The comments describing some of the **experiences of game-based learning** developed by educators, describing satisfactory experiences both for the teachers and the students. Many of the experiences described were related to role-playing, simulation activities or small competitions based on accumulating correct answers (such as quizzes).

3. The last group are the comments of educators reflecting **their intention of learning more about the subject** or describing issues that they faced regarding not having the time, skills, or resources to implement game-based learning as part of their teaching.

Recommendations and conclusions based on the Best Practices and survey results

The desk research of best practices led to the gathering of 48 examples of successful experiences that are aligned with the essential characteristics of:

- **Effectiveness**
- **Transferability**
- **Usability**
- **Playability**
- **Inclusiveness**
- **Innovation**
- **Efficiency**
- **Diversity of ecosystems**

These best practices of game-based learning and gamification, both in offline and online environments, provide the Sparks consortium with successful cases where game elements and features were applied to education achieving extraordinary results and efficiently reaching the learning objectives.

The best practices suggested multiple game dynamics, mechanics, and components that will be implemented in the Framework for Gamified e-learning Programs and the E-learning platform that will be developed in the scope of the project. The most used key components identified were validated once again using the validation survey.

Regarding the survey results, it is possible to state that the level of knowledge in game-based learning and gamification and the digital and ICT competencies of educators and other relevant staff of the VET institutions across the six EU countries is acceptable on average. VET educators are eager to learn new and more advanced game techniques to implement in their teaching. Even though about 58% of educators have high digital and gamification skills competencies, 93% stated the importance of these types of digital teaching methods in VET, putting into perspective the need to provide the resources for VET providers to increase their level of skills.

The goal of the survey was satisfactorily achieved. The game elements and features identified as the most effective and attractive for learners in the best practices in game-based learning and gamification were validated by the 304 VET experts.
Therefore, all the following statements validated by the education experts will be considered in the development of a **Framework for Gamified e-Learning Programs and Sparks' E-Learning platform**:

- *Establishing the objective of the game and the rules previously and explaining them to students before starting the experience.*
- *Defining previously the possible roles of users in the experience and, if relevant, including the possibility of having different roles: active y passive (observer); leader and followers.*
- *Using platforms and digital tools for the game-based learning experiences that are commonly used and recognizable by teachers.*

- *Including an attractive narrative and, if possible, maintaining the storyline defined during the game and till its finalization.*
- *Establishing clear levels in the game experience that gradually became more difficult, with the aim of continuing to challenge users.*
- *Including the possibility of feedback between students and educators during the game, specially at the end of a challenge or level.*
- *Including challenges and tasks that must be done individually and in teams, to foster both teamwork and autonomous work.*
- *Adding the option for the user and the educator of viewing the progress during the game or gamify experience since the beginning (i.e., using avatars or profiles to identify each user and show their progress)*
- *Including access to educational material or additional information in the hosting platform of the experience (i.e., videos, tutorials, curricula, etc.)*
- *Including graphics, visual elements, music, and videos that are stimulating and attractive for the students.*
- *If the objective of the experience requires it, including simulation scenarios (i.e., job interviews) to foster learning by doing.*
- *If the objective of the experience is to evaluate students, previously establish the criteria and make the students aware of the chosen criteria and objectives.*
- *Establishing a reward system (i.e., Points system, ranking, badges, insignias, etc.) that motivates students, but also rewards different qualities such as behavioural attitudes (curiosity, helping other students, devoting more time).*

FOCUS GROUPS FOR REQUIREMENTS GATHERING

The Sparks consortium aims to achieve a detailed framework of the needs and gaps of the VET community regarding game-based learning and gamification in digital environments. Thus we will have a complete compilation of the requirements that our e-learning platform to facilitate game-based learning must fulfil to attend to those needs and gaps of learners and educators of education and training for employment.

The Focus Groups were the qualitative research method chosen to gather such requirements, as it led to an open direct discussion from the direct target groups of the Sparks e-learning platform, VET providers, and indirect target group, VET learners, where they were able to express freely, they specifics needs and points of view regarding game-based e-learning. The transnational Focus Groups fostered the discussion of 144 VET teachers and students from six European countries: Italy, Spain, Greece, Portugal, Poland, and Romania.

Methodology

The technique of data collection through focus groups has been used in research since the 1980s. In this sense, this technique is of undeniable importance to study representations and relationships of the different professional groups, of the different work processes and the population. Focus group research has traditionally been understood ***as "a form of qualitative data collection, which essentially involves involving a small group of people in an informal group discussion(s), 'focused' on a specific topic or series of topics".***

The different organisations of the Sparks consortium developed the Focus Groups activity with a minimum of 24 participants, 12 of them being educators and 12 students from different fields of education and training for employment. Regarding the organisation of the group for the implementation of the activity, the partners organised the groups in smaller numbers to facilitate discussion, and the activities were developed both face-to-face and through online communication platforms such as Microsoft Teams and Google Meets, depending on the arrangement that was better suited for each organisation and its group of participants..

The organisations implement the Focus Groups mixing educators and students in the case of Spain, Poland, Greece, and Romania, but separating both target groups in Italy and Portugal. Thus, the results analysis reflect what can be achieved using both modalities, observing that a stimulating and open discussion between both sides of the education process was raised in the mixed groups. In addition, the separate modality offered more confident and open contributions from the VET students.

The Focus Groups were developed with two experts: **a moderator** to guide the participants, offer discussion points and direction of the turns. **An observer**, as a note-keeper of the interviewees' answers.

Every country followed the same questioning route during the Focus Groups (Annex 3), which was elaborated to obtain the needed data from the participants regarding five issues:

- To define what the experience of the VET students and educators in game-based learning and gamification is and what positive and negative aspects they experienced;
- To determine the perceptions of VET experts and students about Game-Based Learning, if it brings a positive input to the education and training community and what competencies they believe are enhanced by games in their teaching-learning process;

- To establish the needs and gaps of VET experts and students regarding game-based learning and gamification techniques;
- To define the digital requirements to incorporate gamification and game-based learning in VET through digital environments;
- To identify the target groups' requirements for an efficient e-learning platform to facilitate gamified learning experiences in VET;

The organisations used a standard template to organise the data obtained during the Focus Groups and differentiate the common points of agreement from individual responses. The indexing system (i.e., labels) was used during the result analysis to gather pieces of information that belong to the same category. The categories were previously established by the main issues of questioning (so the labels would be Q1, Q2, Q3, Q4, Q5). After the organisation of the data partners elaborated a national Focus Groups Report that gathered the needs and requirements of participants from the VET community in each country.

The national reports have been compared in this final report, presenting the situation of VET providers and learners, their needs and requirements for game-based learning and gamification in digital environments. The comparative results of the qualitative research and the recommendations for a game-based e-learning platform are presented in the following analysis, dividing the information by five categories corresponding to the five main original issues detected.

Comparative results and recommendations based on six European Focus Groups

Game-based learning experiences in the VET community and the positive and negative aspects observed

Q1	1.1. Do you have any experience with gamification and game-based learning? **1.2.** What **positive and negative aspects** did you realize during these experiences?

SPAIN	ITALY	ROMANIA
Participants described a **high pedagogical value of game-based learning** based on their experiences, mainly to engage students. A few of the activities developed before by participants are simulation and role-playing activities and competitions with prices. The group agreed that today's students **are more involved with the digital round**, and it is part of their reality, **so it is essential to include this reality in their learning**. Even though the experiences in digital environments described by	The educators of the group tried to include online gamification tools during the pandemic. It helped them connect emotionally with their students and transfer trust even without direct contact. The students had some minor experiences with game-based learning with generally positive results. The opinions regarding GBL were very positive in its majority. It was pointed out that game mechanics applied to learning helps to overcome the theoretical aspect and mitigate an overly analytical rational approach with **a creative and intuitive component.** An example was made regarding social training, where GBL achieved	**Most of the participants realised their experience with gamification or GBL**. Some respondents were very enthusiastic about the topic and immediately gave examples of using game elements in learning. A participant mentioned Menti word cloud as a tool for brainstorming sessions. Some of the attendees that responded at the beginning of the focus group that they had not experienced game-based learning realized during the discussions that they include in online teaching various elements of gamification as

educators in the group were less and simpler due to lack of digital skills and time to prepare them.	**a less deductive and more abductive approach in learning.**	quizzes, competitions, and rewards systems (i.e., points).
GREECE	PORTUGAL	POLAND
Most educators and students had experienced game-based learning only on face-to-face training. However, in the last two years and due to Covid restrictive measures imposed, they have been forced to continue teaching online. The experiences with game-based learning in person are described as satisfactory in achieving the learning objectives, though some of the participants had no experiences or a negative opinion of GBL in digital environments or simply **preferred face-to-face teaching and learning rather than teaching through digital means**.	The educators of the group agreed that in their experience, the competition element applied to learning proves to be able to increase students' motivation, but some of them stated that the same engagement is not found in other GBL activities that are not focused on competition. Another educator stated that **students are comfortable with digital tools** and often lead game activities and help other colleagues. It was also brought to attention that **GBL can be both synchronous and asynchronous in a combined format**.	In the group, only half of the participants have experience with game-based learning. Nevertheless, both teachers and students described their experiences as positive and engaging. They mentioned that students are more focused than with ordinary tasks and the overall process of learning becomes more enjoyable, dynamic, and creative. Some educators agreed on the difficulty to come back to traditional teaching methods after the games, as students lose their interest.

A large proportion of the total of 78 educators and 66 students from different fields of vocational education and training who participated in the Focus Groups have had some experience with GBL or gamification at different levels. In terms of more advanced experiences in digital environments, the number is lower.

The participating teachers are familiar with the pedagogical techniques of gamification and GBL, and in general they appreciate them and recognise that they have achieved very satisfactory results. Teachers are divided between those who have experience in their application using digital tools and those who have not had these experiences due to lack of digital skills, time, the necessary resources or because they prefer to apply GBL in a face-to-face format.

Students, practically in their majority, showed appreciation for the experiences they had with Game-Based Learning and stated that game dynamics were beneficial for their learning. The most mentioned **positive aspects of GBL experiences**, by the participants of the Focus Groups in the six countries, were:

- Successful in overcoming the challenges related to the acquisition of new concepts.
- Favoured the sense of novelty and fun, overcoming boredom.
- More helpful to include people with specific learning disabilities.
- Gamification helps students to feel positive about their results and it gives them the motivation to try harder.
- Through games, it is easier to foster self-expression, teamwork, healthy competition, and openness to more diversity in communities.
- It fosters learning by doing, problem-solving skills and the ability to make difficult decisions.

The most **recurrent concerns regarding GBL** activities that participants mentioned were:

- Sometimes games can be a source of distraction for the users
- Risk of the game competition becoming more important than learning.
- The need for specific digital skills and much time to prepare an activity in the case of educators.
- The risk of some students being isolated for not having the digital means necessaries for the activities.

- Easier exposure to game addictions, cyberbullying and other internet dangers.

Key competences enhance by including game elements in teaching and learning in VET

Q2	2.1. Do you appreciate gamification and GBL in education and training? Do you think games add a positive input to learning? **2.2.** How, in your opinion, gamification and games can enhance learning?

SPAIN	ITALY	ROMANIA
The group agreed unanimously that there are multiple benefits that game-based learning activities can add to the learning process of students. The serious games based on simulation and roleplaying were especially pointed out as tools for learners to put into practice what a lot of the times they learn in theory, **contributing to make enjoyable experiences that students struggle with**, such as job interviews.	85% of the attendees stated that the quality of education would increase if their education centres integrated GBL as part of their courses. It was also discussed the improvements of relational dynamics through GBL, making students feel stronger when offering their creative contribution, while respecting their colleges when cooperating. **The impulse to self-realization and self-affirmation is mitigated by the group's presence.**	The group VET students stated that they find gamified activities more effective and attractive. VET teachers agreed that **achieving the learning outcomes is more doable with GBL.** Some of the aspects discussed by attendees that are enhanced by GBL are: creative thinking and easier assimilation of new concepts.
GREECE	**PORTUGAL**	**POLAND**
Most of the participants shared the thought that **"if Universities and training institutions were more friendly to the game-based learning programs, the students would be more willing to participate"**. The students of the group stated that gamification makes learners feel like they're part of a team or community on their e-learning journey, fostering feelings of loyalty and belonging.	The educators were of the opinion that teaching should not be based on GML, but rather conjugated - It's complicated to generate meaningful learning based simply on games. Summing up, GBL is a useful tool to engage students, present new concepts and strengthen old ones, but is not a replacement of formal education, but a complement to use wisely.	The educators of the group stated that they recognized the benefits of game-based learning but find difficulties to incorporate in most formal subjects. They strongly agree with the statement that it is **valuable for the development of transversal competencies,** such as communication and teamwork. As well as a useful tool for situations where face-to-face teaching is not possible.

In every focus group celebrated, participants mostly agreed that game-based learning can positively contribute to the learning process. And the VET students stated, virtually unanimously, their appreciation for activities involving game mechanics.
Participants discussed the many forms in which GBL can enhance learning, being the motivation of students, a common characteristic in every country. However, game can enhance learning in many other ways:

- *Improving the relationship dynamics of students*: on the one hand, it improves the cooperation and communication skills of students; they learn to work in teams by having a common goal and jointly developing strategies. On the other hand, it helps students to immerse in the game and feel freer to make contributions and express themselves.

- *Increasing the assimilation of concepts and memory capacity*: students feel more involved in the learning activity and perceive it is easier to retain new concepts. The mechanical model of learning that has been used for centuries does not correlate to the global, digital, and fast-changing society of today. Students need to learn by practice and see the real-life value of the knowledge and skills they are acquiring. *Contributing to the self-esteem and self-confidence of students,* thanks to the feeling of accomplishment when completing game challenges.
- *Problem-solving and creative thinking skills*: games can stimulate creativity and curiosity. When facing a problem during a game, they enjoy the process of finding solutions, and the students' resistance to the stress related to the learning experience is reduced by the game.
- *Creating a safe space for learners to be mistaken* and learn from it, an opportunity that often is forgotten in classical teaching methods. The failure is legitimized as a fundamental learning moment to reach the finish line.
- *Improving several soft skills,* such as teamwork, concentration, patience, and abstraction skills.

Requirements, gaps and needs found in VET to incorporate ga-based learning and gamification

Q3	3. Do you feel like you have the resources available in VET to implement GBL? In case the answer is not, what do you think would make the situation better (educators- more time for teachers for the planification of these classes, more online resources to help with gamification, etc.; students- more innovative and attractive game experiences, more of these types of experiences in general, etc.)?

SPAIN	ITALY	ROMANIA
VET educators agreed on the **enormous number of resources and digital tools to implement game-based learning** that can be found online. However, this works to the educator's disadvantage when preparing game activities, due to the difficulty to search and filter the adequate tools and methods to incorporate. They also expressed their need for more time to get informed about new methodologies, and to prepare more complex game activities. Some participants shared with	There is the need to reinforce the knowledge of more advanced game dynamics and mechanics, to **overcome the traditional basic Point-Badge-Level (PBL) Model** and exploit deeper the potential of gamification. For that, firstly it is required to provide methodological resources to support teachers when adapting GBL to their learning objectives and target groups. Students agree on the need to increase the frequency of these experiences. The attendees consider **the use of technology and game elements a facilitator for the transition from the traditional frontal lesson to a relational one.**	The responses to this question mainly came from the VET teachers. They mentioned **the need of technical support to implement game elements in the courses** provided by VET centres. The key elements were better access to Technology, improving educators' skills, and adapting the curricula to include game elements – Instructional design.

the group some of the sites and tools that work for them.		
GREECE	PORTUGAL	POLAND
In VET training and institutions, the use of innovative pedagogics such as GBL is not very widespread, making its inclusion difficult as part of the teaching process. It also mentioned the **need for qualification measures, manuals, and guidelines for action**, as well as recommendations and best practices on how to include game elements in the classroom. In general, there is a need for more sustained use of digital tools in education and training in the VET system.	The main issue described by participants refer to the lack of time. **Educators need more time to invest in learning how to use GBL and to design and implement the activities**. Some participants also mentioned the need for quality internet connection and equipment. Educators also referred to the lack of training opportunities to improve their digital and gamification skills.	Educators described the fear that implementing more GBL activities will mean more workload. They agreed with the positive input GBL can add to their teaching but feel **the need for more direct resources and guidance to implement it.** They also mentioned that there is still not a great engagement from other teacher colleagues in the matter. The VET students are eager to participate in GBL activities more often.

Regarding the needs and requirement for VET educators and institutions to implement game-based learning, the educators voiced their concerns unanimously. There is a need for educators to have more time and training to adjust their digital skills to the requirements of more advanced gamification applications in digital environments. They also agreed that there is the need to have more time to prepare the activities, which would have to come hand in hand with the inclusion of the GBL methodology in training curricula. In addition, they feel like they must autonomously go through the huge number of online resources available, without the help of manuals, guidance or organize platforms that display the available tools in a more practical way.
The students can also agree with the educators' concerns, and they state that the game experiences they have participated in are satisfactory, but they feel the need for more experiences that innovate and do not focus solely on quizzes and rewards system, but also adding for interesting dynamics and mechanics.

Digital requirements to incorporate game-based learning in VET through digital environments

Q4	4.1. What digital tools and platforms do you have access to/knowledge of?
	4.2 Do you believe VET teachers and trainers, including yourself, have the necessary digital skills to integrate more digital tools into their teaching practices and to support students with their own gaps in digital skills?
	4.3 Do you believe you need more support regarding digital instruments (students and teachers)?

SPAIN	ITALY	ROMANIA
Participants agree that, for lack of knowledge or mostly time, **educators often use the more basic and common digital tools because they feel safer with that choice**. Educators stated that they need specific training, more courses available to learn how to successfully include game-based learning in e-learning and how to blend the online teaching tool with their curricula. It was mentioned the need for courses that approach online GBL for mentors, the field is always advancing and developing, requiring to update the training options regularly.	Participants feel an increase in their digital skills due to pandemic. Some of the challenges that they still appreciate in this regard were: the need of educators to deepen their knowledge of digital tools, particularly in tailoring their use to specific learning environments and content. **Educators also shared they gaps regarding data analysis**, how to gather data online, and data integration, the data is often fragmented across different virtual spaces, difficult to analyse students' performance.	When asked if they have the necessary skills to use the tools for e-learning, all VET students confirmed they have. Some mentioned that their digital skills were substantially improved during online education within the last year. VET teachers were more cautious. They identified some obstacles in adding game elements: **technological challenges, difficulties to add collaborative tools, correlation of assessment tools and content with the game-based learning**.
GREECE	**PORTUGAL**	**POLAND**
Participants stated that distance learning during the COVID-19 pandemic has only accelerated gamification in learning, **educators seek new and innovative ways to reach students outside the bounds of a traditional classroom.** The average digital skills and knowledge in online learning platforms and tools is quite spread in both VET teachers and students participating, but there is a need for more specific training to include gamification.	Participants mentioned that digital skills of both teachers and students increased during the pandemic, but there is still a lot to improve regarding incorporating complex game-based e-learning experiences. Some participants mentioned that an online game should not be a game to be used in all contexts, as there are different needs according to the educational and geographic area, so **it is important that they are customizable and flexible.**	Participants expressed their need for resources to understand how GBL in digital environments works, instructions, rules, etc. Teachers express that it would be useful to have pre-prepared content which would help to apply gamification in teaching.

In conclusion, the data gathered during the Focus Groups show that the digital skills of educators and students are average, although they have increased at a fast pace due to the restrictive measures during covid, forcing all education to take place online.
The requirements to take game-based learning to the e-learning environment, are presented with some issues to overcome:

- Educators need more specific training opportunities that tackle their digital gaps, as well as their concerns in how to incorporate GBL in their curricula in an effective way.
- There is a need for more material and digital resources that are customisable and adaptable, considering that the learning challenges are very different from one field to the other.
- Due to the lack of time, educators would benefit from a platform that provides guidance and manuals on how to proceed, regarding game-based learning and other innovative methodologies such as data analysis, that can contribute greatly to improving the game experience and improve it.
- Students all stated that they would like the opportunity to learn online with game-based activities more often, and that they often feel unmotivated and bored because the e-learning experiences they had lack quality and originality.

Requirements of an efficient e-learning platform to facilitate game-based learning in VET

Q5	Would you consider a gamification platform or templates useful to support educators **when** gamifying their classes?

The participants of the focus Groups agreed in the need for more resources in game based-learning directly aim at providing innovative tools and methods for the VET community, expressing that they would find an e-learning platform, templates to help them introduce game activities and manuals and tutorials to guide them, very helpful and needed.

During the focus groups, we discussed the ways that we could make the Sparks' gamified learning experience more efficient and attractive. VET students and educators agreed of some of the dynamics and mechanics that they would like to have in a game-based learning platform; some of the more popular were:

- Game elements (dynamics, mechanics, and components) that are engaging and innovative, and offer an out-of-the-box approach to learning through games. Some examples are clear rules and objectives, learning pathways that balance individual and collective effort, narration and adventure games structured, a breakdown of the topics, themes, and skills to be acquired in mobile blocks with an interchangeable and module-like path.
- Some other recommendations to consider when designing the platform are to explain how the course prepares learners to achieve those goals, ensure that students align on the goals and want to achieve them, keep the progress transparent to each learner.
- And thirdly, elaborate a platform that allows educators to share information and access information about implementing GBL, a tool that helps them introduce GBL into their teaching in a timesaving way, but always in a customizable way.

Conclusions

During the Focus Groups activities developed in the six countries, we were able to draw a complete picture of the requirements of teaching and learning for the VET community. The qualitative data gathered and described in this report shows multiple examples of positive experiences with game-based learning, how it can enhance learning, especially online, and the requirements of the VET providers and students. Therefore, precious information was collected to ensure that Sparks' e-learning platform considers the actual needs of its target groups.

It is important to consider that the education and training systems are facing a transition period that is radically changing their foundations, leading to the growth of new approaches. Therefore, the development of new competencies of the VET providers is a requirement. For private and public VET entities and policymakers, investing in contributions to new methodologies and technologies for didactics is not enough anymore: they need to focus their attention also on training systems capable of addressing the continuous development and improvement of teachers and trainers' skills to meet new challenges, needs and educational goals.

Game-based learning has proven to be an efficient methodology to teach students in this new digital and global world. Thus it is crucial to create a game-based e-learning experience that is tailored to the VET system needs. While also considering that every teaching situation is different, there is a need to create flexible and adaptable pedagogical tools. There is no such thing as the "perfect method" that applies to every teacher and student. They are the only ones capable of creating their unique experience.

BIBLIOGRAPHY

Gutiérrez Fabián 2021, 5 tools for gamification in Moodle. Subitus. Gamification, Best practices in Moodle. Available at: https://www.subitus.com/herramientas-plugins-gamificacion-en-moodle/ (Accessed: 25/08/2021)

Jorge F. Figueroa-Flores. Gamification and Game-Based Learning: Two Strategies for the 21st Century Learner. World Journal of Educational Research Vol. 3, Nº 2, pp. 506-522), 2016. ISSN 2375-9771 (Print) ISSN 2333-5998 (Online). SCHOLINK INC.

John Findlay. *Game-Based Learning vs. Gamification: Do You Know the Difference?* August 12, 2016. Available at: https://trainingindustry.com/

Redecker, C. European Framework for the Digital Competence of Educators: DigCompEdu. Punie, Y. (ed). EUR 28775 EN. Publications Office of the European Union, Luxembourg, 2017, ISBN 978-92-79-73494-6, doi:10.2760/159770, JRC107466

Wilkinson, S. (2004). Focus group research. In Silverman, D. (Ed.), Qualitative research: Theory, method, and practice (pp. 177–199). Thousand Oaks, CA: Sage.

ANNEX 1

Spreadsheet for the collection of Best Practices

Title [Brief description of the game base learning practices]	
Date [Month and year when the experience took place]	**Authors** [Name, organization, institution]
Element	**Guiding questions**
Geographical scope	In which country, region, province, or district has the game been applied or replicated?
Partners/stakeholders	Who were the main partners (technical and financial)?
Target Group/Beneficiaries	Who are the beneficiaries (direct or indirect) of the practice? How many are there? (Disaggregated data by gender and age)
Context	What was the initial situation and its specific context? What are the specific difficulties that the practice seeks to address?
Objective	What is the purpose or objective of the practice? Brief description. What is the technology needed to develop the practice? Does it fit the objective to be achieved with the game?
Process	Explain, step by step, the process of the practice to facilitate its understanding and reproduction. Indicate, as established in the methodology, which dynamics, mechanics and game components are necessary to develop the practice. If necessary, indicate the structure of the gamification experience following this structure. - Modelling of Knowledge: always we are talking about an educational game, so it is necessary to indicate how the content is integrated into the game. For example, through questions and answers (challenges) and short topics such as "Do you know that..." that appear at different moments of the game. - Game process. Indicate: (1) The objective of the game and whether it is well defined. Does it follow the SMART rule: specific, measurable, achievable, relevant and on time? (2) Proposition of the challenge, is it coherent with the learning objective, is it original, is it attractive? (3) Rewards/reward systems: is the reward management model defined, is it directly related to the learning object? (4) Are the rules of the game clear and understandable to the user? (5) Is the competition motivating? (6) Existence of different levels of difficulty. - Design: by studying the possible calculation algorithms, system architecture and data model. Criteria to be considered: what data does the system collect? - Development of the game considering the interface: what are the usability conditions?

	- Indicate whether a pilot test has been carried out to verify that it meets all the requirements initially proposed. - Indicate whether the game has been validated: have all the problems and deficiencies encountered during the fine-tuning been debugged? - Indicate whether the same practice has been successfully replicated.
Results	What results have been obtained with this practice in the game? This section should reflect the way your practice is perceived, so the results should be clearly presented and supported by data.
Impact	What has been the impact (positive or negative) of this practice on the beneficiaries (men and women)? Has the situation of the beneficiaries improved with respect to the objectives of this specific gamification experience? In what way has the situation improved, increased motivation in learning, improved knowledge, or attitudes? If possible, collect testimonies from stakeholders through which the benefits of the practice can be seen.
Success Factors	What are the conditions, internal (game elements, systems, and tools) and external (institutional, economic, social, etc.) necessary to make this practice a success?
Limitations	What constraints or difficulties were encountered in implementing the practice, how were they addressed, and what other constraints might we encounter in replicating this practice?
Related resources /Link	Establish a list of references related to the practice (training manuals, guidelines, photos, videos, web pages, etc.). Link to the home page of the gamification experience in question. If possible, contact the organization and/or person who carried out the practice.

ANNEX 2

VALIDATION TOOL OF BEST PRACTICES: ONLINE SURVEY

1. Write type of the **entity** you work for (6 options):
   Initial vocational centre or provider, Continuous vocational centre of provider, adult education centre or provider, Youth centre, non-governmental organization, or Foundation, Other.
2. Write the **job position** you occupied (9 options):
   Teacher, coach or mentor, trainer, coordinator, administrative staff, management role, social educator, or social worker, other.

ICT AND GAMIFICATION COMPETENCIES

*Below you can read **four statements** about digital and gamification competencies. Grade them from 1 to 5, depending on how much you agree with the statement, being five the highest level of agreement.*

1. I think that incorporating ICT tools and platforms into teaching pedagogies is beneficial for teachers and students.
2. I feel confident that the competencies of educators (including myself) in digital competencies is sufficient to incorporate ICTs into teaching.
3. I often implement game-based elements in my teaching/training to assess students or increase their involvement during classes.
4. I do not use gamification in teaching, but I would like to.

BEST PRACTICES IN GAME-BASED LEARNING

*Below you can read **13 statements** about game-based learning. Grade them from 1 to 5 (being five the highest level of agreement with the statement), depending on how important you think they are for any game-based learning experience with students.*

5. Establishing the objective of the game and the rules previously and explaining them to students before starting the experience.
6. Defining previously the possible roles of users in the experience and, if relevant, including the possibility of having different roles: active y passive (observer); leader and followers.
7. Using platforms and digital tools for the gamification experiences that are commonly used and recognizable by teachers
8. Including an attractive narrative and, if possible, maintaining the story line defined during the game and till its finalization.
9. Establishing clear levels in the game experience that gradually became more difficult, with the aim of continuing to challenge users.
10. Including the possibility of feedback between students and educators during the game, specially at the end of a challenge or level.
11. Include challenges and tasks that must be done individually and in teams, to foster both teamwork and autonomous work.

12. Adding the option for the user and the educator of viewing the progress during the game or gamify experience since the beginning (i.e., using avatars or profiles to identify each user and show their progress)
13. Include access to educational material or additional information in the hosting platform of the experience (i.e., videos, tutorials, curricula, etc.)
14. Include graphics, visual elements, music, and videos that are stimulant and attractive for the students.
15. If the objective of the experience requires it, include simulation scenarios (i.e., job interviews) to foster learning by doing.
16. If the objective of the experience is to evaluate students, previously establish the criteria and make the students aware of those criteria and objectives chosen.
17. Establish a reward system (i.e., Points system, ranking, badges, insignias, etc.) that motivate students, but also rewards different qualities such as behavioural attitudes (curiosity, helping other students, devoting more time)

COMMENTS

18. Would you like to share any past or present experience with Game-Based learning techniques, tools, or methodologies? You can do it below:

ANNEX 3

Focus Groups Questioning Template

PARTNER ORGANIZATION:	
DATE AND HOUR:	**PLACE:**
FORMAT (online or face-to-face):	
PARTICIPANTS (VET educators and/or VET students):	**NUMBER OF PARTICIPANTS:**
MODERATOR:	**OBSERVER:**

Introduction: Firstly, introduce the purpose of the discussion and yourselves, introduce the Sparks project and what part the FFGG's discussion plays in the project, finally explain how the activity will be develop and start with introductions. You can use the **example** available in the methodology. **Question 0:** Breaking the ice - Why did you decide to join our focus group today? What has brought you here?
Question 1: 1.1. Do you have **experience with game-based learning**? Have you implemented game elements? Or have you participated as a student in a class that has implemented GBL? **1.2.** What **positive aspects and negative aspects** did you realize during these experiences?
NOTES:
Common Responses:
Noteworthy Individual Responses and Ideas:
Question 2: 2.1. In general, would you say you appreciate GBL in teaching and learning? Do you think **games add a positive input to learning**? 2.2. Could you describe **what** in your opinion **GBL can enhance in teaching and learning**?

NOTES:
Common Responses:
Noteworthy Individual Responses and Ideas:
Question 3: Do you feel like you have the **resources available in VET to implement GBL**? In case the answer is not, what do you think would make **the situation better** (educators- more time for teachers for the planification of these classes, more online resources to help with gamification, etc.; students- more innovative and attractive game experiences, more of these types of experiences in general, etc.)?
NOTES:
Common Responses:
Noteworthy Individual Responses and Ideas:
Question 4: Regarding e-learning. **4.1.** Do you have **access to and knowledge of digital tools and platforms**? **4.2.** (Educators) Do you have the **digital skills** necessary to implement more digital tools into your teaching and to support students with their own gaps in digital? (Students) Do you feel like you have the necessary digital skills to use digital tools? **4.3**. (For everyone) Do you feel like you need **more support** regarding digital instruments (user friendly platforms, tutorials, templates, etc.)
NOTES:
Common Responses:
Noteworthy Individual Responses and Ideas:

Question 5: Would you consider useful **templates that help to implement innovative GBL practices** easily?
NOTES:
Common Responses:
Noteworthy Individual Responses and Ideas:

Sparks

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