

Sparks



GAMIFICATION AND GAME-BASED LEARNING

**BEST PRACTICES AND REQUIREMENTS
FOR DIGITAL ENVIRONMENTS**

Portugal

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Erasmus+ Programme
of the European Union





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

NATIONAL REPORT – PORTUGAL

ECOS-Cooperativa de Educação, Cooperação e Desenvolvimento, CRL

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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 great 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).

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 organizations 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.

The transnational research of Best Practices and requirements in digital environments

The transnational research developed 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 lead by Femxa S.L.U has followed three phases. Firstly, the identification and collection of 48 best practices in game-based learning and gamification experiences, following a unify common criteria tailor designed for the Sparks Project. Secondly, the development of 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 in education and training, validating with incredibly successful results the best practices. None of the key elements included in the survey received an average below an 83% of high ratings (4 or 5).

Thistly, ten Focus Groups 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, as well as the results of the discussions developed during the Focus Groups, were comparatively analyse by the expert researchers of the six organizations, concluding in this transitional final report

The results will be used by the transnational research team to identify the process and system features and the game elements to transfer into a Conceptual Framework for Game-based e-Learning Programs.

Best Practices

Each partner organisation analysed the best practices in game-based learning and gamification for education and training in their country.

The definitions adopted by the research team for "game-based learning" and "gamification" are the following:

- "**Game-Based Learning** refers to the borrowing of certain gaming principles and applying them to real-life settings to engage users" (Trybus, 2015);
- "**Gamification** is the use of game elements and game design techniques in non-game contexts" (Werbach, 2012).

The following pages report the results of the analysis carried out by ECOS in Portugal..

1. Mi.Momo.Faro

Title	Mi.Momo.Faro
Date	2020-2021
Authors	Câmara Municipal de Faro; Faro 2027 Candidature for European Capital of Culture
Geographical scope	Faro, Algarve, Portugal.

Description

MI.MOMO.FARO 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 basic education. With this project, Faro Town hall wants to bring together students, teachers, architects and other experts in modernist architecture, as well as the inhabitants of the buildings, in the potential of this digital tool for exploring our cultural heritage.

The project is also in line with the spirit of the Faro Convention, a framework convention of the Council of Europe about the value of Cultural Heritage for Society, which stresses the importance of cultural heritage as an integral part of Human Rights and Democracy. This promotes a broader, interdisciplinary understanding of this concept and its relationship with society, by establishing rights and responsibilities vis-à-vis cultural heritage, a focus on the promotion of sustainability, access, and the use of digital technology in the context of heritage.

Partners/Stakeholders

- Câmara Municipal de Faro
- Faro 2027 Candidature for European Capital of Culture
- Algarve Regional Directorate of Culture
- Ria Formosa Training Centre
- Europeana Education
- Microsoft
- The National Arts Plan – <https://www.pna.gov.pt/>

Target groups/Beneficiaries

MI.MOMO.FARO brings together **students, teachers, architects**, and other **experts** in modernist architecture, as well as the **inhabitants** of the buildings, in the potential of this digital tool for exploring our cultural heritage.

Schools Participating in the Project

- Escola Básica 2,3 de Santo António
- Escola Básica 2,3 Dr. Joaquim Rocha Peixoto de Magalhães
- Escola Básica 2,3 D. Afonso III
- Escola Básica 2,3 Dr. José Neves Júnior

- Escola Básica 2,3 Poeta Emiliano da Costa
- Escola Básica 2,3 de Montenegro

Context

As part of Faro's application to European Capital of Culture 2027, MI. MOMO.FARO was born, a heritage education project that aims to reproduce emblematic buildings of the city's modernist architecture on the Minecraft platform: Education Edition, by students of 3rd cycle schools in the municipality of Faro.

Developed with the support of Microsoft Portugal and the National Arts Plan, MI. MOMO.FARO is an interdisciplinary initiative involving more than **150 students** aged **13 to 15**, **7 schools in the municipality of Faro**, more than **20 teachers**, among teachers and prominent figures linked to architecture and heritage.

The teachers involved in MI. MOMO.FARO had access to specific training that will allow them to explore pedagogical approaches in the classroom environment, and also have the scientific support of technicians in architecture, urbanism and heritage of the Municipality of Faro. As an example, the online open classes on the Modernist Movement and its specificities in Faro and the Algarve that took place in March 2021.

Objectives

Main Objectives:

- To contribute to enhancing the cultural heritage of the municipality.
- To build the capacity of students, teachers and schools through the contact with new types of learning (game-based learning).
- To raise awareness of the importance of skills in the areas of communication, creativity, curiosity, and complex problem-solving through the educational approach of project-based learning.
- To strengthen heritage education through the use of digital skills.
- To promote collaborative work between teachers and students.
- To encourage the adoption of a European identity and a sense of belonging to the European Union.
- To facilitate the integration of educational practices at a European level and participation by communities.

Process

MI.MOMO.FARO uses the structure of Minecraft, available on <https://www.minecraft.net/>. As mentioned before, MI. MOMO.FARO 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 basic education. **Game Mechanics:** the participants could collaborate between them in order to achieve the objectives.

Results

The results obtained are in line with the objectives of the project, namely:

- To contribute to enhancing the cultural heritage of the municipality.
- To build the capacity of students, teachers and schools through the contact with new types of learning (game-based learning).

- To raise awareness of the importance of skills in the areas of communication, creativity, curiosity, and complex problem-solving through the educational approach of project-based learning.
- To strengthen heritage education through the use of digital skills.
- To promote collaborative work between teachers and students.
- To encourage the adoption of a European identity and a sense of belonging to the European Union.
- To facilitate the integration of educational practices at a European level and participation by communities.

Impact

Accordingly, with the feedback provided by the project coordinators, the results obtained with MI. MOMO.FARO, demonstrate that the initiative was effective in order to achieve the learning objectives and had a huge impact in the participants of the initiative (150 students, 7 schools in the Municipality of Faro, 20 teachers).

"MI. MOMO.FARO starts from the city and the modernist architecture as educational content. It is a proposal that provokes the critical and aesthetic look of the student on the urban heritage and develops learning that gives ample meaning to the notion of building/ house/ place. The project recruits the sensitive gaze (which goes beyond the visible) and, through pedagogical and playful dynamics, shows students the value of the heritage asset, then transforms it into raw material for creativity and innovation." – Sara Brighenti, Sub-Commissioner of the National Plan for the Arts

"At a time of great transformation of teaching and learning, projects of this nature show the importance of using solutions that combine play with teaching, enhancing active learning and putting into practice hybrid teaching. Actions like this one demonstrate the importance of bringing tools like Minecraft to stimulate new ways of learning and teaching." – Sandra Martinho, Director of Education and Philanthropy at Microsoft Portugal

"This is a project that aims on the one hand to enhance heritage education through the use of new technologies, empowering students, teachers and schools through contact with new learning dynamics (game-based learning) and on the other hand to contribute to the enhancement of the cultural heritage of the county, in this case modernist architecture, motivating all those interested in this project to discover the modernist movement in cities of southern Europe". – Bruno Inácio, Head of the Culture Division of Faro Municipality and Coordinator of Faro's candidacy to European Capital of Culture 2027

Limitations

Accordingly, with the feedback provided, there are no limitations or any difficulties encountered.

Related resources

- <https://www.faro2027.eu/mimomofaro>
- <https://mimomofaro.pt/>
- <https://www.instagram.com/faro2027/> & <https://www.facebook.com/faro2027>
- Youtube – <https://bit.ly/3jHGIUJ> (Cerimónia de Encerramento do MI.MOMO.FARO)
- <https://www.sulinformacao.pt/2021/03/faro-coloca-alunos-a-jogar-minecraft-par-a-os-educar-para-o-patrimonio/>

FINAL ASSESSMENT



2. Milage

Title	MILAGE: Interactive Mathematics by implementing a Blended-Learning model with Augmented Reality and Game books
Date	1/09/2015 - 31/08/2018
Authors	Mauro Figueiredo (contact person), Algarve University
Geographical scope	Faro (Portugal); Bodø (Norway); Verdal (Norway); Cáceres (Spain); Mersin (Turkey).

Partners/Stakeholders

- Escola Secundária Pinheiro e Rosa, Portugal
- Nord University College, Norway
- Verdal Upper Secondary School, Norway
- University of Extremadura, Spain
- IES Norba Caesarina, Spain
- CAG University, Turkey

Funding Program: Erasmus+ Strategic Partnerships for School Education (2015-1-PT01-KA201-012921)

Target groups/Beneficiaries

- Students
- Teachers / School Community

Context

Results from the 2012 Program for International Student Assessment (PISA), show that Norway, Portugal, Spain and Turkey are below the OECD average in mathematics, with a mean performance of 489, 487, 484 and 448 score points. The countries that show significant improvement in PISA performance – Brazil, Germany, Greece, Italy, Mexico, Tunisia and Turkey – are those that manage to reduce the proportion of low-achieving students. In Norway, Portugal and Spain about one out of four students, in Turkey about one out of two students still do not attain the baseline proficiency Level 2 in mathematics. The PISA report also concludes that “improvement in performance rarely comes at the expense of equity in education”. There are exceptions to this. “Between 2003 and 2012, Poland and Portugal increased the proportion of high performers in mathematics as they simultaneously reduced the proportion of low performers. Improvements in mathematics performance in Mexico, Tunisia and Turkey, all of which scored well below average in their first PISA tests, are observed mainly among low-achieving students. This usually means greater equity of education opportunities in these countries too.” (OECD, PISA in Focus 2015/01. pp.4). Regardless of the controversy over PISA test results, this situation calls for actions aiming at improving instruction strategies for teaching and learning mathematics.

The MILAGE-Mathematics blended Augmented Game project is looking for improving mathematical performance and achievements for all students including also those in the PISA share of low achievers and the top performers.

In this project we plan to extend the traditional learning environment to a virtual classroom setting that will keep students connected for learning mathematics by the exploration of motivating math tools. Different tools and materials will be explored including (i) a social learning platform to connect students, teachers and parents; (ii) 10th to 12th grade contents on the form of mathematical tasks and its video resolutions; (iii) the use of eBooks and augmented reality technologies; (iv) the exploration of gamification methods and (v) the development of an APP that will be available for smartphones and tablets. We want to take advantage of mobile devices for teaching and learning. The recent availability of smartphones and tablets with increased processing power and usability, accessible on a large scale, allow an exponential expansion of social and participative web technologies. However, among the countries involved in this project, there are variations in the degree of how much mobile devices are utilised for teaching and learning purposes among teachers and students. It is also important to note that these students are the generation of digital games and social networks. In this context it is wise to consider the integration of digital media and mobile devices (iPad, iPod, tablets, smartphones), allowing students to set personal goals, to manage educational content and to communicate with others in the right context. However, according to the EU Commission initiative Opening Up Education (25 September 2013), between 50% and 80% of students in EU countries never use digital textbooks, exercise software, podcasts, simulations or learning games.

We want to implement an approach for teaching and learning mathematics that will also accommodate gaming mechanics that is two-fold: complexity and detail. It will have three different levels of problems complexity: beginners, intermediate and advanced. On the other hand, each problem will have two levels of explanations/resolutions: detailed and concise. In this way, all students will be accommodated in a learning environment centred on the student. The low-achieving students that may struggle to learn the materials covered in class, can study and repeat the materials as many times as they may need to learn. Students will have access to complex problems and activities that may provide additional stimulation for top performers students. Teachers will also be more confident to give homework activities to their students. It is known that it is important to assign homework, to help struggling or underachieving students to learn the material covered in class, to ensure that the material is stored in students' long-term memory, or to provide additional stimulation for high performers. With this project we aim at providing the support so that we can contribute to the improvement of mathematics skills of all students.

Objectives

The main aim of the MILAGE project was to implement a blended model, explore and develop innovative approaches, student centred, for all students, including also the share of low and top achievers' students, supported by ICT tools, to teaching and learning mathematics for the upper secondary education (10th to 12th grade). At the same time, teachers and students also develop skills in information technologies.

Process

The project consortium has developed worksheets of exercises and educational videos that explain its resolutions. To include all students, the project consortium has defined a two-fold approach: **complexity and detail**. They have three different levels of complexity: **beginners, intermediate and advanced**. On the other hand, each problem can have two levels of explanations/resolutions: **detailed and concise**.

In this way, all students are accommodated in a learning environment student centred. The low-achieving students that may struggle to learn the materials covered in class, can study and repeat the materials as many times as they may need to learn. Students have access to complex problems and activities that provide additional stimulation for top performers. Teachers are also more confident to give homework activities to their students. It is known that it is important to assign homework, to help struggling or underachieving students to learn the material covered in class, to ensure that the material is stored in students' long-term memory, or to provide additional stimulation for high performers. But homework can be particularly burdensome for disadvantaged students. Their parents' may not have the skills to help them, they may not have the resources to support them on private lessons. We aim at providing the same support for all the students so that we can contribute to weaker the relationship between students' socio-economic background and mathematics performance. These worksheets of problems were organized in ebooks and in the app MILAGE LEARN+ that was developed.

Results

MILAGE LEARN+ app

The MILAGE Learning+ is an application for mobile devices that has been developed at the University of Algarve, enabling students to access educational content in and outside the classroom. This app works as a support tool for students which provides them with the opportunity to autonomously solve given exercises compiled in worksheets, while also supporting the teacher in managing classroom time, to the extent that the teacher does not have to provide solutions to exercises in the classroom which are already integrated into the MILAGE Learning+ app. In order to stimulate and support the implementation of the various activities proposed, the MILAGE Learning+ app interface incorporates gamification features, segmenting different levels of exercise difficulty to support students with greater difficulties and also motivate more advanced students in learning mathematics. To include all students, the app provides detailed videos with the resolution of exercises for students with more difficulties. There is also a concise video with the essential steps to guide you through the resolution of the exercise. In addition, the MILAGE Learning+ app also includes a self-assessment scheme and peer review to stimulate the student to work independently. The review of the content and the ability to identify key steps in solving exercises allows for the better storage of knowledge in the long-term memory. Within the project, another application was also created – the MILAGE Learning + Teachers – which is a back office, free for teachers and schools, who wish to join the development of content in mathematics teaching, as well as other subjects that can be included in the MILAGE Learning+ app.

The MILAGE Learn+ app is free and is available for Android and Apple iOS.
You can follow a video tutorial about the use of this app here: <https://bit.ly/3klazZh>

eBooks (<https://bit.ly/3yD6b2b>)

You can download eBooks covering the national curriculum of mathematics for the upper secondary schools for Norway, Portugal, Spain and Turkey. The eBook is another tool to extend the classroom in a blended learning model. It is developed with the free and open standard EPUB 3 that runs for both mobile Android and iOS platforms. This specification supports video embedded in the eBook. In this way, students can study using these eBooks, solving available problems and watching the videos available with the problems resolutions, which is especially interesting for learning mathematics. If students do not have Internet, they can download these eBooks at school and study at home even if they do not have Internet, since all videos are integrated in the eBook.

Training Course: Bring Your Own Device (BYOD): Active and autonomous learning strategies with mobile devices

Considering the importance that apps for mobile devices can play in enabling students access to learning contents in and outside the classroom, this course will promote user experiences and reflection debates regarding ICTs in educational scenarios. Teachers will analyse mobile devices integration opportunities into lesson plans. While the focus of teaching remains on the contents, technology can enhance the learning process at many levels and segments in a lesson. Letting students “Bring Your Own Device” into classroom scenarios increases learning outcomes and evaluation scores, as well as students’ engagement in learning activities and subjects. The current students’ generation has grown up with technology and want to use it in every aspect of their daily lives – including school. Students are not just using mobile devices to communicate with friends or download music. They use technology to study or work on homework assignments and believe that mastering the latest technology skills will improve their educational and career opportunities. Therefore, this is an opportunity to promote autonomous work, collaboration and centred student learning.

Course Objectives

- To work the importance of ICT in a classroom setting;
- To promote experiences of innovative methodologies that improve teaching and learning;
- To explore innovative learning activities with mobile devices;
- To practice with educational mobile apps;
- To create digital contents for creative learning scenarios.
- To reflect about the opportunities of using mobile devices for learning.

At the end the participants are expected to:

- To be aware of the pedagogical ICT strategies in the classroom to increase student engagement;
- Use mobile apps available to support innovative teaching and learning;
- Share experiences and ideas with teaching

Training Course: Future classroom: Implemented with the free MILAGE LEARN+ platform

The recent availability of smartphones and tablets with increased processing power and usability, accessible on a large scale, allow an exponential expansion of social and participative web technologies. However, in many countries teachers and students do not use mobile devices for teaching and learning purposes. It is also important to note that these students are the generation of digital games and social networks. In this context it is wise to consider the integration of digital media and mobile devices (iPad, iPod, tablets, smartphones), allowing students to set personal goals, to manage educational content

and to communicate with others in the right context. However, there are many educational apps that it is difficult and confusing to find which ones to use in the classroom, since many times they were developed for a global market that it is not possible to answer to regional settings. At the Algarve University we developed the MILAGE LEARN+ platform that is free and is a tool to support students and accommodates different learning styles. It started with mathematics but it can be used in any discipline. It is now available in English, Spanish, Portuguese, Norwegian and Turkish but it can be translated in any language very quickly. With more than 13 000 students using it, we are working with the Portuguese Ministry of Education to be implemented in all Portuguese schools. It implements a pedagogical model with gamification, self and peer assessment. In order to motivate and include all students, the MILAGE LEARN+ APP incorporates gamification features with different levels of complexity of exercises to support students with greater difficulties in learning and also include more advanced students. The student can also watch educational videos with the essential steps explaining the resolution of exercises. The MILAGE LEARN+ APP also includes a self and peer assessment that aims to stimulate the student's different learning styles, to revise content for the storage of knowledge in long-term memory and to identify key steps in the resolution of exercises. This course will promote teacher experiences with the MILAGE LEARN+ platform that allows also the development of digital, communication and collaboration skills that are needed for XXI century students. All the educational contents of the platform are developed by teachers and students according to their regional settings and needs. This community of teachers and students' producers are made available for everyone. This course will show that any classroom can be transformed in a future classroom using the MILAGE LEARN+ platform.

Course Objectives

Work the importance of ICT in a classroom setting and the MILAGE LEARN+ platform will be used to:

- promote experiences of innovative methodologies that improve teaching and learning;
- explore innovative learning activities with mobile devices;
- create digital contents for creative learning scenarios.
- reflect about the opportunities of using mobile devices for learning.

At the end the participants are expected to:

- To be aware of the pedagogical ICT strategies in the classroom to increase student engagement;
- Use the MILAGE LEARN+ platform available to support innovative teaching and learning;
- Share experiences and ideas with teaching peers.

Impact

MILAGE LEARN+ app model has been tested in real learning environments in all the countries that participated in the project. The app was successfully implemented and it was a fruitful experience for the students and also for teachers. However, the project consortium realized that they have to improve some elements of the architecture in terms of functionality and design to get a mature model. They also realized that the app can be used, not only to teach maths, but also to teach other subjects. In Portugal, for example, the app has been used to teach other subjects, for example, informatics, languages, and other with positive impact. The MILAGE Learn+ app, as mobile technology, also converges with cultural practices that transform learning and have an effect outside the formal

institutions. This mobile technology broadens the scope of teaching and enables new learning contexts within common educational practices. To sum up, mobile devices with Internet connection change the way to access the information, to consume content in informal contexts, to promote active methodologies with focus on students, and to open new ways for virtual interaction. This app provides the possibility for learning math anytime and anywhere, carrying only a mobile device in the pocket. The gamification elements introduced in app were essential to rethink how students learn, and how learners follow new learning patterns and become more autonomous. (Algarve University)

Success factors

According to the project coordinator, there was a great interest in the app for both teachers and students from other schools besides partners. They had outside the project partnership about **140 teachers of mathematics** in Portugal that they trained to use the platform and they have more than **11 000 students using the MILAGE LEARN+ app**. With the collaboration also of those teachers that are working using the MILAGE LEARN+, the platform has already in Portugal, about **2 000 problems and videos resolutions** from the 1st to the 12th grade for mathematics. The MILAGE project was planned for the secondary level but now they have contents for all years. It was also extended its use for other subjects too. We also have about **200 problems and video resolutions for Portuguese, Natural Sciences, Spanish, English, French, Chemistry and Physics for different grades**.

The MILAGE platform is making it possible to build a community of teacher's producers of contents, according to the national curriculum, that are made available for free for students. There are also students working collaboratively and actively making contents for mathematics under the supervision of teachers. In this way, students also develop digital, communication, collaboration and critical thinking skills. With this community it was possible to make a much greater number than expected materials and to have more students using the platform.

The project consortium signed an agreement with the Portuguese High Commissioner for Migration to support about **50 000 students from disadvantaged backgrounds** and with the Portuguese Ministry of Education, to disseminate the app in all schools in Portugal. (Algarve University)

Limitations

Accordingly, with the feedback provided, there are no limitations or any difficulties encountered.

Related resources

MILAGE Publications: http://milage.ualg.pt/?page_id=609

Website: <http://milage.ualg.pt/>

<https://www.adcoesao.pt/content/milage-aprender>

FINAL ASSESSMENT



3. IREC

Title	IREC – INOVAR A RECICLAGEM
Date	2021-2022
Authors	Empresa Municipal de Ambiente de Cascais E.M. S.A
Geographical scope	Cascais, Portugal.
Description	

iRec, an innovative pilot project developed by Cascais Ambiente in partnership with the Nova School of Business and Economics (SBE), will 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. Funded by EEA Grants and the Ministry of Environment and Climate Action, iRec will help to definitively introduce the packaging deposit system that will become mandatory in Portugal in 2022. Thanks to the intervention of TRATOLIXO, responsible for waste management in the municipality of Cascais, the collected packaging will be sorted and forwarded to the partners who have accepted the challenge of giving them a new life.

Partners/Stakeholders

- Empresa Municipal de Ambiente de Cascais E.M. S.A
- Universidade Nova de Lisboa
- Zero Waste Lab

Target groups/Beneficiaries

- Citizens of the Municipality of Cascais.

Context

Recycling levels remain low in Portugal, below the targets set for 2020, 2025 and 2030, highlighting the importance of addressing the existing barriers to recycling. This can be addressed through the design of innovative incentive schemes which motivate and involve the society in recycling activities. Some such schemes have already been implemented in other settings; however, lack of effective monitoring and analysis of project results prevents adequate tests to their effectiveness and the implementation of informed public policies.

iREC will address the challenges mentioned above through an innovative approach to the management of single-use containers, bringing together, towards that end, an experienced team of retailers, collection services, research centers and companies in the waste sector.

Firstly, a pilot scheme for the introduction of incentives to recycling will be implemented in

Cascais, thus covering a population of 206,000 inhabitants and 1,200,000 tourists per year. This will be achieved by setting up 10 "Reverse Vending Machines" (RVM) in the main commercial spaces in the municipality (hyper and supermarkets, shopping centres and the municipal market). The incentive scheme will be based on a "gamification" system, making use of applications which award users for depositing plastic and glass beverage containers and aluminium cans in RVMs with "city points" (which can be converted into various services, such as bus and museum tickets). In order to guarantee large-scale adherence to the incentives scheme, the project will devise and implement a communication plan specifically designed to achieve that goal.

Secondly, the project will test the effect of the incentives scheme on selective collection rates, thus contributing with valuable and unprecedented knowledge which will support decision-making and the transition to the new recycling system, mandatory from 2022 onwards.

Objectives

The iREC project aims at fostering the circular economy. In practice, what will happen is that the beverage packaging we put in the return machines will be collected and put back into the production of new products and/or new beverage packaging.

Process

HELP THE PLANET AND BE REWARDED!

It is very easy to use the machine, here is how:

1. **BRING YOUR PACKAGES:** Empty beverage containers, with label and cap, barcode legible, in their original format: not flattened or damaged.
2. **DEPOSIT THE PACKAGES:** Insert the empty containers, one at a time with the base facing inwards. Only PET plastic, glass and aluminium cans and 0.1L to 2L (water, juices, soft drinks, wine, sangria and beer) are accepted.
3. **REMOVE THE RECEIPT:** When you are finished, press the screen to print the receipt with the barcode. Remove the receipt.
4. **REDEEM FOR PRIZES:** Download the **CityPoints Cascais** app and start using it.

CITY POINTS CASCAIS aims to promote citizenship best practices as well as to recognize citizens, or as we refer to them, super citizens, that is to say, people whose actions are an active contribution to local sustainability. Inspired in gamification, CITY POINTS CASCAIS allows citizens to gather points by accomplishing some predefined actions. A certain number of points can, afterwards be exchanged for vouchers for goods or services provided for different organizations or municipality services. ***How to win points? Available on the APP, the list of point winning actions is frequently updated. At this moment, for example, one can win points by:***

- Recycling beverage packaging (plastic, glass and tin) in one of the 10 machines installed in supermarkets in the county (NEW)
- Donating blood– Adopting a pet

- Using public transports
- Volunteering
- Exchanging school books

What are citizenship actions worth? Actions are rewarded in the areas of environment, citizenship, social responsibility and sustainable mobility. For example, points can be exchanged for:

- Organic products for sale in Quinta do Pisão
- Concert & Show Tickets
- Entrances in cultural facilities
- Nature activities in several locations

As new partners join CITY POINTS CASCAIS, other products and services will become available. Cascais is the first county to use the application, but it is intended that other municipalities will join the system, which will enable synergies and expand the network of opportunities for citizens.

The APP is now available in Android and IOS versions. Just download, log in and start becoming a super citizen!

Results

The project is still in the implementation phase. More data are needed to perform a qualitative/quantitative analysis of the results.

Impact

100 000 packages in the iRec machines - innovating in recycling.

- 100 000 000 packages that didn't end up in our streets, our parks, the sea.
- 100,000 Packaging that will become packaging again.
- 100,000 Packaging which demonstrates the purpose of the circular economy.

Related resources: <https://ambiente.cascais.pt/pt/irec/irec-inovar-reciclagem>

4. Escapando de la clase tradicional

Title	Escapando de la clase tradicional - The methodology of "Escape Rooms" in Spanish classes as a Foreign Language.
Date	2019
Authors	Mário Cruz - Escola Superior de Educação do Politécnico do Porto/ inED - Centro de Investigação e Inovação em Educação/ CIDTFF - Centro de Investigação em Didática e Tecnologia na Formação de Formadores/ Universidad de Vigo - Facultad de Filología y Traducción
Geographical scope	Porto, Portugal.

Partners/Stakeholders

- School of Education of the Polytechnic of Oporto,
- Professors of Spanish as a foreign language.

Target groups/Beneficiaries

The escape rooms were implemented in the School of Education of the Polytechnic of Oporto with two groups of students (BA, MA, PhD students), who were attending either Spanish A2 or Spanish B1.2 classes. All of them are Portuguese citizens and have Portuguese as their native language. Four other students also had French and German as second languages. Most students are between 17 and 25 years old (94%) and are female (70%).

Context

As described by Mário Rui Domingues Ferreira da Cruz, Porto Polytechnic, in the dossier "Escapando de la clase tradicional: the escape rooms methodology within the spanish as foreign language classroom", published in 2019 on the Revista Lusófona de Educação of the Universidade Lusófona de Humanidades e Tecnologias (vol. 46, pp. 117-137): "Nowadays students must be provoked by undertaking activities which allow them to learn essential skills for their success in our local society, as these cater for a new view of the world. Within this scope, we would like to highlight the importance of communication, critical thinking and collaboration, as far as language learning is concerned, as it is the case of our study. Bearing in mind that languages learning may help to contribute towards the development of future citizens, we should (re)think our practices in order to achieve a teaching and learning process which integrate activities that simulate students' present-day life and its routines, and at the same time cater for the fostering of a pro-active citizen who is able to undertake an active role in his/her global society." "Escapando de la clase tradicional": the escape rooms methodology within the spanish as foreign language classroom

Objectives

- Exploring how to use escape room concepts for educational purposes and, more specifically, in Spanish as Foreign Language (SFL) classroom.
- Fostering the development of students' 21st-century skills through escape rooms.

Process

- The objective of the game follows the SMART rule (specific, measurable, achievable, relevant and on time).
- The proposition of the challenge is coherent with the learning objective, original, and attractive. The students were solving a mystery based on popular Spanish TV series, successful on Netflix and well-known among the students.
- The rules of the game are clear and understandable.
- The competition is motivating.
- The practice integrated different challenges, where there weren't gradual levels of difficulty but the challenges were diverse and the narrative motivated the students to face the next challenge.

Moreover, by following an ethnographic methodological approach, a case study was undertaken in which the following data-collection tools were used: a) a pre-questionnaire to figure out students' opinion and experience on escape rooms; b) a final questionnaire to get to know their opinion on the influence of escape room methodologies onto the development of skills; c) field notes, pictures and videos were collected during the application of the escape room activities. Within this case study, students were able to both participate and create escape rooms by following the experiential communicative approach enhanced by hyper pedagogy strategies. Therefore, two educational escape rooms were created, having into account Two Spanish TV series, namely 'Money Heist' ('La casa de papel') and 'Elite' (Élite). Within the first escape room, students had to discover who was the thief behind a microwave's robbery, by solving a series of puzzles related to the revision of some topics, including vocabulary (clothes, trips, environment, mass media), verb tenses, linking words, etc. The second escape room was created by the Spanish B1.2 level students in order to be implemented within Spanish A2 level classes. These students had to unveil who was the one who murdered one of their mate students, by following a couple of leads and solving puzzles and tasks related to the "love and friendship" unit, in which students have to learn vocabulary related to the topic, verb tenses, etc.

In addition, students were able to recreate the escape room to other students adopting new themes, and by the project creator feedback, they optimized the experience.

Escape room for Spanish B1:

Taking the puzzles into consideration, students were enticed before participating in the escape room through WhatsApp messages, according to which they had to figure out the number of the classroom the escape room would take place. Focusing on the puzzles flow, it was followed by a sequential approach, in which students would unveil the mystery by moving from task to task. During the experience, students had the chance to encounter diverse objects which they had to manipulate to fulfil the goal in the end, i.e., finding out who stole the microwaves. The puzzles they encountered were the following:

- 1) A message written backwards which could only be unveiled by reflecting it on a mirror (<https://app.box.com/s/vaulewupuyzl5llyqor2vv0wlsgh0qv6>);

- 2) A crossword puzzle which could be found in the trash bin, and once solved a perforated cardboard could be used to find out the hidden letters G - L - O - B - O;
- 3) A globe with a hidden key, which would let them open a trolley bag which had another task;
- 4) A message with some exercises on subjunctive verbs which if properly solved would unveil the code to open the safe
(<https://app.box.com/s/zvhd5qctuw472lsxnskvphj3l7k7fie>);
- 5) An e-mail message with multiple-choice exercises, in which students had to complete a text in order to obtain an alphanumeric code that would unveil the country the microwave thief would flee to
(<https://app.box.com/s/j0lpqdhmmj5cseqk2qmg6t6x3iakgd5h>);
- 6) A final task with a QR code, which students would have to access to watch a video about the city the thief would be fleeing to and solve some filling-in gap exercises that allow them to unveil the numeric code of the thief's luggage in a deck of cards. In the end, students would find inside the luggage some cards with the letters from the thief's name. Once they ordered them, they had to send a WhatsApp message with their answer (<https://app.box.com/s/7v3gh54irnpys1mijplqvhnnpkelioo>) and would be getting a video of the thief, revealing her true identity.

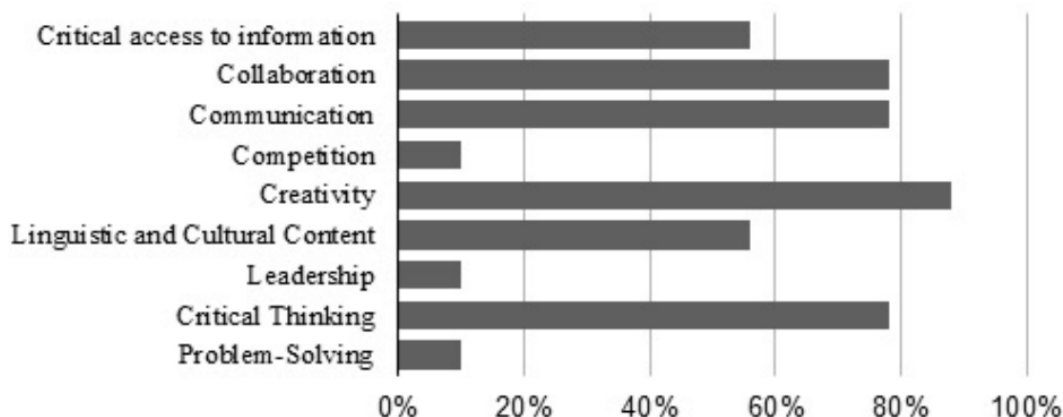
Escape room for (Spanish A2):

The puzzles they conceived were the following:

1. students were introduced to the escape room narrative through an audio recorded by the School of Education Radio reporter, which can be retrieved here: <https://app.box.com/s/i3eu4jlptl3tlc2w8lr2rgtddw8yl2tc>;
2. an envelope with a map and three questions which deal with the Spanish Speaking countries and cities, whose location would give students a code to open a chest (<https://app.box.com/s/dli4oyf093a5t4q13v6ycm6ykhpyzo2>);
3. a chest which entails a QR code with a lady throwing a paper into the trash bin, leading students to look for something in the trash bin itself (<https://app.box.com/s/m9layo5zcyj3cgkvr8m1vhlx3socst2hn>);
4. a love letter written backwards by the protagonist's love, which could only be unveiled by reflecting it on a mirror and whose signature was written in numeric code students had to unveil;
5. a crossword puzzle which could be found in another envelope with had the message "From Nadia to Edgar, with love", and once solved would allow students to discover the word "Literature", inciting them to search for another clue in one of the books present in the room
6. (<https://app.box.com/s/txva1q7ofph63uxv9a18k5a5sg5lfo8v>);
7. a book with a hidden key that would let them open a bag which had another task, an exercise on past verb tenses and words collocation, which would allow students to unveil a numeric code to open Edgar's luggage; 7. within Edgar's luggage, students would get the chance to develop a reading comprehension exercise by having a look at some pages of Edgar's diary (<https://app.box.com/s/0kmaq0g0pki753pe5u1nuosyx9hyvlead>), through which they would figure out that the word "TROFEO" would lead them to discover Edgar's killer by discovering a USB key hidden in the trophy present in the room.

Results

Graph 3 - Skills that the students developed within the design of the escape room 'El asesinato de Edgar' ('Edgar's Murder')



Source: Mário Rui Domingues Ferreira da Cruz, *Escapando de la clase tradicional: the escape rooms methodology within the spanish as foreign language classroom*, Revista Lusófona de Educação, vol. 46, pp. 117-137, 2019.

Impact

When students were asked to assess the escape room they participated in, taking into account the narrative, types of puzzle, organisation of the room, use of technological resources, role of characters, among other aspects, students shared their views regarding

a) its **design**

"It was a very educational experience, as the puzzles were very well done and steps were connected";

b) its **narrative**

"The narrative was incredible (...), the room had a very good organization and drew attention to the different clues, contained real objects but we were able to resort to more technological resources such as mobile phones";

c) the **learning opportunities** it offered

"I think the Escape Room was organized. It helped in thinking, creativity and, in a way, teamwork but in the end we should have access to the different exercises solutions;

d) its **organisation and implementation**

"I think the escape room had an appealing and funny narrative, and that the games used were appropriate to develop our critical thinking. (...) However, I think the number of people was very large and did not allow us to develop any teamwork".

Regarding the skills that the students developed within the design of the escape room 'El asesinato de Edgar' ('Edgar's Murder'), the majority of students considered creativity, collaboration, communication and critical thinking skills as the ones which were fostered while creating the tasks. Some students explained in which ways they had the chance to develop these skills, as we can see in the following examples: "Having created the narrative, I feel I developed my critical thinking considering the purpose of the game and my creativity in inventing a plausible plot. The training in audio editing was necessary"and

“When creating challenges for the escape room I felt that my creativity and problem solving (when we did not get the expected results) were the most developed skills”.

Success factors

Students shall be involved from scratch in the activity by engaging them since the very first moment within the activity. With regard to the methodologies used to achieve these objectives, it was necessary, first, to understand what the teaching of foreign languages and cultures should be like in the 21st century, to gather information on pedagogical approaches appropriate to this type of teaching and to analyse those with which escape rooms are related and help to explain why reasons can be effective. As such, a documentary analysis was carried out on articles and books related to the escape room methodology, taking into account their characteristics and their application in teaching and learning contexts. This analysis contributed to the planning of an escape room and its achievement in a context of formal education, during which some field notes were taken.

Limitations

The time and materials required to implement this practice need to be considered.

Related resources

A practical example:

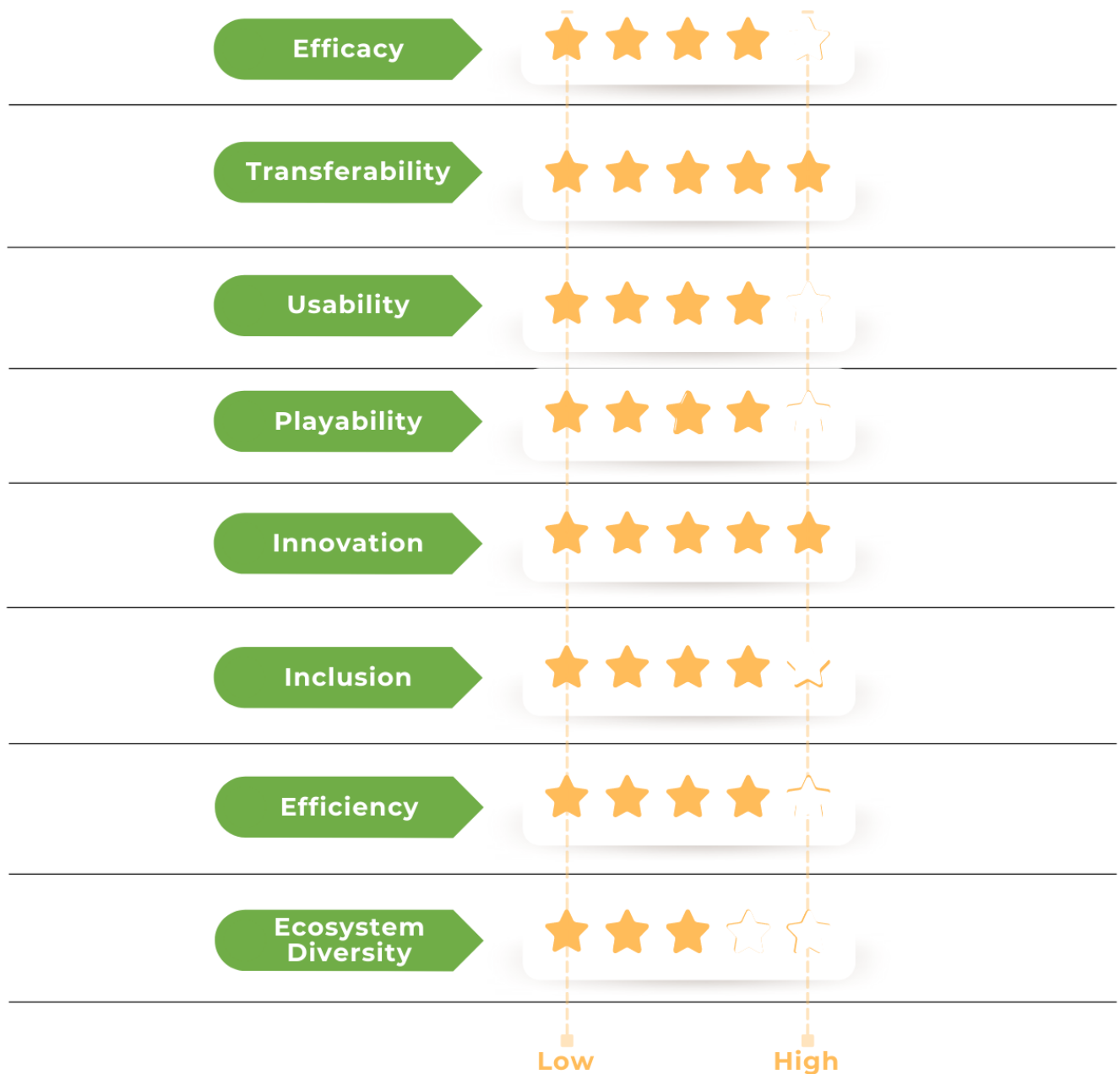
<https://www.education.com/worksheetgenerator/reading/crossword-puzzle/> .

First questionnaire: <https://forms.gle/WdPCZY4tLUaNDcXWA> .

Final questionnaire: <https://forms.gle/wR7oE8fsRqeh7RqE7> .

Video: <https://vimeo.com/user66694393/review/342707300/dbca5d9305> .

FINAL ASSESSMENT



5. Escape 2 Educate

Title	Escape 2 Educate': the "Escape Room" methodology in teaching English in the primary school
Date	September 2019
Authors	Mário Cruz – Escola Superior de Educação do Politécnico do Porto/ inED – Centro de Investigação e Inovação em Educação/ CIDTFF – Centro de Investigação em Didática e Tecnologia na Formação de Formadores/ Universidad de Vigo – Facultad de Filología y Traducción João Almeida Colégio do Sardão/ Escola Superior de Educação do Politécnico do Porto/ inED – Centro de Investigação e Inovação em Educação
Geographical scope	Colégio do Sardão, Porto, Portugal.
Partners/Stakeholders	
English language teachers in primary education, Colégio do Sardão, Escola Superior de Educação do Politécnico do Porto and Centro de Investigação e Inovação em Educação.	
Target groups/Beneficiaries	
The direct beneficiaries were the students from the 2nd and 3rd grade of primary school with ages comprehended between 8 and 10 years old. 43 students were involved in the application of the project 23 from the 2nd grade and 20 from the 3rd grade.	
Context	
Nowadays, the teacher is expected to develop a teaching-learning process based on everyday practices, reformulating the educational and pedagogical context, so that the students become more proactive participative and aware of the society they are part of, simulating characteristics of a citizen of the global era we are living in. Therefore, it is expected that the teacher contributes to the active construction of students' knowledge, based on reflection and collaborative learning which contributes to their true insertion in the community and in a participative (re)construction of the common good.	
Objectives	
The aim of this project was to raise awareness of educational Escape Rooms and motivate their use in Portugal, with a greater focus on how they can contribute to language	

teaching and learning. It was also intended to address the lack of studies on this methodology, namely regarding its application in the Portuguese context and in primary school.

This practice only demanded material resources, but technological devices needed to be used to carry out this practice. The materials used in this project were: tables; chairs; dustbin with crumpled papers inside; two computers; a projector; a mobile phone; papers with written challenges, letters or numbers; an envelope; three boxes; two books; a map of Europe; pouffes; five bottles of water; three packets of tissues; one pair of shorts; one suitcase; a padlock; a safe and a key.

Process

The "Escape 2 Educate" project uses the "Escape Room" methodology in teaching English in 1st CEB. Within the framework of this project, students were locked inside a classroom, and to escape - and therefore win the game - they had to overcome a series of challenges using specific knowledge and skills acquired in English classes.

This Escape Room was made to primary students, with that in consideration the narrative created was based on the animated series The Amazing World of Gumball as it is a theme that all pupils like and so they would be motivated to participate in the game. In this narrative the students would be responsible for saving Gumball and his family. In order to do so, they had to win the Escape Room that the villain had prepared for them. In order for the students to have some adult support, given their ages, a character was introduced as the villain's assistant who was actually a spy trying to frame him. With the spy and pupils in the room the door was locked, and an audio file was played in which the villain explained the rules of the game.

The game was divided into eleven challenges which contained the content review that was passed on during the classes. In the interview with this project counsellor (Mário Cruz), the feedback about the way that the content was inserted in the challenges was very positive.

The challenges of the Escape Room:

Challenge 1: *Here is a picture with Gumball and his family. As you can see, Gumball is already identified, but we still need to tell who the other people are. Write under each of them what family relationship they have with Gumball. Write in English!*

Clue: The password to access the computer is the first letter of each word you write from left to right. "Gumball" doesn't count.

Challenge 2: *Look at the picture of Gumball and his family. The colour of his brother's face is also the name of a fruit. Look around to find the next challenge.*

(There was a picture of an orange posted on the wall and behind the picture was the next challenge)

Challenge 3: *Colour the big blue triangle and the little yellow square. Then cut it out and give it to John. He will know what to do.*

(If the shapes were coloured correctly, the spy would hand out the next challenge)

Challenge 4: *Find the words.* The animals that appear horizontally are in a box. There are several boxes, with different pictures, but only one is the right box, which includes the letter that the students would need for the next activity.

Challenge 5: *Create a new dish.* You can use these words: *milk, chocolate, chips, ice cream, apples, bananas, burgers, sandwiches and cake.* Use this sheet to write down your ingredients. You must use at least 3. You also have to give a name to this food (in English, don't forget!) For this, John and the teachers can help you. Send me a photo so that I can decide whether or not to accept your invention...

Challenge 6: *Not bad...I'll take it. Here's a clue to get you further in the game.*
(This would be a message sent by the villain to the spy's mobile phone, along with a picture of a book that was somewhere in the room and inside him was hidden the next challenge).

Challenge 7: *These are two traditional dishes. From which countries? On the map of Europe that is somewhere in this room, each country has a number on it. If you add up the two numbers that correspond to these countries, you will get the page number of a book. But I'm not going to tell you which book it is...* (The pictures were of a pizza and a francesinha. On the correct page of the book would be the following challenge)

Challenge 8: *On your computer, there is a document that you can only open with a password. The password is the answer to the following question: what are two examples of words about food that are used in English and Portuguese?*
(The Word document contained the following challenge)

Challenge 9: *There is something under an object. That object is not a chair, but you can sit on it.* (The challenge was under a pouf)

Challenge 10: *You may have noticed the bottles that are on the table. You will need something that is inside two of the bottles. And to find out which are the right bottles, you must know the answer to the question: In which languages can you listen to in the song "Échame la culpa"?* (Each bottle had a label with a language written on it. Only two of them contained two halves of a leaf that formed the message "Not everything that looks like rubbish is rubbish". In the bin there was a crumpled-up piece of paper with a key inside and the following challenge written)

Challenge 11: A video is proposed (<https://www.youtube.com/watch?v=pj2AmQ6rWsu>) and students are invited to watch and answer the following questions:

- 11.1 - *In which season does the video take place?*

A chair had a piece of paper attached to it saying, "It's sunny and it's hot", which was the correct answer, and on top of the chair was a piece of paper with a number on it. There were more chairs with papers saying, "It's raining and it's cold" and "It's snowing and it's cold", also with papers with numbers on top, to make it harder.

- 11.2 - *What is Gumball wearing in minute 2:16?*

The answer was "shorts", so students had to find a pair of shorts that were somewhere in the room, which had a piece of paper with another number in one of the pockets.

- 11.3 - *According to Gumball, "procratelamaquión" is a word from which country?*

There was a piece of paper with another number on it hidden inside a packet full of tissues, this package had grabbed a paper with the Mexican flag Mexico flag on which was written "Mexico". There were two more packages, with flags of other countries and also with numbers inside to make it more difficult.

Around the room you will find things related to your three answers, and in these things will be hidden numbers that will be used to... well, you will have to find out for yourself. If you are able to...

The numbers were written out in full and were a combination to open the lock of a suitcase that had a safe inside. This safe was to be opened with the key that the students had previously found in the rubbish bin. Inside the safe was the last letter of the many that they had collected by overcoming the different challenges, to form the word that would allow them to leave the room: "Escape". One of the advantages of Escape Rooms is that the objective is always well defined, to overcome challenges to get out of a closed space. In this project that wasn't an exception.

Results

The results show that tasks based on the 'Escape the classroom' methodology promoted:

- collaborative behaviour amongst pupils
- creative problem-solving and critical thinking in the classroom.
- an engaging learning experience, meaningful and experiential.

The practice proved to be a very interesting and amusing way of fostering the development of skills, not only for those who learn, but also for those who teach.

Student testimonies:

- collaborative work

"I want to unravel problems with my friends again"

"On my own I couldn't solve..."

- development of critical thinking

"It was necessary to connect things I never thought of to solve the puzzles"

"I had to think a lot to be able to solve it"

- communication

"I liked the parts that had English mixed with other languages"

"I couldn't remember some of the names in English anymore"

Impact

During the "Escape Room", students collaborated with each other in different ways to overcome challenges, thinking together, distributing tasks or sharing search sites among themselves to find a clue or challenge more quickly. The enthusiasm with which they became involved was also evident and the feedback obtained was very positive.

Success factors

Students shall be involved from scratch in the activity by engaging them since the very first moment within the activity. At the same time, the Escape Room shall not act as a one-time activity. It should be a frequent activity within the school. At this moment it is integrated into the school practices. Regarding the methodologies used to achieve these objectives, it was necessary, first, to understand what the teaching of foreign languages

and cultures should be like in the 21st century, to gather information on pedagogical approaches appropriate to this type of teaching, and to analyse those with which "Escape Rooms" are related and help to explain why reasons can be effective. As such, a documentary analysis was carried out on articles and books related to the "Escape Rooms" methodology, considering their characteristics and their application in teaching and learning contexts. This analysis contributed to the planning of an "Escape Room" and its achievement in a context of formal education, during which some field notes were taken.

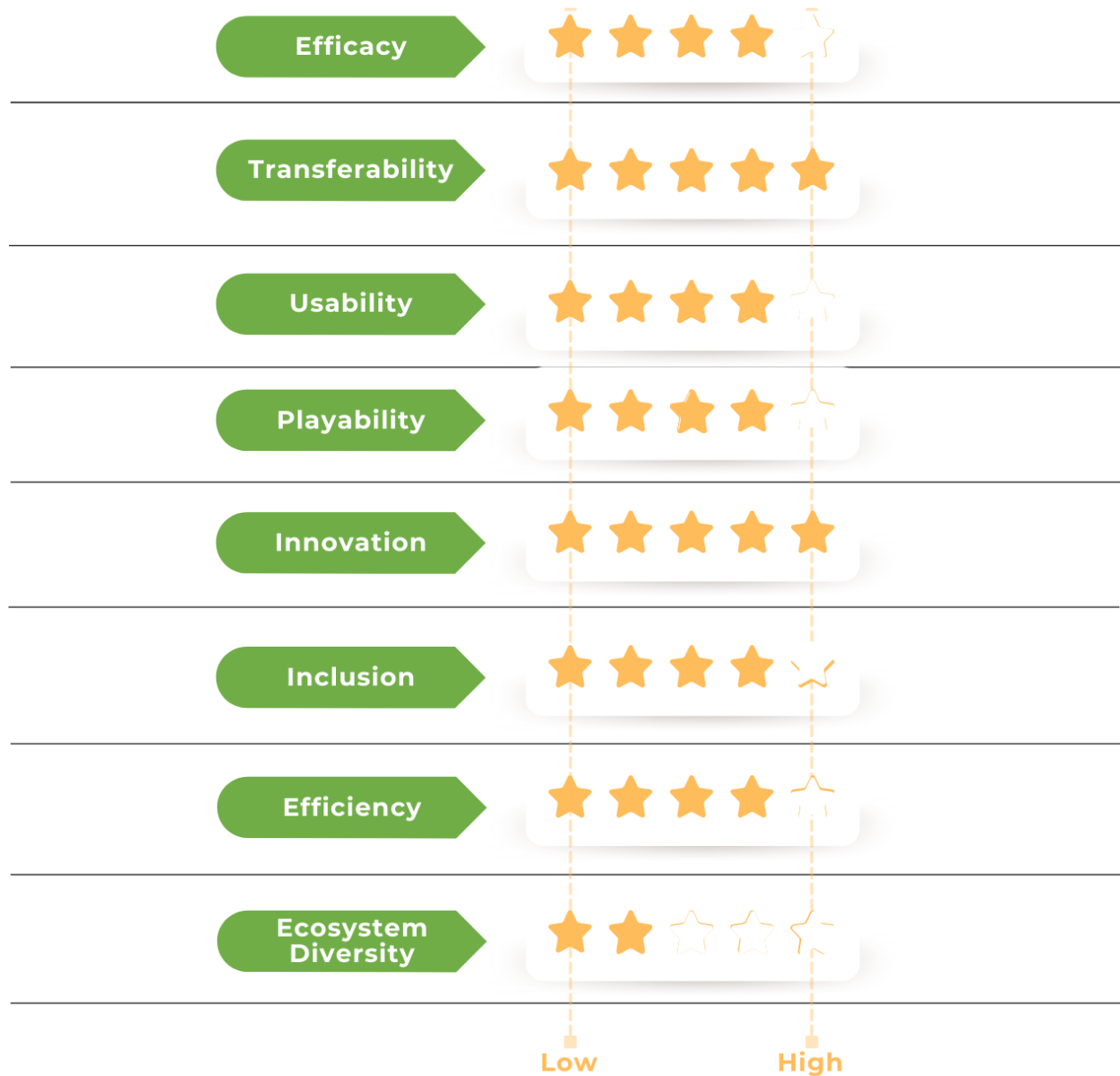
Limitations

The level of difficulty of the challenges can be too linear: there was too much concern about the children not being able to overcome the challenges and thus losing motivation. The creator of the project offered a trophy to the two classes but chose not to include the competition factor during the Escape Room. This narrative was built to primary students but can be adapted to other grades. The time of an Escape Room is usually between 45 to 60 minutes, this one had to be reduced to 30 minutes (5 per challenge) due to the attention span of the children, it was a good and successful adaptation.

Related resources

- <https://parc.ipp.pt/index.php/sensos/article/view/3466>
- <https://blogs.ua.pt/cidtff/?p=25134>

FINAL ASSESSMENT



6. Global

Title	Global
Date	2014
Authors	Instituto Superior de Engenharia do Porto (PT), Virtual Campus Lda (PT), Kaunas University of Technology (LT), Technical University of Gabrovo (BG), Inveslan (SP), Hellenic Regional Development Center (GR), Universidade Federal do Rio Grande do Sul (BR), Universidade Federal de Pelotas RS Brasil (BR)
Geographical scope	The game was applied in Portugal, Lithuania, Bulgaria, Spain, Greece and Brazil.

Partners/Stakeholders

The game resulted from the combination of the expertise of eight qualified entities active in the fields of Higher Education, business and VET, from seven countries:

- Instituto Superior de Engenharia do Porto (PT), experienced in producing and using Serious Games and Virtual Environments for Education and Training;
- Virtual Campus Lda (PT), experienced in providing innovative tools and learning materials for Serious Games;
- Kaunas University of Technology (LT), that provided know-how on intercultural learning and assisting learners on mobility programme by web-based language materials;
- Technical University of Gabrovo (BG), that was responsible for the research and design of the game due to its expertise in language learning and technology supported language learning;
- Inveslan (SP), a SME with expertise on the relation between Higher Education and SME's, development of human resources of SME's and e-commerce;
- Hellenic Regional Development Center (GR), with extensive knowledge of the challenges that European SMEs face in foreign markets and experienced in supporting SMEs' internationalisation and bridging the existing gap between the European Union and foreign markets, by facilitating business-to-business contact;
- The universities UFPEL and the UFRGS (BR), experienced in graphics, including designing for serious games.

The development of the game was supported by the European Agency for Culture, Education, Audiovisual in the scope of the Lifelong Learning Programme, KA2 sub-programme, in the frame of the "Game Based Language Learning - GABALL" project (project no. 531327-LLP-1-2012-1-PT-KA2-KA2MP).

The project benefited also from a close relation with the Serious Games Network (SEGAN), a European network that helped to disseminate the game and the results of the project.

Target groups/Beneficiaries

Global 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.

In the period 2013-2014, the game reached over 1.500 people. Available disaggregated data of the direct beneficiaries are limited to the initial alpha testing stage, aimed at assessing the first prototypes: this stage was conducted independently in the six different countries involved in the project, and participants were mainly researchers (30), students (18) and SME managers (17), 62% male and 38% female. The average academic age was 30.3 years old, and the managers were 38.6 years old on average.

Indirect beneficiaries of the game are SMEs managers and VET providers that can use the game to provide their staff or learners with an innovative learning experience.

Context

The Global game was developed by the GABALL Project Consortium in response to the need for the internationalisation of European businesses, to enhance growth and increase jobs in Europe. The partners sought to develop intercultural and inter-communication skills of European managers, who intend to internationalize their companies to facilitate employability and European competitiveness, and of future entrepreneurs so that they are aware of this need.

Objectives

- Reinforcing interpersonal and intercultural competencies relevant to the SMEs internationalization and e-marketing/e-commerce to facilitate competitiveness;
- Bridging the worlds of personal and cultural valorisation within work by supporting SMEs managers and HE students throughout individual and flexible learning pathways;
- Developing the integration of learning with working life, promoting conducive learning environments at the workplace and work-placed training as the basis for developing their learning objectives autonomously vocational skills relevant to the labour market.

Process

Global is a serious game that provides rule-based, professional, real-life situations and contexts of interaction where the player, through a trial and error based approach, can achieve autonomously their learning objectives while improving teamwork, social skills, leadership and collaboration, and increase their motivation and engagement. It is designed to develop language competencies and the skills related to how successfully do business abroad: legal and institutional environment, markets and innovations, tax and finances, international networking, intercultural differences.

The storyline is based on the central character of an entrepreneur that wants to internationalize their company into a specific market (Europe, Brazil). When the player starts the game, they can choose between **six** different international socio-cultural role-playing **scenarios**.

- The first scenario diagnoses the players' **internationalization readiness**. It assesses their language skills, communication skills, IT skills, multicultural competencies, knowledge of international markets; analyses whether their company is already in a situation suitable for internationalization; and identifies whether their internationalization objectives have been well defined and if challenges were accurately anticipated and measured.
- The second scenario, named "**Participation in a Fair**", helps learners to develop networking skills: appropriateness, and effectiveness of the participation, knowing how to advertise the participation, looking for funding opportunities, making contacts with the organizers of the fair, making arrangements, negotiation, application for stands and logistics.
- The third scenario deals with various aspects of "**Business Culture**", such as greetings, gift-giving, dress code, communication styles, meetings and negotiations. Furthermore, players can gain basic foreign language knowledge. Finally, they have to prepare for the first meeting with local partners in Bulgaria, Greece, Lithuania, Portugal, Spain or Brazil.
- The fourth scenario, dedicated to **e-Commerce and e-Marketing Management**, analyses the existing knowledge in these areas and guide decisions towards internationalization through e-Commerce. Emphasis is given to both strategic planning and practical skills. In this scenario, players will be meeting the team in charge of helping them set up their online presence.
- The fifth scenario deals with **Online Communication** and aims to promote collaboration skills in business internationalisation. It also fosters language competencies, technical and non-technical skills like time management, communication tools (phone, fax, e-mail, video conference, online conference devices, blackboard, etc.), information management, etc. In this scenario, the player is challenged to set up business agreements with a foreign partner.
- The sixth scenario is dedicated to **Institutional Negotiation**. Players need to look for specific administrative entities and documents required to set up their business' international branch in Brazil.

Each scenario is independent and takes about one hour to be completed. Players can follow any scenario at any given point, and their status in each scenario is saved so that they can interrupt it, start a new one, and then restart the previous one where they left. They can also opt to reset a scenario and start from the beginning. Each scenario is composed of 4 to 6 locations, each corresponding to a horizontal scrolling background and containing characters and/or items. In each location, there are 3 to 4 challenges for the player to overcome, which can consist, for example, of speaking with other characters, interacting with the environment or solving custom mini-games. To progress to a new location, the player must complete all the challenges of the current location. After three failed attempts to complete a challenge, a tip will be available to the player. The player will receive a score per challenge which will add up to give the player the complete score for each scenario. This way, the player can repeat a scenario to achieve a higher score. There is no loss situation. Thus, the player can always progress through the tip system. However, the score reflects the choices of the player. In each challenge, he receives an explanation of what they should have done to learn and score higher in the next attempt.

While playing the game, users can experience scenes of daily life at work and choose between different behaviours: international networking clusters; virtual parks; online

collaboration; participation in a fair; attend the event; manage an international network, negotiations, agreements; social networking through exhibitions, events and other activities, such as culture greetings, timing (meals, rest, leisure); visit other companies; culture of relations at and out of the working place; relations in an international company.

Globalball adopts primarily a first-person point of view: the player is represented by the main character and follows a narrative as the character. The player first chooses the avatar, which helps them to make decisions in various real-life situations, to deal with different clients, business partners, deciding how to react to strange requests and how to balance his time and make rational decisions. The dialogues are represented in a branching story where the player must choose between different options, which are never obvious or evident. The next scene is determined by the previous choice and sometimes randomly picked from a pool of possibilities to make the user engage with the story even when playing again.

In addition to the main first-person story, all scenes within the game contain different challenges in the form of small mini-games. These mini-games vary in style, from word searches to problem-solving. The final comments encourage the player to state how they think they have performed. Furthermore, feedback is generated by the system and displayed: users can check their behaviour during the game experience and reflect on it. Finally, to better reflect on the differences and the experience, users will be able to review the dialogues. Therefore, with self-evaluation processes, users are motivated to reflect on their actions and choices during the game.

The **gameplay** style is based on a mix between a point & click graphic adventure, a visual novel, and an RPG.

The **game design** style is based on a combination of photo-realistic backgrounds and rendered 3D models of characters and objects.

The **game development** was done using Unity3D, C#, .NET Framework, Windows Forms, Microsoft Visual Studio, Git / BitBucket, Audacity and Blender.

The game is available for 6 different platforms: iOS, Android, Web, Windows, Linux and OSX and in the major app stores, such as Apple Store and Google Play.

Results

Data available, updated to 31.01.2015, shows that the game was downloaded by 1.500 people in one year who:

- increased intercultural, languages, communication, personal and social competences;
- gained knowledge of the process of finding the financial and operational resources needed to organize a fair;
- learnt how to successfully communicate with different business representatives;
- learnt basic words and expressions in different languages for relevant business situations;
- gained knowledge of cultural differences in business and learnt how to communicate with different business cultures in order to facilitate the business internationalization;

- improved knowledge, skills and competences in the fields of e-commerce and marketing;
- improved their communication skills, in communicating through ICT tools, using appropriate written communication in different business situations and managing information in the communication process;
- learnt the legal, financial and practical requirements to set up a business in a foreign country.

Impact

The game increased the motivation in learning of the beneficiary HE students, European managers and others staff in EU countries who are involved in internationalisation activities, generating a growing interest in learning through role-playing scenarios concerning real situations and professional issues, which combine the challenge of a game with a safe place to practice real-life skills.

Success factors

- The game is challenging
- The storyline is clear and relevant for the targeted topics
- The player feels the outcomes of their actions
- Elements of luck are adequately inserted in the game
- Game mechanics are adequate to the target group and to the content
- Good play is adequately rewarded
- Ease of use (appropriate User Interface, intuitive interaction with the system, easy installation process)

Limitations

During the first pilot test of the game, the project partners collected the following qualitative comments for what players were less satisfied:

- some parts of the games were too static;
- the game can become repetitive;
- the 3D models do not look natural;
- too much control of the user actions.

These aspects were improved in the final version of the game.

Related resources

Presentation of the game:

<https://docplayer.net/5196529-A-business-serious-game.html>.

Global App:

<https://play.google.com/store/apps/details?id=eu.virtualcampus.global&hl=it&gl=US>;

<https://apps.apple.com/us/app/global-manager/id935462624?mt=12>.

Papers:

https://www.researchgate.net/publication/273425857_GABALL_Project_Serious_Games_Based_Language_Learning;

<https://aipo.es/files/actas/17-Serious%20Games.pdf>;

https://ijac.org.uk/images/frontImages/gallery/Vol._3_No._9/5._58-68.pdf.

FINAL ASSESSMENT



7. Triple Europe Game Project

Title	Triple Europe Game Project (Make a Change – Triple Europe Game & Europe Quiz Games)
Date	From 15th Jan 21 to 15th July 21
Authors	Paulo Costa (paulo.costa@rostosolidario.pt) contact person, Rosto Solidário/ Plataforma ONGD
Geographical scope	The Triple Europe Game initiatives took place online and presently. The online sessions covered the entire Portuguese territory. In the face-to-face modality, the sessions took place mainly in the north of Portugal (Santa Maria da Feira and Ovar districts).

Partners/Stakeholders

The technical project partners were Tree Collective Change (@treecollectivechange) who did the research, concept, and content for the games and the creative agency Olho do Cão implemented the graphics and design tools.

Financially, the project "Towards an open, fair and sustainable Europe in the world – EU Presidency Project 2020-2022" was funded by the European Union and implemented by the Portuguese Non-Governmental Development Organizations Platform (Plataforma Portuguesa das ONGD).

Target groups/Beneficiaries

Intermediary:

The actions mobilized youth workers, educators, youth leaders, Eurodesk multipliers, and their respective entities working with young people.

Final Beneficiaries:

Youth (from 15 to 30 years old)

Number:

- 143 youth leaders, youth coaches and Eurodesk multipliers trained
- 847 young people sensibilized.

Context

These games and its initiatives intended to promote the critical awareness of young people about the role of European policies using gamification strategies.

These games are also new tools that youth workers and multipliers of the Eurodesk Portugal Network can have accessible to work with young people, in a fun and lighter way, to create awareness on important themes such as Global Challenges, Global Citizenship and Sustainability.

Additionally, the project also was aligned with the themes of development, human rights, the role of civil society, the 2030 Agenda, and policy coherence.

Make a Change – Triple Europe Game is a Role Play concept game that was developed for three distinct themes/scenarios: climate change, migration, and food security. It allows to go deeper and to live / simulate different scenarios and to think and put people in the shoes and vision of the other part/entity. The three proposals have a script with instructions, additional information with arguments tips and all the description for the facilitation.

Europe Quiz Game: It's a board game, based in questions cards with multiple choice, true or false, or complete the sentences as replies. The cards test the knowledge of the players regarding these six themes: Trade and Finance; Food Security and Responsible Consumption; Security and Development; Migration; Climate Change and Agenda 2030 and Portuguese Presidency of the EU Council

Both games had the possibility of dynamization in virtual format and in face-to-face format (having the production and physical distribution or files of the tools available for printing)

Objectives

What is the purpose or objective of the practice?

- Contributing to increase the knowledge and awareness about European policies;
- approaching the themes of development cooperation in a clear way;
- contributing to a better understanding of human rights, the role of civil society, Agenda 2030 and policy, coherence for sustainable development;
- enabling a better understanding of global interdependencies, the European Union-Africa relationship;
- allowing to awake a greater interest for a global vision with a view to social justice and the common good;
- increasing the knowledge about sustainability, the Sustainable Development Goals and climate change has been enriched;
- allowing the creation of a more conscious opinion about the topics.

Make a Change – Triple Europe Game goals:

- To problematize Policy Coherence for Development and critically reflect on the role of the EU in some of today's major global challenges.
- To increase the raising awareness and knowledge, among young people, around the themes of Climate Change, Migration and Food Security.
- Develop individual and interpersonal skills of negotiation and conflict diagnosis and resolution, in a logic of joint and collaborative learning, using the role-play method assumed as a pedagogical process of experimentation, interaction and communication.

What is the technology needed to develop the practice? Does it fit the objective to be achieved with the game?

Besides the produced/physical tools, digital tools (Website animations, Jamboard, Mentimeter, Mirowere) used to implement the games, make them available and more dynamic to play online and face-to-face.

It does fit the goal of the games.

Could have a more dynamic and appealing interface though (different programming language), but due to the budget it was made with the resources available.

Process

Explain, step by step, the process of the practice to facilitate its understanding and reproduction.

Make a Change – Triple Europe Game

Promote the discussion between different actors about the following issues: climate change, migration, and food security Each of these global challenges is materialized in a thematic negotiation panel, in which the problem is presented and with the participation of different social and institutional actors:

- Representatives of the EU Delegation
- Representatives of the Country Delegation
- Economic Groups
- Representatives of Social Economy Organizations and Activists
- Youth Group

The goal is to present different arguments, defend them and get into a final negotiation decision between the different parties' interests.

Europe Quiz Game

Explain the concept and rules of the game.

Define the teams (number of players – 3-4 elements, define a team name, spokesperson who will transmit the final response and decision of the team (players from the same team should discuss the right reply to give), the person who will throw the dice and move the pawn in the board game). Each team had 1 minute to decide and communicate the chosen answer.

Give instructions about the cards and its six themes: Trade and Finance; Food Security and Responsible Consumption; Security and Development; Migration; Climate Change and Agenda 2030 and Portuguese Presidency of the EU Council

Each team if they win can reply to two questions at each round.

Throw the dices to move the pawn and check which theme or extra rule they must do as a move.

Besides the normal questions houses/cards, there are challenges houses/cards, and they should do what the card tells to.

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: 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.

Make a Change: Role play game so the participant has a role to play in the narrative that gives him the need to inform himself about the content

Europe Quiz: Cards with questions that have multiple choice, true or false, or complete the sentences as replies, testing the knowledge of six themes: Trade and Finance; Food Security and Responsible Consumption; Security and Development; Migration; Climate Change and Agenda 2030 and Portuguese Presidency of the EU Council

- 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?

Yes

(2) Proposition of the challenge, is it coherent with the learning objective, is it original, is it attractive?

yes

(3) Rewards/reward systems: is the reward management model defined, is it directly related to the learning object?

Yes (more at the Europe Quiz).

(4) Are the rules of the game clear and understandable to the user?

Europe Quiz Game Yes. **Make a Change – Triple Europe Game** Yes. This game may be difficult to understand but the guiding material available is very clear and gives good support to the facilitator and to the players.

(5) Is the competition motivating? Yes

(6) Existence of different levels of difficulty. Try to make less or a greater number of rounds.

- Development of the game considering the interface: what are the usability conditions?

Online and face to face, the Make a Change game was created to be played face to face but with the covid 19 restrictions the game was adapted to digital environments and the usability depends a lot on the facilitator work in providing the best explanation of the game. Europe Quiz was developed in the same way but it's simpler to play and to understand.

- Indicate whether a pilot test has been carried out to verify that it meets all the requirements initially proposed.

Yes, it was made a pilot test with a group of European volunteers. Their feedback was positive and they appreciated the experience, one thing mentioned by the interviewee was that it was important that the players had self interest in the themes involved in the game.

- Indicate whether the game has been validated: have all the problems and deficiencies encountered during the fine-tuning been debugged?

Initially the games were thought for a more physical version /sessions.

-Due to the pandemic context and the confinement that occurred in January and the following months, most of the sessions were done online, as well as the whole strategy of dissemination.

-The questions were too difficult at the beginning of the proposal so they had to readjust it to be more understandable and to decrease the frustration level of the players.

- Online access to the tools: specially cards and movement/animation was required to create a more dynamic way of playing (in questions and answers card faces).
 - Uploading every card individually took many resources (specially time)
 - **Indicate whether the same practice has been successfully replicated.**
- Yes, it was replicated by other youth associations on a national level and young people started to play also privately and with friends and family.

Results

- 143 youth leaders, youth coaches and Eurodesk multipliers trained:
- 847 young people sensibilized.

52.9% from 17 satisfaction inquiries evaluated the games' proposals as "very satisfied" and the other 47.1% as "satisfied". In addition, the questionnaire made included seven more statements related to the knowledge gained after playing the games and most of the answers ranged between "totally agree" or "partially agree" to the following statements:

- The game contributes to increasing knowledge about European policies.*
- The game clearly addresses the themes defined for development cooperation.*
- The game contributes to improve understanding about human rights, the role of civil society, Agenda 2030 and Policy Coherence for Sustainable Development.*
- The game enables a better understanding of global interdependencies, the European Union-Africa relationship.*
- The game allows awakening a greater interest for a global vision with a view to social justice and the common good.*
- Knowledge about sustainability, the Sustainable Development Goals and climate change has been enriched.*
- The game allows to create a more conscious opinion of the topics covered in it.*

No. of visits to the organization's institutional website: 255

No. of people reached on social networks (Facebook, Instagram and LinkedIn): 9866

Impact

The participants could broaden their knowledge on these issues, becoming more aware of the world's problems, making people around them aware, and potentiating a change in their attitudes towards these issues.

Check some testimonies from Europe Quiz Game and the project in this video https://youtu.be/_CmTpWm4nXY (at 7 minutes)

Success factors

Due to covid 19 restrictions more online sessions were organized and that allowed to reach more people.

Limitations

Limitations to play face-to-face sessions (number of people allowed at schools or other places/ organized sessions) due to Covid restrictions.

Related resources

<https://rostosolidario.pt/triple-europe-game/>

Promotional video: <https://www.facebook.com/watch/?v=1154112908423873>

Triple Europe Game-Make a change

<https://rostosolidario.pt/triple-europe-game/triple-europe-game-online/>

<https://rostosolidario.pt/wp-content/uploads/2021/04/TCC-triple-europe-game-instrucoes-vFinal.pdf>

Europe Quiz

<https://rostosolidario.pt/wp-content/uploads/2021/04/TCC-europe-quiz-instrucoes-vFinal.pdf>

<https://rostosolidario.pt/triple-europe-game/europe-quiz-online/>

<https://rostosolidario.pt/triple-europe-game/europe-quiz-online/cartas-desafio/>

<https://rostosolidario.pt/wp-content/uploads/2021/04/Tabuleiro-vFinal.png>

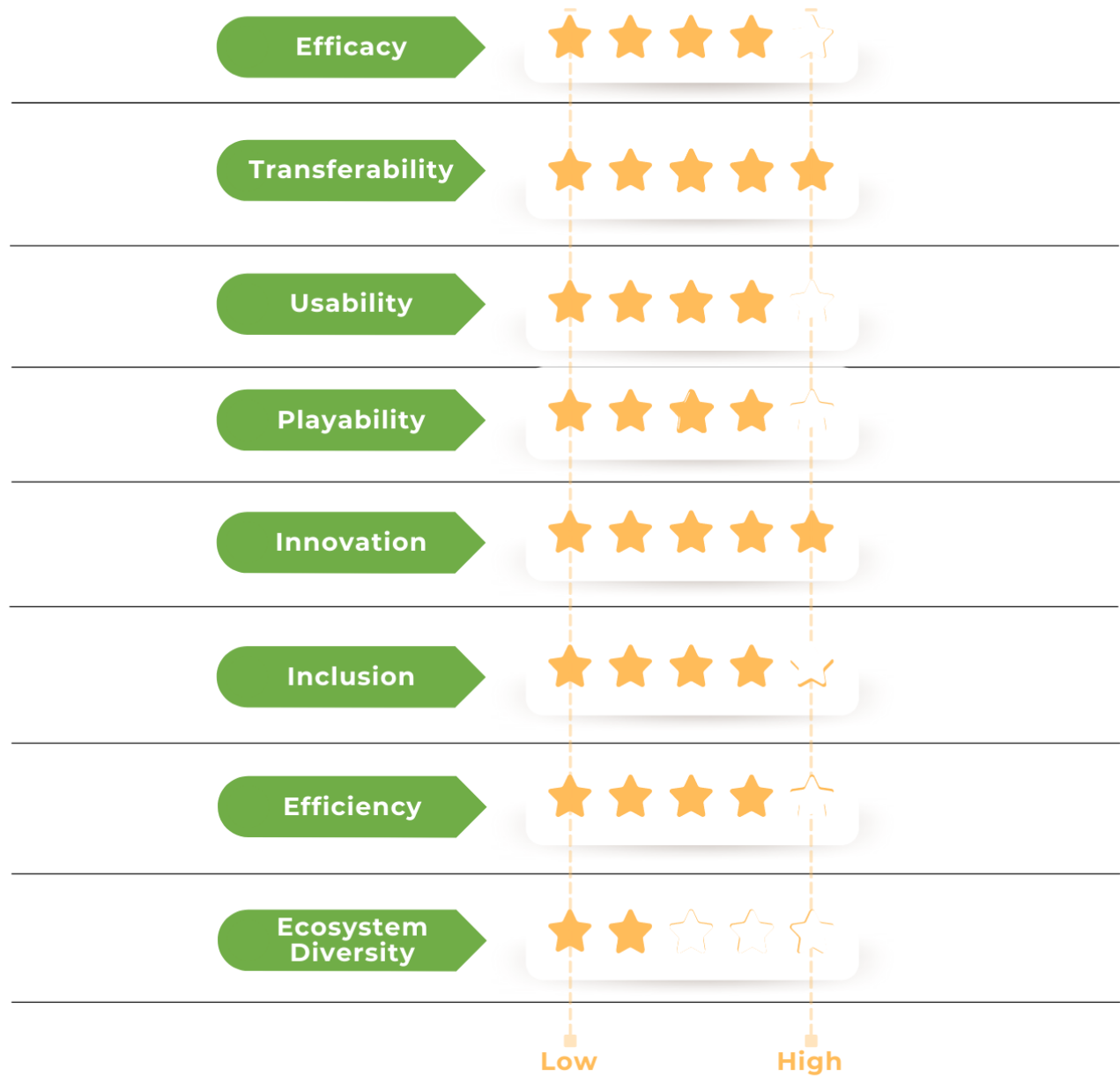
<https://www.dados-online.pt/>

Video that explains more about the funding, global project concept and initiatives, responsible organisation, participants.

Triple Europe Game project https://youtu.be/_CmTpWm4nXY (at 7 minutes)

Paulo Costa (paulo.costa@rostosolidario.pt) contact person from Rosto Solidário.

FINAL ASSESSMENT



8. YES! Gam-EU

Title	YES! GAM-EU : Youth Engagement Strategies and Gamification in the EU
Date	2018–2021
Authors	Youth For Exchange And Understanding International (BE) Sdruzenie Aktivno Balgarsko Obshtestvo (BG) Dypall Network: Associacao Para O Desenvolvimento Da Participacao Cidadã (PT) Associazione Promozione Sociale Lafenice Associazione Sportiva Dilettantistica (IT) Sauga Avatud Noortekeskus (EE)
Geographical scope	Belgium, Bulgaria, Portugal, Italy and Estonia.

Partners/Stakeholders

- Youth For Exchange And Understanding International (BE)
- Sdruzenie Aktivno Balgarsko Obshtestvo (BG)
- Dypall Network: Associacao Para O Desenvolvimento Da Participacao Cidadã (PT)
- Associazione Promozione Sociale Lafenice Associazione Sportiva Dilettantistica (IT)
- Sauga Avatud Noortekeskus (EE)

The project received financial support under the European Youth Together grant scheme funded through the Erasmus Plus Programme of the EU.

Target groups/Beneficiaries

The practice targeted youth workers and young people.

Context

Youth civic engagement remains one of the subjects that young people ask the EU to prioritise. According to their views and ideas, as collected through the “Future of Europe” study, one of the main reasons for the lack of engagement is the inherent lack of knowledge about the EU and EU policies, programmes and opportunities as well as what the EU does for local communities and its citizens directly.

Objectives

- Informing and raising awareness about the EU opportunities through innovative media channels in multiple languages, by engaging young people through an online simulation gaming platform and app and by creating virtual reality educational tools;
- provide educational workshops and events for young people and youth workers to know about EU policies and priorities in the field of youth and to become multipliers of EU values Provide large-scale creative, experiential and immersive learning experiences for YP.

Process

The explanation of the games process will be based on three games created in the project corresponding to the ENGAGE CONNECT EMPOWER games. Engage – Game – Shattered Timelines – engage the players and show them a few things about EU. After someone traveled in time, this timeline got damaged and many EU regulations got lost. Help people from all around Europe regain things they lost or forgot, find the flags in all the countries and fix the timeline in this point-and-click game. The narrative it's interesting but it can be confusing to play. Possibility to choose an avatar and to get to know a lot of things about the EU, consider it to be a good practice to know more about the EU. It's available in 6 languages so it can be replicated. You can collect objects, for example catch cans from the floor which promotes climate and pollution awareness.

Connect – Game – MEP for a Month – connect the players with the Members of the European Parliament by turning them into a MEP and see what they do within a month – The timeline is not completely fixed yet and you suddenly find yourself in the shoes of a Member of European Parliament. Destiny is calling you and now you have to learn what MEPs do on a monthly basis. Your choices and actions will affect your performance at the plenary meeting in Strasbourg. A game that explains how some entities from EU work and the role of a MEP and how he can involve himself with those entities. The game offers rewards, it's interactive and the challenges are interesting. The content is well integrated within the objective.

Empower – Game – Roadtrip for a Change empowers the players by telling them a story about how to try and send a proposal in the Parliament procedure. Once again you find yourself in someone else's shoes. This time you will journey across seven European Countries as an activist, your goal is to get at least one million signatures, this way you will manage to have a meeting with an MEP and get your proposal enter the Parliamentary procedure. But it won't be an easy task, you will need to learn a few things about raising awareness about your cause and you will need to do it fast.

A game where you can learn a lot of things on how to fight for causes and human rights, the challenges were enriching and motivating. The rewards were the signatures collected in each challenge, this allows an evaluation on the answers and students levels on the topic.

These three games are all played in a similar way, all with avatars, rewards well defined, challenges with crosswords, and find the object scenarios. In one of the pilot test made with a class from the vocational youth technician course, they appreciated the game and the existence of avatars. They said that they managed to acquire new knowledge about the EU in a motivating way.

Results

The main results of the project are: 9 applied games on the topics of EU identity, values and history; Engage/Connect/Empower stories and games based on human rights education approaches regarding social inclusion, migrations and diversity. Guidelines on gamification in youth work and non-formal education Recommendations for a better

Europe created by young people Bringing Europe closer to youth people – educational tools and approaches.

Impact

The practices managed effectively to produce the desired outcomes, and thus making Europe closer to young people, increasing their knowledge about the European Union, institutions, policy-making processes and opportunities to get engaged.

Limitations

The authors faced the the following obstacles:

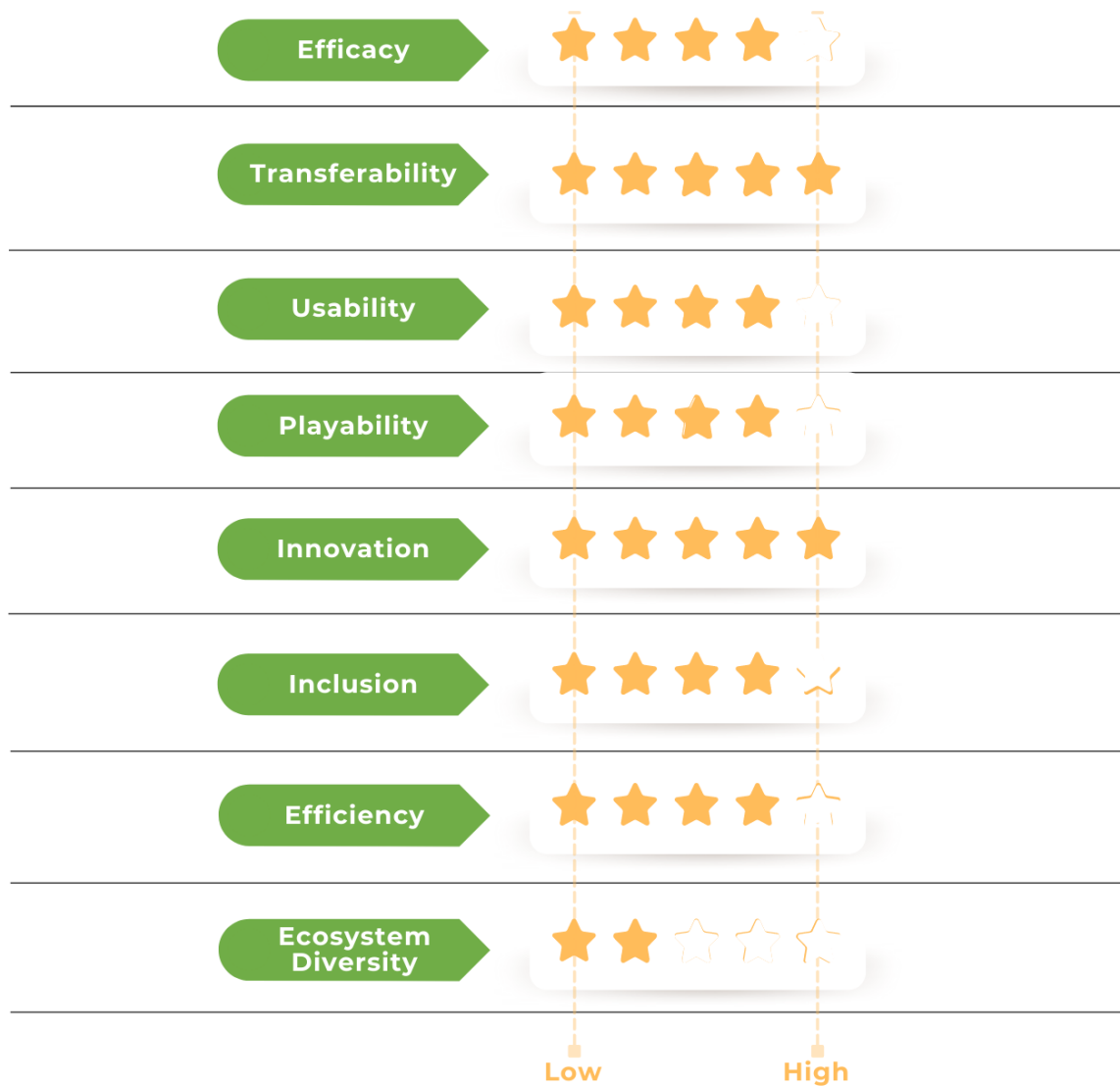
1. Creating many animated characters. Full 2D animations can be pricey and slow to design, 3D characters are pricey but can be easier to animate (if the character is simple). The solution they came up with was to blend them together, we made 3D animation of 2D characters (a solution well known in the modern game industry). This way they could achieve a smooth animation with the lowest possible production toll.
2. The reconstruction of Europe's map for Engage in a fixed screen format that allowed the player to recognize the different Countries.
3. The screenplay writing for the characters, their stories and storylines, the game design for puzzles and the objects to collect and use.
- 4.

Related resources:

<https://gamifyeu.org/>

<https://gamifyeu.org/wp-content/uploads/2021/07/publication-GamifyEU-FINAL-3.pdf>

FINAL ASSESSMENT



Surveys Analysis

An online questionnaire was designed **to validate the best practices** collected in game-based learning in the six European countries involved: Spain, Italy, Greece, Romania, Portugal, and Poland. The survey aimed to gather the VET experts' perspectives on the innovative experiences, game dynamics, mechanics, and components researched by the Sparks consortium.

1. Methodology

The research work followed three main phases:

1. Design of the quantitative research tool;
2. Fieldwork;
3. Data Analysis.

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 Portugal, 40 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) *Analysis* of the data.

- 4) Drawing *conclusions* based on the results of data interpretation.

Phase IV: Final Document elaboration

The last phase of our comparative research is developed in the Final Report, where the consortium analyses the results of the desk research in Best Practices in GBL together with the results of the validation survey performed and the results on the Focus Groups research the needs in VET.

2. Survey Results obtained in Portugal

The first block of questions aimed at obtaining a **general picture of the target group of educators**. It includes essential information, such as:

- the type of entity the expert belongs to, including initial or continuous vocational center/provider, adult education center/provider, youth center, non-governmental organisation or foundation and other VET providers;
- the job position occupied, including teacher, coach or mentor, trainer, coordinator, administrative staff, management role, social educator or worker and other.

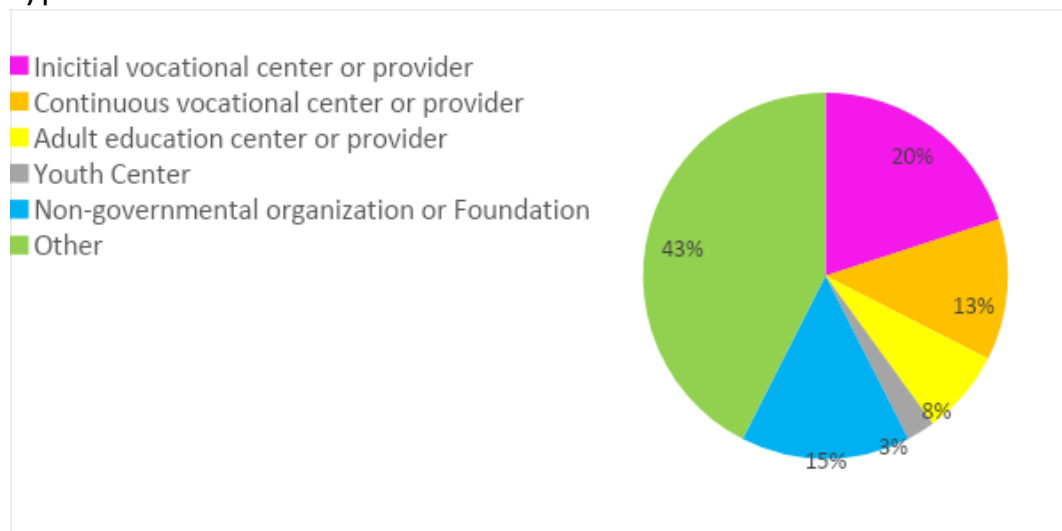
40

Responses

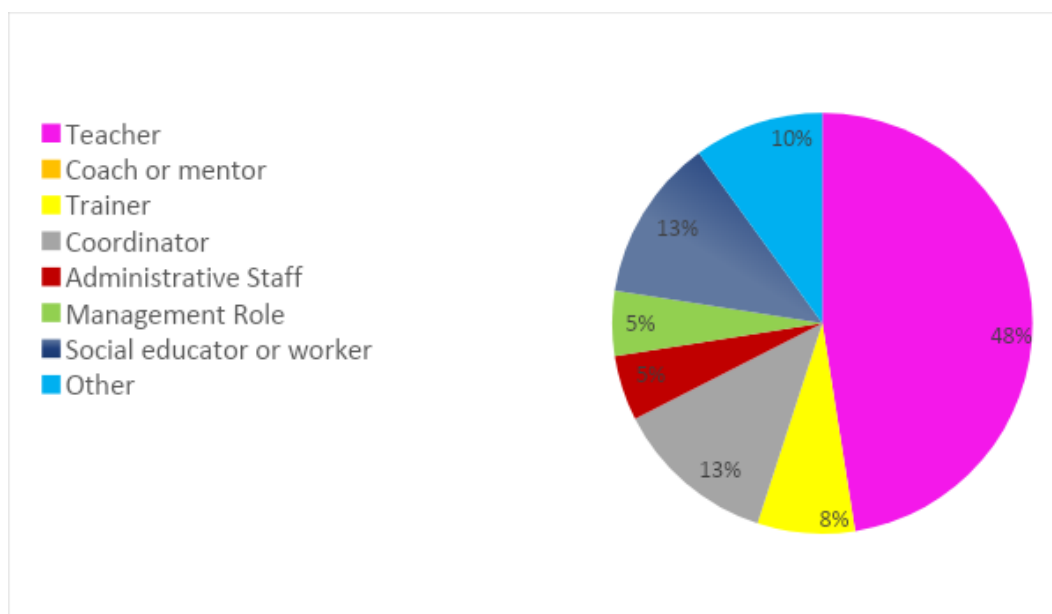
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Average Time for completion

Type of **entities** the educators work for:



The different **job positions** occupied by the people surveyed:



The following question belong to the second block that responds to the objective of achieving a general picture of the overall level of **competencies of VET experts** in digital skills and ICT tools and platforms, and more specifically their level of competencies in **game-based learning**.

3.	I think that incorporating ICT tools and platforms into teaching pedagogies is beneficial for teachers and students.
4,46	Average
4.	I feel confident that the competencies of educators (including myself) in digital competencies is sufficient to incorporate ICTs into teaching.
3.5	Average
5.	I often implement game-based elements in my teaching/training to assess students or increasing their involvement during classes.
3.27	Average
6.	I do not use gamification into teaching, but I would like to.
3	Average

The objective of the third block of questions is to **validate the best practices collected** by the following set of questions about the game-based elements that were found as the key to a successful game-based learning experience.

7.	Stablishing the objective of the game and the rules previously and explaining them to students before starting the experience.
4,9	Average
8.	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.
4,35	Average
9.	Using platforms and digital tools for the gamification experiences that are commonly used and recognizable by teachers

4,86 Average
10. Including an attractive narrative and, if possible, maintaining the storyline defined during the game and till its finalization
4,1 Average
11. Stablishing clear levels in the game experience that gradually became more difficult, with the aim of continuing to challenge users.
4,1 Average
12. Including the possibility of feedback between students and educators during the game, specially at the end of a challenge or level.
4,3 Average
13. Including challenges and tasks that must be done individually and in teams, to foster both teamwork and autonomous work.
4,5 Average
14. 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)
4 Average
15. Including access to educational material or additional information in the hosting platform of the experience (i.e., videos, tutorials, curricula, etc.)
4,5 Average
16. Including graphics, visual elements, music, and videos that are stimulant and attractive for the students.
4,35 Average
17. If the objective of the experience requires it, include simulation scenarios (i.e., job interviews) to foster learning by doing.
4,1 Average
18. If the objective of the experience is to evaluate students, previously stablish the criteria and make the students aware of those criteria and objectives chosen.
4,4 Average
19. Stablish a reward system (i.e., Points system, ranking, badges, insignias, etc.) that motivates students, but also rewards different qualities such as behavioral attitudes (curiosity, helping other students, devoting more time)
4,1 Average

This last block constitutes an **open-ended question** so that the surveyed person can make a remark or state a relevant opinion on GBL.

20. Would you like to share any past or present experience with Game-Based learning techniques, tools, or methodologies? You can do it below:
8 of the total of 40 Portuguese education providers surveyed answered.

COLLECTION OF COMMENTS
The answers I gave before really depend on the type of game, objectives, and profile of the group. * Through the experience of MI.MOMO - https://www.faro2027.eu/mimomofaro-719407.html - the involvement/feedback between students and teachers was essential throughout all the

phases of the project (there were no levels of achievement but a continuous work involving different disciplines) and there was no individual reward system because the goal was to re-create together different modernist buildings through Minecraft (the visibility of the project on social and national media, the presentation of the students work, the achievement of managing to complete the building and the debates with architects and the community was enough reward to both students and teachers involved). The motivation and involvement of both teachers and students was extremely high because it was a long-term project involving different actors, disciplines, groups of students and it created a link between digital and reality. With other short-term activities of education through gaming, the rewards and competition can be more useful for motivation and the feedback can also be more level-based.
Kahoot! https://www.escolavirtual.pt/ https://auladigital.leya.com/
Mindcraft in schools
Genially
quizziz kahoot
I do not have experience
Tools/techniques already used: minecraft education (in a project to enhance the city's cultural heritage). For primary school students the use of games that train motor coordination (on the computer) in combination with educational games that work on school concepts/contents.
All the (few) gaming experiences I used in the classroom were very well accepted by the students. I would like to have more training and opportunities to use it more often, taking much more advantage of the potential of these pedagogical tools.

3. Final Conclusions

In conclusion, both the average competencies in ICT and game-based learning of Portuguese educators are sufficient, and they show a common appreciation for the benefits of applying game elements to teaching. The validation by experts in education of the best practices collected by the SPARKS consortium has been extremely successful based in the responses, all the mechanics, dynamics, components, and pedagogical techniques incorporated in the survey have received a high number in the 1 to 5 scale proposed, all the elements of the best practices identify have received a punctuation higher than 4.

Focus Groups Analysis

Each partner organisation implemented a Focus Group with a minimum of 24 participants: 12 educators and 12 students in the field of Vocational Education and Training.

1. Methodology

A common questioning route was developed for the implementation of the focus group. Each partner implemented its focus groups at the local level following the common questions outlined by the project team to reach the goals of the qualitative analysis.

The questions aimed to gather the target groups' needs, such as pains in their current e-learning practices and jobs-to-be-done, possible gains deriving from the platform, and the features and game elements they would find more effective and engaging in Game-based Learning Programs.

A moderator and an observer were involved in the implementation of the activity.

2. Report of the Focus Groups. Analysis and comments

2.1. Focus Group 1: Students

PARTNER ORGANIZATION: ECOS	
DATE AND HOUR: 06 october	PLACE: Escola Secundária de Pinheiro e Rosa
FORMAT (online or face-to-face): face-to-face	
PARTICIPANTS (VET educators and/or VET students): 1 vet educator 10 vet students 60% of the students are from the Professional course in Youth Technician and 40% are from the Professional Course for Event Organisation Technician and the head educator of this course was also present.	NUMBER OF PARTICIPANTS: 12 8 female students 3 male students 1 female educator Ages were comprehended between 16 and 20 years old – students
MODERATOR: Sofia Martins – ECOS	OBSERVER: Duarte Gonçalves – ECOS

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: Only two participants were highly interested in games independently from the environment that they are played (face to face or digitally). Other two participants revealed that they don't appreciate games but in a face-to-face classroom it can be useful and motivating. The rest of the participants have a moderate interest in games but they revealed a preference for face to face games rather than digital games. It was noticed that many students were worn out from confinement and online learning, revealing needs for face-to-face communication and interaction with peers, perhaps this is why during the session the responses were very much in line with this need for face-to-face activities.

Common Responses: 1.1. It was a teaching method used to activate the energy of the group, face-to-face games.

During the pandemic situation they played some online games.

As the class was small the gamification method was enough to get them motivated, so small team groups are preferable over big team groups.

They used Mentimeter, Kahoot and Quizizz.

They were involved in the experimentation of the gamifiy.eu project, they appreciated the experience that involved questions about the EU and it was applied in a digital environment.

Involved questions and answers, content was produced for them.

Didn't do a large number of online games, used tools already mentioned above, did more face-to-face games, it can be considered an hybrid environment because they needed the technological resources in order to carry out those activities.

Have no knowledge of other colleagues who have used GBL.

Positives -

- can use it at any time
- makes learning more fun
- Helps with decorating
- More motivating

- Visual stimulation combined with challenge
- No need to compete
- Some games tell stories and you learn better that way

Negatives –

- can harm physical health, posture, sight, if only played in a digital environment
- Prefer face-to-face games. + interactive
- Detox of electronic devices
- Many prefer to be off digital

Noteworthy Individual Responses and Ideas:

They learn through survival games.

Female resistance, uncomfortable with games. Not everyone.

Teacher – feels that students do homework and study more easily by using digital tools.

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:

Everyone could recognize that GBL can add positive things to learning and they also believe that is something that helps them face content that they don't appreciate that much.

Common Responses:

Positive reaction to GBL.

Make boring lessons more interesting. Interest in bringing the game from digital to face-to-face.

Rewards

Levels (growing, gradual)

Challenges

resources (have to have x to pass the level)

connection with reality (physical space)

important to develop skills but also gain others
out of the comfort zone

There is a positive reaction to GBL, most students appreciate the way games motivate them, how they turn uninteresting topics into fun activities. In general, they say that the application of games in a classroom context makes them want to give their best, promotes group work, despite expressing that it is not a competition against each other, but an individual competition, a mainly personal development.

Furthermore, they agreed that GBL helps them to decorate content more easily.

Noteworthy Individual Responses and Ideas:

VET student – Appreciate it, say it's the Future even though it's the Present
It has a great potential in terms of some contents, the gamification being applied can be an advantage.

Don't appreciate the use of gamification as something online only, it could be something you could bring to the classroom.

The face-to-face they think it is essential, the combination of both things would be an asset.

VET educator – The problem of addiction can arise, and gambling is very much associated with it.

In fully developed societies like the Japanese ones, gaming is one of the biggest problems and that this entails from suicides to isolation.

Don't know how to balance the negative part.

VET student – Games allows them to be in a simulated reality, so they help to understand what will be needed if this simulation becomes real. – We can conclude that games potentiate soft skills development.

Games explain history to (e.g. world war) making it more interesting than a traditional class about it.

You capture information without realizing it (without the burden of being "forced" to learn)

The game arouses the desire to do research to find out more (makes them question themselves).

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: The school provides students the necessary material to work with gamification, but some still don't have some materials like computer for example and with that delay in having the materials they are in disadvantage when compared to other students when GBL is implemented in classes. Of course educators have this in consideration and adapt the content prepared for them. Nobody was prepared for the online teaching relevance because of the pandemic situation, so it became a slow implemented process.

Common Responses:

In general, they feel they have some resources available in VET to implement GBL, such as computers, most of them, internet, skills for the proposed games and if they don't have them, they confess that they easily acquire them out of interest in matter/game. But on the other hand, they admit not having access to many games that can be implemented in the classroom.

Educators confess the workload and the countless platforms they have to work on daily and, therefore, they often do not feel available to prepare these games and perform them, expressing lack of time and emotional predisposition.
Noteworthy Individual Responses and Ideas: There is an obvious fear of the time that will be devoted to online space that could be used for more time in reality. They say that the games component is available in everyday life in various ways, as an educator/teacher if this is really the priority, to spend the little time they have for a game or will it be looking for other activities and initiatives that are equally important, because the students they enjoy leaving the school space, in a real way. The online form is already something that many of them use on a daily basis.
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: They are aware of some of them like the ones that were mentioned above (Kahoot, Mentimeter, Quizizz); Even though they didn't have any, they were open to learning; They showed the need for resources to understand how games work, instructions, rules etc. – Especially the students that don't appreciate games that much and struggle with them, but all of the participants relevated the importance of having this material. Teacher – have material resources: yes ; lack of time was again a problem posed. What would be useful was to have pre-prepared content which would help to apply gamification in teaching. Showed more interest in doing activities outside of digital for the passage of content.
Noteworthy Individual Responses and Ideas:
Question 5: Would you consider useful templates that help to implement innovative GBL practices easily?
NOTES: A lot of comparison between face-to-face and online has arisen leading students to have some resistance to digital environments. Urged the need to bring gamification to reality. Students demonstrated a preference for face-to-face, group, classroom games, a teaching method that they find easier and more interactive.
Common Responses:

They think it would be good to have this guide as it would benefit the teachers, it would help them to make the class more dynamic.

These templates would be more useful for denser classes and in classes with more students.

It could be a bridge between the classroom and the space outside it.

Useful for people with special needs – One student present in the session had special physical needs and she confessed that games help her to deal with a lot of the challenges that she has to face with her condition.

Certain students abuse the teachers trust, it would be beneficial to have a mechanism that made them more focused and guided them better in the proposed activity.

Noteworthy Individual Responses and Ideas:

It was considered useful for teachers to bring in innovative methods.

2.2. Focus Group 2-VET Educators

PARTNER ORGANIZATION: ECOS	
DATE AND HOUR: 04-10-2021 17:30	PLACE: ZOOM
FORMAT (online or face-to-face): online	
PARTICIPANTS (VET educators and/or VET students): VET educators All from state school and with ages comprehended between 36 and 50 years old. Two were men and ten were women.	NUMBER OF PARTICIPANTS: 12
MODERATOR: Sofia Martins – ECOS	OBSERVER: Duarte Gonçalves – ECOS

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?

- The presence of the participants arose from the need to follow the evolution of teaching and develop new knowledge to apply in class.
- Even before the pandemic, vocational and professional education forced teachers to be innovative and create new dynamics in class.
- Some are very fond of technology and try to teach using it.
- This session was a good opportunity to share testimonies with other educators and learn new things about gamification.

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: VET educators revealed experience in the using of game – based learning. They implemented game elements by using some tools that are more explicit in question number 4.

Common Responses:

Pros – degree of student motivation is increased;
prepare once and then replicate;
forces teacher to reinvent himself;
can be synchronous and asynchronous, played online and offline;
student knowledge growth is enhanced;
self paced learning.

Cons – students material – access to pc;
could not open some programs on common school computers;
Some students don't enjoy games;
In the application of a game: in a larger class the faster ones respond quickly and those who don't have such good material resources get upset.
They are afraid that GBL promotes competition in excess.

Noteworthy Individual Responses and Ideas:

VET educator – Competition factor increases student motivation. Socratic is a good tool to consolidate learning, but students prefer to go for tools that have competition as a key factor. Used online virtual laboratories to carry out experimental activities, students reacted well. Often are the students themselves who build this. They evaluate the work of other colleagues. Students were comfortable with digital tools.

VET educator – Had a game experience about interculturality with an expert company in games in a classroom context – for certain topics the game didn't

bring anything innovative, you can do these kinds of challenges in a face to face context, it's an advantage for online teaching.

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: In general all participants considered the input positive;
Pros overcome cons.
Contribution is always positive.
It makes students more motivated.

Common Responses: Teaching should not be based on gamification but rather conjugated - It's complicated to generate meaningful learning based on games, good for presenting content. Complicated to generate hard skills using the game, they prefer traditional education to that end. Don't know a game they can use to consolidate content.

Some educators still prefer to use formal education methods mixed with non formal education methods such as GBL.

(GBL)Useful for closing content or starting new themes.

Games enhance motivation, they are a complement to the contents.

Playing is part of the human being, playing is learning, discipline can be passed through games, rules, rewards etc. Helps to motivate, recover students who are unmotivated. The game by itself is not enough. A mind that questions itself will always be richer and more important in learning than games, if there are games that are less about consumption and competition and more about promoting critical thinking and creativity it is preferable. Like to create games with students. Would prefer more creation tools than games already made.

It brings the student closer to the teacher, when the student participates in the process of creating games for the classroom. This process results in greater student involvement and effort to understand certain subjects that are inserted in the games. Promotes collaborative work.

Noteworthy Individual Responses and Ideas:

VET technical course in sports - The game makes sense, the challenge is always an asset.

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: Everyone demonstrated the need for guidelines, tutorials and checklists. Particularly interested in user friendly platforms.

Common Responses: LACK OF TIME - too much time to plan for this type of classroom.

Knowing how to use the tool implies investment by the teacher - training, practice, teacher and student perspective, creating a plan for the student; Investment to have full access to the applications;

Quality internet and equipment - There is a lack of internet coverage in all school spaces.

Lack of computers for all students and teachers.;

There are many resources, platforms, teachers have to analyze it, test it and at what point in the class they will use it, it requires an investment in time that they often don't have.

They feel like they need more training, they are open to learn new things about gamification in the educational area and they understand that it's part of the future and present.

Noteworthy Individual Responses and Ideas:

VET educator - cooking course - On the one hand, in the educational system, there is no manual for classes in this discipline in Portugal. There are cooking games but the educator fears that competitiveness will be promoted too much since it is already a competitive area. Lack of materials suited to the needs of each one. They end up spending personal time preparing for this type of class. Schools do not have conditions for students to be able to develop these dynamics, once again materials, lack of mobile phone memory, bad internet connection etc.. educators lose motivation to insist on this type of class. If GBL is used to start a topic, the teacher has to prepare that part and still prepare the rest of the lesson. It requires that they have to do research to do classroom activities.

VET educator - The school has set up a website where teachers can access resources such as digital tools for preparing lessons. They put there ideas that can optimize the time of educators when they are preparing an innovative class.

VET educator - The school should acquire more licences for a freer use of digital tools.

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: All educators have access to and knowledge of digital tools and platforms such as:

Emaze; Lino.it; Jamboard; Adobe Sparks; Canva; Kahoot; Mentimeter; Padlet; Quizziz; Miró; Word Wall; Peer Deck; Socrative; Genial.ly; Spot Games; Class Craft; Minicraft – MI.MOMO; Quizzlet; jigsaw planet;

Educators at this school have access to training provided by the institution to level up their digital skills.

Educators revealed that during the pandemic situation that they improved their digital skills, they also noticed that students also developed those skills and they were more open to GBL lessons after the pandemic situation.

Common Responses:

Mentioned that there should not be a game to be used in all contexts, as there are different needs according to the educational and geographic area to generate knowledge. Students from inland Portugal, such as Alentejo, have fewer resources than students from large coastal cities.

During the pandemic educators needed to use digital tools and they learned a lot but still have a lot to learn, most tools are intuitive but they always waste time to absorb these processes.

They acquired skills from the perspective of the tool user but in terms of programming and game design they do not have these skills.

Noteworthy Individual Responses and Ideas:

Question 5: Would you consider useful templates that help to implement innovative GBL practices easily?

NOTES:

Everyone considered useful to have templates that help to implement innovative GBL practices easily. The educators were more open to use GBL if they had these templates which simplified their lesson preparation.

Common Responses:

Time optimization is the main aspect to be considered.

Noteworthy Individual Responses and Ideas:

VET educator - It makes sense to have this platform, it should be the responsibility of book publishers to adapt games for classes. It should not be the teachers to create these activities.

Paid internet manuals are also a hindrance. He feels that even with this kind of material he will waste a lot of time.

VET educator - He didn't agreed with the issue of publishers, there must be an entity that can facilitate teaching professionals with playful activities capable of enhancing the generation of knowledge in students.

