



GAMIRIGHT

THE RIGHT GAMIFICATION FOR TACKLING EARLY SCHOOL LEAVING AND DISADVANTAGE

PROFESSIONAL METHODOLOGICAL MANUAL

PARTNERSHIP

CEIP



Scoala Profesionala
Gropnita



E-School



DAFO



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I. INTRODUCTION

1. About our project – GAMIRIGHT

The project GAMIRIGHT is a KA201 – Strategic associations for school education in which four organizations from three countries (Spain, Greece and Romania) are involved. Its main purpose is to design and implement an educational model based on gamification and game-based learning with its corresponding manual to contribute from the very beginning to the causes that could make the reduction of early school leaving and social inclusion possible. In Spain there is the highest percentage with 17.9% of early school leaving. Despite the fact that in the Community of Madrid the rate is 11.9%, the area where CEIP Cuba is located exceeds even 17.9%. Located in one of the most culturally diverse areas of the community with a 44% population of different nationalities and a low social and cultural level, with serious economic difficulties, we must add that the data provided by the center is far below the national data in terms of PISA (481 points).

In the case of Romania, there is a 16.4% of early school leaving. In the area where the SPG center is located, the average is again higher than the national average, among other things identified because there is a high percentage of families with economic difficulties and low qualifications. They are well below the OECD average with just 429 points.

In the case of Greece, it presents a percentage of the lowest in the European Union with 4.7%. In this case, the city of Karditsa, where this project will be developed, finds the same figures. This is one of the reasons why we include this Greek center in the consortium. However, it also presents academic difficulties due to the few educational measures that are being carried out and reflecting this are the 451 points of PISA, with a downward trend.

In all cases, a clear association between poor academic results and socio-economic status is identified, confirming the needs analysis carried out at the national level and in each of the centers and areas where the centers are located (Rumberger, 2012 & PISA, 2019)

- Taking into account the needs and context set forth above, the following OBJECTIVES are established:
- Improving the MOTIVATION of students to learn so that during their educational process they have good experiences that make it easier for them to continue learning.
- Increasing the ACADEMIC LEVEL of the students, thus increasing their motivation and preparing them to face higher stages successfully.
- Increasing SOCIAL INCLUSION, the improvement of social relations and coexistence among students, thus contributing to the improvement of key competences such as personal, social and learning to learn, citizenship and civic responsibility and in cultural awareness and its expression.
- Improving FAMILY INVOLVEMENT in the education of students so that they have strategies that allow them to actively contribute to the child's school life.



2. The game and the motivation to learn

Games in education have been studied for the last 40 years (Abt, 1970; Egenfeldt-Nielson, 2007; Loftus & Loftus, 1983). While games of various types have been used in education since schooling began—including individual and team sports, board games (e.g., chess), and games created by children—educational games used in the 21st century arose in the 1950s through 1980s as alternatives to drill and practice, for enrichment activities, or as computer-assisted/programmed instruction systems.

As widely recognised, the approach based on games makes the attainment of educational objectives and the learning process easier, more student-centred, fun, interesting and more effective (Lepper and Malone 1987; Papastergiou 2009; Prensky 2001; Rieber 1996; Rosas et al. 2003). Several works have investigated the reasons that make games such a powerful learning environment. Papastergiou (Papastergiou 2009) states that games are successful since they support multisensory, active, experiential and problem-based learning. They promote the recovery of prior knowledge, because players must use previously learned information to improve their score in the game, and provide immediate feedback that allows players to test different hypotheses and learn from their actions. Games also provide self-assessment tools such as the mechanisms score and the achievement of different levels, and use the social dimension to involve the community in the learning process. Furthermore, besides the acquisition of knowledge, the game promotes logical-mathematical and critical thinking and the development of personal and social skills, language abilities, communication and collaboration skills, creative, and problem-solving capabilities (McFarlane et al. 2002). In addition, games support pedagogical principles (Oblinger 2004) such as:

- individualization: the level of the game is tailored on the basis of the player's abilities;
- feedback: immediate and contextualised feedback is supplied during the game session;
- active learning: the game engages the player in active discovery;
- motivation: the players are engaged in pursuing a goal;
- social: the game is often multiplayer or social;
- scaffolding: players are gradually challenged because they cannot move freely among the game levels;
- transfer: the game fosters the ability to transfer learning from the game context to a real context;
- assessment: the player can assess the acquired knowledge or skill with the other players.

In recent years, interest is growing in Gamification, defined as the use of game mechanics and rules in non-gaming contexts (Deterding and Dixon 2011; Zichermann and Cunningham 2011).

In other words, Gamification proposes to use game thinking and dynamics to increase users' engagement and stimulate their active participation, thus enhancing the outcomes. This approach has been widely used in the e-commerce domain, where a Gamification experience has high impact on the "FOUR Is" (Epps 2009): Involvement, since the game improves the active participation of the players; Interaction, since the game assures a high level of interactivity; Intimacy, because the game stimulates the familiarity with the brand; Influence, because the game allows the spread of the brand and the products.



These outcomes are desirable also in education, where interactivity, active participation and competitiveness are essential, in order to motivate and engage the students. However, in order to fully understand the power of gamification in education, it is necessary to study in depth the game elements that can be used and how they can support the learning process.

The main elements that can be taken from the game and used in the learning context, are (Bunchball Inc. 2010; Simões et al. 2012):

- Status: the acknowledgment of the user reputation leads her/his fame and prestige in the community;
- Recognition of results: the use of points and levels to keep track of achievement and progress is useful to maintain interest and encourage a greater commitment to higher goals;
- Competition: the comparison of the players' performances is a motivational element that can be achieved for example with charts that allow the player to view the results and the winners to celebrate;
- Ranks: the measurement of all participants' progress and their achievements can be used to encourage players to do better, driven by the desire to improve their position;
- Social dimension: the activities of friends can influence those of other users, in real life as well as in virtual communities. Gamification initiatives must therefore be able to create a strong sense of community.
- Customization: the game elements and feedback can be customized, thus promoting a sense of belonging to the "game" and to the community.
- Scores and Levels: scores can be used as rewards for users' progress and for achieving the objectives in various stages. Collecting points will allow access to higher levels, defining the degree of skills achieved by each single player.
- Reward: the reward for obtained results can be real or virtual and be used to increase the player satisfaction for having achieved the desired objective. It triggers the motivational mechanisms necessary to reach new and more ambitious goals. This requires an increased involvement of the users who will be encouraged to offer even better performance.

All these elements can contribute to improving the engagement in learning activities and then motivation to acquire new knowledge. However, in order to transform Gamification into an effective learning experience, it is necessary to investigate how it can be combined with the dimensions - cognitive, emotional and social (Illeris et al. 2002; Lee and Hammer 2011) - involved in the learning process.



II. CONTEXTUALIZATION

1. Introduction

The national reports, realized in the framework of the GAMIRIGHT project, financed by Erasmus+ Program has the aim to analyze the Spanish, Romanian and Greek educational frameworks, in terms of implementing gamification as an innovative methodology with the aim to increase pupils and even teachers' motivation and the school results. By presenting the legal educational framework and cases of best practices regarding the application of gamification methodology in class, we intend to lay the ground for the gamification strategy and manual, which will be the results of our project.

Current trends and concerns increasingly require a response to the generations of young people who need to find an answer in the educational context to their technological expectations and most immediate needs. This brings with it the responsibility of professors and institutions when innovating in methodologies that try to incorporate into their classes strategies that increase the motivation and commitment to provide all possible tools and resources that favor the autonomous and meaningful learning of their students. What's more, it has been recorded that students reach a high level of commitment when they are motivated, even preferring to continue with the playful activity to end the class (FERNÁNDEZ; OLMOS; ALEGRE, 2016). Within these new demands arise new teaching strategies. In this article we focus on gamification in education or educational gamification (MARÍN, 2015).

This trend is reflected in the report Horizon Report: 2014 K-12 (JOHNSON et al., 2014), whose recommendations are made within a period of two to three years in reference to game-based learning and gamification as a strategy didactic, integrating aspects of the dynamics of the game in non-playful contexts that help to enhance the motivation of students, as well as other positive values that they are common in most of the games that are used today for learning.

In most disciplines the games are oriented towards the goal of learning having strong social components and pose simulations of some type of real-world experience that students find relevant to their lives. As can be seen from the Horizon report, the reception of the game in the academic world is making developers respond with games expressly designed for support immersive and experiential learning.



2. Gamification as a methodology in the national context of school education in the project partners' countries

2.1 Spain

- **LEGAL FRAMEWORK**

The Spanish educational system is a complex reality regulated by a legislative framework that governs and guides its structure and operation, it is formed by the Spanish Constitution of 1978, and by a series of organic laws that develop the principles established in it, Among which stand out Organic Law 8/1985, July 3, regulating the Right to Education (LODE), and Organic Law 2/2006, of May 3, Education (LOE) modified by the sole article of the Organic Law 8/2013, of December 9, for the improvement of educational quality. (LOMCE).

The development and national implementation of the previous laws for Primary Education is carried out through Royal Decree 126/2014 of February 28, which establishes the basic curriculum for Primary Education.

The educational model established in this legislative framework is a decentralized model in which the administration of the educational system distributes competences among the National Government, the Regional Government, the Local Government and the school centers.

- **NATIONAL GOVERNMENT**

- General organization of the educational system.
- Minimum requirements of the centers.
- General teaching programming (Basic Curriculum).
- Regulation of academic and professional titles.
- International cooperation in education.
- High Inspection.

- **REGIONAL GOVERNMENT**

- Development of the general teaching program (development of the curriculum).
- Orientation and attention to students.
- Administrative ownership in its territory.
- Creation of authorization of centers.
- Staff Administration.



- Regulation of the operation of centers.

- LOCAL MANAGEMENT

- Provision of lots for the construction of public centers.
- Conservation, maintenance and reform of the centers.
- Extracurricular and complementary activities program.
- Monitoring compliance with compulsory schooling.

Regarding the didactic methodology: Royal Decree 126/2014 of February 28, which establishes the basic curriculum of Primary Education:

In its Article 2. d) it defines the didactic methodology as the set of strategies, procedures and actions organized and planned by the teachers, in a conscious and reflective way, in order to enable students to learn and achieve the objectives set.

In its Article 15.1 it is indicated that the educational administrations will promote the pedagogical and organizational autonomy of the centers, they will favor the teamwork of the teaching staff and will stimulate the research activity based on their teaching practice.

Therefore, the aspects related to the methodology that is developed in the school center is therefore responsible for the decision of the center and the teaching team. However, this must be specified in the General Annual Program. The Annual General Program is a planning instrument for each academic year, which aims to: Collect the most relevant decisions and agreements that affect the organization and general operation of the Center. This is where all the methodological aspects to be implemented throughout the course should be collected.

2.2 Romania

The Gamification in Romania is still at the beginning. There have been some initiatives in the area of e-learning.

Even though games are generally being used in the educational process quite often, the Gamification techniques are only now being tested during lessons.

The Romanian educational system is flexible, and teachers are free to plan their lessons using interactive didactic strategies that successfully lead to achieving the objectives, and more importantly, to acquiring the knowledge. And not just to acquire the knowledge, but to transfer it into the long-term memory, through the active participation of the students during lessons.

There is no pedagogic methodology specifically based on a gamification program in our country.

The team of teachers from Scoala Profesionala Gropnita has done some research regarding the



use of gamification techniques in the schools of Romania, from February 10 to February 22, 2021.

The case study and the questionnaire were the tools used for this activity, which helped them obtain data regarding the quality and quantity of the gamification activities.

The online questionnaire has had 158 responses from teachers from 146 schools from Romania, and it had the following results:

- 62,6% of the respondents know what gamification is, and 18,5% of these teachers have used it in the teaching-learning-evaluation process at some point;
- The teachers have used video games or platforms/apps in their lesson plans, which allowed them to use gamification: <http://www.scoalaintuitext.ro/> - for primary school students (video games for subjects such as Romanian, Mathematics, History, Geography, Arts); the game Kids - an application for financial education for primary school students; izibac – a mobile app that helps students of the upper secondary level to study in a modern and fun way for the exams; the game *Gamify* – it helps students learn about being an entrepreneur through gamification and it is suitable for those in the upper secondary level;
- To the question “What impact did the gamification activities have?” the answers were based on the following ideas: much easier learning; improvement of the academic level; the students’ involvement and motivation (even shy students actively participate), joy and pleasure to be at school;
- The teachers mentioned some obstacles in the use of gamification techniques: inflexible curricula, infrastructural limitations, lack of information about gamification, limitations of time, lack of trust in using these methods.

2.3 Greece

The use of games in education is found deep in the past centuries. Some observers mention that the Socratic Method may be considered as a kind of a word game of questions and answers, as he doesn’t just wish to transmit knowledge, but also to lead his co-speakers to discover and understand it (Kanakis, 1990). Furthermore, game as a teaching method is welcome, according to Plato, saying that it is more important for the learners to “learn playing” (Plato, *Politeia*, 537a). Nowadays, a strong trend in the educational process is the introduction of Gamification and Game based Learning methods, which constitute alternative teaching methods. These methods have as a general goal the creation of educational environments combining in balance learning with student satisfaction.

Researches have shown that the use of games but also mechanisms, elements and techniques running games, contribute to the improvement of the learning process and to the enforcement of students’ involvement in the learning process, through prompting, positive influence and motivations (Arapitsa, 2019; Papastergiou, 2009). Game Based Learning and Gamification methods don’t aim mainly at learners’ entertainment, they are methods which remain committed to learning goals. They both boost the educational process, they don’t replace it,



leading to the achievement of learning goals, like deepening of learning material, acquiring skills and improving school performances.

- Education in Greece

Education in Greece is centralized and governed by the Ministry of Education and Religious Affairs (Υ.ΠΑΙ.Θ.) at all levels. The Ministry exercises control over public schools, formulates and implements legislation, administers the budget, coordinates national level university entrance examinations, sets up the national curriculum, appoints public school teaching staff, and coordinates other services.

The Greek educational system does not allow much autonomy to its teachers. The analytical programmes and timetables applied at schools have been created by the Pedagogical institute (PI)- Greek Ministry of Education that was later renamed to Institute of Educational Policy (<http://iep.edu.gr/en/>), which, among others, gives its opinion on or proposes matters concerning: school curriculums, school books, teaching methods and means relevant to each subject. Therefore, the formation of the educational policy takes place away from teachers, although they are the ones asked to apply decisions made. The sectors constituting the basic teachers' activities are the ones relevant to the educational process and decision making in the classroom. They include choosing the methods used for teaching, choosing the educational material and evaluating students.

- Game Based Learning and Gamification in Greece

As far as the Greek educational system is concerned, there have been efforts to incorporate the Game Based learning and Gamification methods into the analytical curriculum, mainly in primary education. Simulation games as well as role-playing games are the proposed methodology by the Institute of Educational Policy. Greek teachers have the ability to choose the educational methods and strategies. Central management and school headmasters can propose some teaching methods or approaches to teachers, but the final choice lays on the teachers' discretion.

Despite all these, the model of teaching through games, as well as other alternative models, are not exploited satisfactorily in teaching (Kossivaki 2003) because of the following factors:

Games take up a lot of time and require more preparation on behalf of the teacher, compared to other teaching methods

It requires a holistic participation of students, that is physical, emotional, mental and movement around the room, which is very difficult for schools that are designed in the traditional way.

Game is opposed to the prevailing mentality about teaching at school, claiming that anyone playing is thought to be straying from the school curriculum and teacher's profile.

Students' performance can't be easily measured (e.g. vocabulary expansion, understanding science or maths etc.)

There is the possibility that these learning procedures are considered by some students "easy" so that they refuse doing laborious homework.



Therefore, we realize that concerning the application of Game Based Learning and Gamification methods in the Greek educational system, there is no particular plan by policymakers, but it is up to the teachers' discretion.

- Digital games and software

The advance of technology has also contributed to the creation of educational digital games and software. Researches have shown that educational digital games and software run by pedagogical rules, make teaching interactive and cross-curricular and can become an extremely valuable tool for teachers (Panagiotopoulos et al., 2003, Papastergiou 2009). However, the Greek educational community slowly accepts these rapid developments. In Greece, only these last few years, there has been interest in utilizing educational digital games and software in the educational process.

Concerning educational digital software, the Institute of Educational Policy has incorporated the new technologies in the "Joint Cross curricular Framework for schools" and in "Curricula" to teach all cognitive subjects. Furthermore, it has developed the following software / platforms, which utilise the Game Based Learning and Gamification methods:

- a series of educational software (<https://ts.sch.gr/software>) concerning all educational levels that can be exploited by the educational community.
- the platform titled "Aesop" (<http://aesop.iep.edu.gr/#about>) that consists of a series of interesting digital interactive educational scenarios following the rules of cross curricula and science (Gklavas et al. 2010).
- the platform titled "Photodentro" (<http://photodentro.edu.gr/lor/>) which is a digital storeroom of Open Educational Sources and hosts digital educational material used in teaching and learning, like interactive simulations, educational games, 3D maps etc.

The digital material included in the sources above is freely available and it is at every teacher's and student's disposal, whenever they feel it contributes to the achievement of learning goals. Moreover, teachers are free to use other sources available through the internet.

In this framework, teachers must have that "special knowledge" (Gklavas et al., 2010) that will enable them to use this digital software in teaching, but also to check its quality and compatibility to the educational principles. Therefore, to utilize educational software in the classroom, some prerequisites have to be ensured. First of all, schools must have the necessary facilities concerning digital equipment and software appropriate for educational use. Secondly, a high percentage of teachers should have been trained on basic skills on the use of new technologies, but be able to use them as well.

As far as data in Greece goes and according to the Pedagogical Institute findings (Gklavas et al., 2010) school facilities are considered adequate. It is just that not all teachers have been equally acquainted with the Informatics and Communication Technologies, resulting in the non-use of these facilities in the teaching process.

Nevertheless, according to Nikolaou and Barbarousis (2017), there is a set of limiting factors in the exploitation of digital games in a Greek classroom, such as:

- the school curriculum and the lack of support towards the teachers,



- the lack of available time to familiarize teachers with the educational digital game,
- the search of the appropriate educational game for a specific module in the compulsory school curriculum,
- the lack of experience in the incorporation of digital games in educational activities,
- the necessary equipment
- teachers' mentality
- the readiness to accept a novelty.

Therefore, we realize that despite the efforts of the Ministry of Education to use digital games in the Greek classroom, there are many obstacles that are yet to be overcome.

- Student contests based on games

At this point, it would be useful to mention that the Greek Ministry of Education and Religious Affairs, acknowledging that game is an integral part of the educational process and that its educational role is important, organizes and promotes student contests based on games, mainly for digital creativity, in different subjects throughout the school year. Nonetheless, participation is optional on the teachers' part and is also achieved without hindering the normal operation of the school. Consequently, the participation in such contests is an extra-curricular activity, in after school hours, which explains the low rate of interest and participation on the teachers' part.

Moreover, other important private and public organizations operating in Greece have undertaken significant initiatives to create mainly digital educational applications, as well as school contests based on games. Such organizations are mostly museums like the Acropolis Museum (<https://www.theacropolismuseum.gr/en>), the National History Museum (<http://www.nhmuseum.gr/>) but also other organizations like the Onassis Foundation (<https://classroom.onassis.org/>) etc.



3. Best practices in each partner's country

3.1 Spain

CASE STUDY 1	
Name	Class of Clans
Description	<p>The project is based on the integration of natural science subjects, social sciences, technology and plastic and visual education of 1st ESO under the same gamification: CLASS OF CLANS.</p> <p>From the symbolic and aesthetic framework of the online game clash of clans students become Paleolithic beings who have to survive and move forward as a civilization, going through different eras. With this purpose , they are organized into clans and have to overcome weekly tasks and events, many of which are based on the use of information and communication technologies (ICT).</p> <p>Class of clans has an online component (website) where rules and rules of the game;and a physical component, a board in the classroom where students record the skills acquired in the form of badges and where they develop their strategies so that they can save all members of their Clan.</p> <p>The methodology used is based on the use of ICT, creative thinking, cooperative learning, neurodidic learning, project-based learning, flipped classroom and learning by doing.</p>
Key Stakeholders/ Provider	I.E.S Antonio de Nebrija Mostoles – Madrid
Level (Organisational, Regional, Local, National)	Organisational
Type (Prevention, Intervention, Postvention)	Intervention
Impact	<p>Our perception of the results that occurred in the students after the completion of the project are as follows:</p> <p>Improved motivation level: Students have been much more committed and enthusiastic about their learning process. Particularly significant has been the impact it has had on the segment of students at an intermediate level.</p> <p>Improved diversity care: Students with more concerns have been able to unleash their curiosity by providing information relevant to the subject, seeing his work as a research by acquiring gems.</p>



	<p>Improve cooperative work and emotional intelligence: through group work, encouraged by the dynamics of the game, have understood the importance of the partner in achieving a common ultimate goal.</p>																														
<p>Available Statistics (if available)</p>	<p>Quantitatively, we have compared the result obtained in the four subjects, with the results obtained in the 2 classes (1A and 1B) in the previous quarters. The table shows the remarkable improvement in student performance in all subjects.</p> <table border="1" data-bbox="491 595 1366 913"> <thead> <tr> <th></th> <th>Results 1st-2nd evaluation (pupils approved)</th> <th>Results 3rd evaluation (pupils approved)</th> <th>Results 1st-2nd ev. (pupils scoring more than 6)</th> <th>Results 3rd ev. (pupils scoring more than 6)</th> <th>Improve percenta</th> </tr> </thead> <tbody> <tr> <td>Social Science</td> <td>1^oA: 82% 1^oB: 80%</td> <td>1^oA: 95% 1^oB: 92%</td> <td>1^oA: 65% 1^oB: 60%</td> <td>1^oA: 78% 1^oB: 80%</td> <td>1^oA: 13% 1^oB: 20%</td> </tr> <tr> <td>Natural Science</td> <td>1^oA: 96% 1^oB: 88%</td> <td>1^oA: 98% 1^oB: 92%</td> <td>1^oA: 69,2% 1^oB: 68%</td> <td>1^oA: 77% 1^oB: 76%</td> <td>1^oA: 7,8% 1^oB: 8%</td> </tr> <tr> <td>Technology</td> <td>1^oA: 85% 1^oB: 87%</td> <td>1^oA: 95% 1^oB: 93%</td> <td>1^oA: 60% 1^oB: 55%</td> <td>1^oA: 75% 1^oB: 73%</td> <td>1^oA: 15% 1^oB: 17%</td> </tr> <tr> <td>Arts</td> <td>1^oA: 90% 1^oB: 92%</td> <td>1^oA: 95,4 % 1^oB: 95,2 %</td> <td>1^oA: 70,5% 1^oB: 72,2%</td> <td>1^oA: 85,3% 1^oB: 82,2%</td> <td>1^oA: 14,8% 1^oB: 10%</td> </tr> </tbody> </table>		Results 1 st -2 nd evaluation (pupils approved)	Results 3 rd evaluation (pupils approved)	Results 1 st -2 nd ev. (pupils scoring more than 6)	Results 3 rd ev. (pupils scoring more than 6)	Improve percenta	Social Science	1 ^o A: 82% 1 ^o B: 80%	1 ^o A: 95% 1 ^o B: 92%	1 ^o A: 65% 1 ^o B: 60%	1 ^o A: 78% 1 ^o B: 80%	1 ^o A: 13% 1 ^o B: 20%	Natural Science	1 ^o A: 96% 1 ^o B: 88%	1 ^o A: 98% 1 ^o B: 92%	1 ^o A: 69,2% 1 ^o B: 68%	1 ^o A: 77% 1 ^o B: 76%	1 ^o A: 7,8% 1 ^o B: 8%	Technology	1 ^o A: 85% 1 ^o B: 87%	1 ^o A: 95% 1 ^o B: 93%	1 ^o A: 60% 1 ^o B: 55%	1 ^o A: 75% 1 ^o B: 73%	1 ^o A: 15% 1 ^o B: 17%	Arts	1 ^o A: 90% 1 ^o B: 92%	1 ^o A: 95,4 % 1 ^o B: 95,2 %	1 ^o A: 70,5% 1 ^o B: 72,2%	1 ^o A: 85,3% 1 ^o B: 82,2%	1 ^o A: 14,8% 1 ^o B: 10%
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Technology	1 ^o A: 85% 1 ^o B: 87%	1 ^o A: 95% 1 ^o B: 93%	1 ^o A: 60% 1 ^o B: 55%	1 ^o A: 75% 1 ^o B: 73%	1 ^o A: 15% 1 ^o B: 17%																										
Arts	1 ^o A: 90% 1 ^o B: 92%	1 ^o A: 95,4 % 1 ^o B: 95,2 %	1 ^o A: 70,5% 1 ^o B: 72,2%	1 ^o A: 85,3% 1 ^o B: 82,2%	1 ^o A: 14,8% 1 ^o B: 10%																										
<p>Tools/Resource s/ Services</p>	<p>Computers: they have proved essential for many searches and processing of information.</p> <p>Websites: The game has its own website (http://jespinosag.wix.com/classofclans), which students can access to see the rules, the leaderboard, information about various tasks and challenges, etc...</p> <p>Blogs: On the game's website, we have a blog where the Technology teacher has posed challenges, tasks, etc... for students.</p> <p>Kahoot and Flipquiz: allow you to create online questionnaires, to solve in large group in class. They have been used for evaluations.</p> <p>Prezi, Padlet and Glogster: have been used for groups to create virtual murals and present the information to the class.</p> <p>Edmodo: educational social network, has been used for communication with the delivery of assignments and evaluation tests.</p> <p>WhatsApp: used as a form of communication with the teacher. Real-time communication, doubt resolution, even delivery of tasks.</p> <p>ClassDojo: used to assign badges and attitude points.</p> <p>Google Drive: Google Drive apps have been a big help for shared editing documents, both from teachers and teachers from students.</p> <p>Realtime board: this virtual whiteboard enables collaborative work and has served to coordinate the three teachers involved in the Project.</p> <p>Popplet: a tool used to create concept maps.</p> <p>Dipity: allows you to make timelines, which has been very useful in this game to locate in time the different events of it.</p>																														



	<p>edPuzzle: Allows students to watch videos and answer questions previously prepared by the professor. This tool has been used to reverse the class (flipped classroom).</p> <p>Google Earth: a program used as a mapping base in the explanations of the subject of social sciences.</p> <p>Games-Geographical: online web full of interactive games geographical location.</p>
Link/ Website	https://jespinosag.wixsite.com/classofclans

CASE STUDY 2	
Name	STAR WARS BATTLENET
Description	<p>A few years ago, specifically during the 2013/2014 academic year, framed in the professional network operating systems module of the Middle Degree Cycle of Microinformatics systems and networks, a first edition of this tournament emerged. It was initially a class activity to practice the contents that were being taught in the professional module, in which pairs of students from the same group competed for a couple of days.</p> <p>By noting the good results obtained and the playful environment in which the experience was developed, the potential of this form of interaction with students was positively valued. Thus, during the 2014/2015 and 2015/2016 courses, two more editions have been developed in which competitors from different groups and courses have joined, as well as evolutions and improvements in each of them.</p> <p>The objectives that have been pursued have been several: on the one hand, to implement the knowledge and skills acquired in the classroom and on the other hand, to enhance teamwork, cooperation and logical reasoning through a competition game.</p> <p>Among others, students had to experiment and master routing techniques, deploy basic networked services (FTP, HTTP, Remote Access, ... etc.), design and program web pages, develop scripts for different operating systems, use encryption techniques, assess vulnerabilities in computer systems, etc.</p> <p>To this end, Gamification principles and techniques have been applied through the creation of different teams, use of emblems, establishment of phases and stages, elaboration of</p>



	<p>game standards known to all, definition of a training period, as well as a system of scores and prizes.</p> <p>Finally, special mention must be made of the atmosphere of the whole experience. It was chosen to use as a common thread the STAR WARS saga with which it was safe we would be able to connect with a large part of the students.</p>
Key Stakeholders/ Provider	I.E.S Oretania de Linares (Jaen)
Level (Organisational, Regional, Local, National)	Local
Type (Prevention, Intervention, Postvention)	Intervention
Impact	<p>In relation to the perception of students, the impact has been assessed through the study that the University of Jaén has prepared (from the Department of Pedagogy – A.M. Ortiz Colón) in which, based on the data of a questionnaire made to the participants, we can say that 90.7% of students would request the edition of an upcoming tournament, 98.2% indicate that the motivation achieved in learning is high, 86% indicate that working as a team and that they can apply all the skills acquired in their studies, after performing a good distribution of tasks, has allowed them, winning the tournament or acquiring important scores in it.</p> <p>With regard to the impact on the teaching team, teachers are found to perceive a greater connection between them and the coordination, synchronization and collaboration systems that have led to better results have been improved. There has been a positive reinforcement of the relationships between teachers-students, students and teachers-teachers. The management team has favored the realization of innovative activities in the center proposed by the departments, producing an improvement of the overall image of the institution and positively increasing management-teacher relations.</p> <p>As noted, there are already 3 editions of this tournament and therefore the experience can be replicated on multiple occasions. Through the documentation provided on the website itself (jlgarcia48.wixsite.com/battlenet) any teacher or center that has sufficient technical and human resources, could carry out a similar action. This documentation has been</p>



	published with Creative Commons open license. In fact, it had been planned that 3 guest teams from other institutes with Computer Training Cycles participated in person and online.
Available Statistics (if available)	<ul style="list-style-type: none"> • 90.7% of students would request the edition of an upcoming tournament, • 98.2% indicate that the motivation achieved in learning is high • 86% indicate that working as a team and that they can apply all the skills acquired in their studies, after performing a good distribution of tasks, has allowed them, winning the tournament or acquiring important scores in it
Tools/Resources/ Services	<p>Computers: they have proved essential for many search and processing of information.</p> <p>Websites: The game has its own website (https://jlgarcia48.wixsite.com/battlenet)</p> <p>Blogs: On the game's website, we have a blog where the Technology teacher has posed challenges, tasks, etc... for students.</p> <p>Kahoot and Flipquiz: allow you to create online questionnaires, to solve in large group in class. They have been used for evaluations.</p> <p>Edmodo: educational social network, has been used for communication with the delivery of assignments and evaluation tests.</p> <p>WhatsApp: used as a form of communication with the teacher. Real-time communication, doubt resolution, even delivery of tasks.</p> <p>Google Drive: Google Drive apps have been a big help for shared editing documents, both from teachers and teachers from students.</p> <p>Realtime board: this virtual whiteboard enables collaborative work and has served to coordinate the three teachers involved in the Project.</p> <p>Popplet: a tool used to create concept maps.</p>
Link/ Website	https://jlgarcia48.wixsite.com/battlenet

CASE STUDY 3

Name	SAVE THE WORLD
Description	



	<p>Save The World was created as an interdisciplinary Gamification PBL for 4t ESO students at The Temple Coligi, in World War II.</p> <p>Gamification experience in World War II where interdisciplinary work is carried out (Social, FiQ, Biology, Spanish Language, English and Mathematics).</p> <p>It is a project where it is not only intended to know the events that occurred during World War II, but to live them in the first person with the aim of raising awareness of the students so that it does not happen again.</p> <p>Save The World is a World War II Gamification experience that aims to involve students, working on creativity, self-learning, critical spirit and seeing and feeling in first person the political, military and social situation of that time, not only academically but also emotionally.</p> <p>The scenery of the game is the following: Life on Earth has come to an end. We are in 2048 and after the launch of nuclear bombs by the great world potentials there is no chance of surviving on a planet totally depleted of natural resources, with a highly polluted and irrespirable air. There is no hope for the few remaining survivors on the planet. The powerful and millionaires migrated to Planet Kepler 22b after the outbreak of World War III, the human race has not become extinct but no longer inhabits the Solar System. That was the big reason why the Jihadist Empire decided to drop the nuclear bombs and wipe out the planet Earth reign of the unclean.</p>
Key Stakeholders/ Provider	Col-legi El Temple (Palma de Mallorca)
Level (Organisational, Regional, Local, National)	Organisational
Type (Prevention, Intervention, Postvention)	Intervention
Impact	Both learners and teachers declared it was a magnificent experience, especially as the students lived it and the fruit of the great work they did. They felt more motivated to learn in all the disciplines, and they improved not only the knowledge, but also competences such as team work, problem solving, time management etc.
Available Statistics (if available)	No statistics available



<p>Tools/Resources/ Services</p>	<p>Computers: they have proved essential for many search and processing of information.</p> <p>Websites: The game has its own website (https://mflexas.wixsite.com/savetheworld), which students can access to see the rules, the leaderboard, information about various tasks and challenges, etc...</p> <p>Blogs: On the game's website, there is attached the blog of the project director and trainer of the school</p> <p>Kahoot and Flipquiz: allow you to create online questionnaires, to solve in large group in class. They have been used for evaluations.</p> <p>Prezi, Padlet and Glogster: have been used for groups to create virtual murals and present the information to the class.</p> <p>Edmodo: educational social network, has been used for communication with the delivery of assignments and evaluation tests.</p> <p>WhatsApp: used as a form of communication with the teacher. Real-time communication, doubt resolution, even delivery of tasks.</p> <p>ClassDojo: used to assign badges and attitude points.</p> <p>Google Drive: Google Drive apps have been a big help for shared editing documents, both from teachers and teachers from students.</p> <p>Realtime board: this virtual whiteboard enables collaborative work and has served to coordinate the three teachers involved in the Project.</p> <p>Popplet: a tool used to create concept maps.</p> <p>Dipity: allows you to make timelines, which has been very useful in this game to locate in time the different events of it.</p> <p>edPuzzle: Allows students to watch videos and answer questions previously prepared by the professor. This tool has been used to reverse the class (flipped classroom).</p> <p>Google Earth: a program used as a mapping base in the explanations of the subject of social sciences.</p> <p>Games-Geographical: online web full of interactive games geographical location.</p>
<p>Link/ Website</p>	<p>https://mflexas.wixsite.com/savetheworld</p>

CASE STUDY 4	
Name	BEIJERINK OPERATION
Description	Operation Beijerinc is a Project-Based Gamification and Learning project that unites the subjects of language,



	<p>mathematics, plastics, alternative, natural science and social science of 6th primary education. It has been created and designed for students of this course of the Valle del Miro De Valdemoro College and implemented in the academic year 2017/2018.</p> <p>This experience arises after the success of the gamification and ABP projects carried out in the 2016/2017 academic year at this school with the same students: Armageddon and Hogwarts.</p> <p>The project is an original idea of Carolina Alvarez and Beatriz Cánovas, two teachers looking for the ideal formula of teaching-learning, one that motivates students, allows them to create, nourish their curiosity and in which they are the only true protagonists.</p> <p>It's a Creative Commons project so if you like it, and you think you can take it to your classroom, you can use all the materials created.</p> <p>The scenery of the game is the following: A secret society contacted the students, telling them that they were selected to be part of it and help them solve a mysterious case: a scientist's body was found in a school laboratory. Everything seemed to indicate that the scientist had been developing a "virus" for months to wipe out a large percentage of the planet's human population. Some mistake at the end of his process caused him to get rid of that "virus" and he died. Society had suspicions that before he died, the stranger had inserted the virus into a capsule, hiding it in an unknown place where it could be released at any time. The mission of the students was to study the crime scene and solve the mysteries to find the capsule and deactivate it before a global catastrophe occurred. They also had to analyze how this strange compound affected the virus in order to develop a possible antidote. Throughout the course, in the different subjects, they have been solving the challenges that were posed to them and keeping in touch with the secret society to advance the adventure.</p> <p>In addition, there were special missions in which the reserve agents, the families of the students, had to participate and assist the secret agents in the search for the capsule and the ingredients of the antidote outside the school.</p>
Key Stakeholders/ Provider	Colegio Valle del Miro, Valdemoro, Madrid
Level (Organisational,	Organisational



Regional, Local, National)	
Type (Prevention, Intervention, Postvention)	Intervention
Impact	<p>The project has been a success, since the results obtained have been very satisfactory: all students have improved their performance in class and their results in the different subjects, especially those with special educational needs. In addition, his motivation and desire to come to school increased and a perfect environment for learning was fostered. Finally, we find it an enriching and recommended experience for all teachers. Moreover, the missions of the game have fostered the family-school relationship, proposing to families activities that, were it not for Operation Beijerinck, they may not have carried out. The results obtained have been very positive: https://youtu.be/QkJ4DKCTptY</p>
Available Statistics (if available)	No statistics available
Tools/Resources/ Services	<p>Computers: they have proved essential for many search and processing of information.</p> <p>Websites: The game has its own website (https://beacanovas.wixsite.com/operacion), which students can access to see the rules, the leaderboard, information about various tasks and challenges, etc...</p> <p>Kahoot and Flipquiz: allow you to create online questionnaires, to solve in large groups in class. They have been used for evaluations.</p> <p>Prezi, Padlet and Glogster: have been used for groups to create virtual murals and present the information to the class.</p> <p>Edmodo: educational social network, has been used for communication with the delivery of assignments and evaluation tests.</p> <p>WhatsApp: used as a form of communication with the teacher. Real-time communication, doubt resolution, even delivery of tasks.</p> <p>ClassDojo: used to assign badges and attitude points.</p> <p>Google Drive: Google Drive apps have been a big help for shared editing documents, both from teachers and teachers from students.</p> <p>Realtime board: this virtual whiteboard enables collaborative work and has served to coordinate the three teachers involved in the Project.</p> <p>Popplet: a tool used to create concept maps.</p>



	<p>Dipity: allows you to make timelines, which has been very useful in this game to locate in time the different events of it.</p> <p>edPuzzle: Allows students to watch videos and answer questions previously prepared by the professor. This tool has been used to reverse the class (flipped classroom).</p> <p>Google Earth: a program used as a mapping base in the explanations of the subject of social sciences.</p> <p>Games-Geographical: online web full of interactive games geographical location.</p>
Link/ Website	https://beacanovas.wixsite.com/operacion

CASE STUDY 5	
Name	FORTNITEEF
Description	<p>Fortnite EF a new sports game for the Physical Education classroom. Innovation and gamification proposal based on the Fortnite video game</p> <p>The Physical Education classroom becomes an optimal setting for the work of multiple contents that positively affect the social, affective, emotional, psychic and physical development of the students. Gaming, videogames and innovation can be a good way to improve the learning of curricular contents in students. Through this innovative and gamification proposal, Physical Education teachers are offered a didactic adaptation of the successful and famous video game Fortnite, a video game that has attracted the attention of millions of players around the world, especially children and adolescents. A new sports game called Fortnite EF is created for this purpose. Its objective is to work on different contents of the primary and secondary education curriculum, boosting motivation and enjoyment in sports practice, preventing violent behaviour and working on different values. It presents the complete development of the didactic proposal and develops a methodological approach to research based on the collection of data through questionnaires passed on to future university teachers.</p> <p>Taking advantage of the media boom of the famous Fortnite video game created by Epic Games and knowing that a large part of the students play in their free time and leisure to this video game, it has been decided to incorporate into the physical education classroom a didactic adaptation of this, affecting three main aspects: adherence and motivation towards sports practice, education in values and prevention of violent behaviors. Fortnite is an online video game that presents several game modes, one of them is Battle Royale, in</p>



	<p>this free game mode 100 players participate online who must fight for survival on a magical island, where there are materials that can be broken and used to build shelters or great forts. Players can and must also pick up weapons hidden in houses and buildings, as well as through the field of Battle. All players have a map to see their position constantly, in team mode it also allows you to see the position of teammates. From time to time, play space is reduced due to a storm that invades part of the map and forces players to come together in a microspace to increase the intensity of the game (Epic Games, 2017). The main goal is to get good weapons, building materials and protective shields and other items that will make the player stronger and thus be able to fight for the last survivor. The game features a total of 100 level passes, which as the player plays and earns points for challenges and other concepts will unlock different gifts or prizes for leveling up. Perhaps it is this aspect and the permissibility of moves that each player has that invites players to play both games, given the absence of stereotypical movements or with a fixed sequence chain. Each game is different, giving players the ability to use their creativity, wit and tactical and strategic thinking by producing different moves. This modality has several ways of playing, among which I highlight the solo mode, paired mode and four-player squads. These three modalities are those that have been used for the teaching adaptation that is proposed to take them to the physical education classroom, it is important to know them since through them you can work one or other values in the students.</p> <p>This proposal of innovation in the classroom of Physical Education through the adaptation of the famous video game Fortnite presents three main objectives:</p> <ul style="list-style-type: none"> -to improve and enhance the adherence of students to sports practice making them see that the practice of physical exercise can be fun at the same time -to improve their motivation and self-esteem, enhance education in values -to promote the prevention of violent behaviors.
<p>Key Stakeholder s/ Provider</p>	<p>School Sports Research Unit, Physical Education and Psychomotory. UNIDEF Faculty of Education. University of A Coruña.</p>
<p>Level (Organisational, Regional,</p>	<p>Local</p>



Local, National)	
Type (Prevention, Intervention , Postvention)	Intervention
Impact	<p>The results confirm a greater motivation towards the practice of sport, a better work of values and prevention of violent behaviours during the game as well as an innovative way of working different contents of the curriculum through a new sport game, being defined by the participants in the study as very intense, dynamic, fun and stimulating. It is concluded that the participants of this innovative gamification experience based on the teaching adaptation of the Fortnite video game of Epic Games for the Physical Education classroom claim to increase their enjoyment and motivation towards sports practice. Second, it is noted that the use of a socially labeled as violent adaptation of a video game can be used for teaching purposes to prevent violent behavior and educate students in values. The proposal turned out to be very well received by all future university students in Physical Education. Fortnite EF can prevent the appearance of violent behaviors in children and adolescents, educating in values and especially affecting social, affective-emotional and psychic components.</p>
Available Statistics (if available)	<p>95% of those surveyed affirmed that it is a fast game, full of stimuli and with a high level of motor commitment 40% of the interviewed students defined the game as motivating 33 % of the interviewed students defined the game as dynamic 65% of the interviewed students defined the game as funny</p>
Tools/Resources/ Services	<p>In relation to the physical education material used is classified into two groups: material that inflicts damage and protective material. It should be noted that it is capable of adapting to the material resources available to each school. For the adaptation reflected here, the use of foam balls, not plastic or rubber, was chosen to avoid real damage to players, foam javelins and Indians, all of which are materials that simulate bullets, missiles or rockets as in the video game, and cause the same damage if they hit a player's body. As for protective materials, blue vests that serve as a shield have been incorporated, the player who gets one will have an extra life, the moment he hits a bullet he must remove it and throw it to the ground so that another player can make use of it. Finally, we incorporate several cones into the adaptation, the cones will play the function of protective material,</p>



	the team or player who gets 4 can establish a cabin created by four cones forming a square, this cabin will be hostel for one minute for the team that created it, and they will be able to rest in it and even throw bullets from there without being able to be touched.
Link/ Website	https://victorarufe.es/fortnite/





3.2 Romania

CASE STUDY 1	
Name	
Description	A technology and game-based system has been used at the Preparatory Grade (ages 6-7) during Romanian and Mathematics classes. Online platforms were used, such as: Plickers, AnswerGarden, Socrative, Classcraft. The students saw the learning process as an adventure, they had different roles and powers that they received from one level to the next one according to their scores.
Key Stakeholders/ Provider	Adriana Şurcă, primary school teacher at Şcoala Gimnazială "Sfântul Nicolae", Târgu Jiu, România
Level (Organisational, Regional, Local, National)	Organizational
Type (Prevention, Intervention, Postvention)	Intervention: overcoming the obstacles in the learning process by using digital tools in order to improve the academic level of the students.
Impact	The impact was very positive: the students learned because they were having fun, their academic level improved and their motivation and activity during classes increased.
Available Statistics (if available)	-
Tools/Resources/ Services	Computers, online platforms: Plickers, AnswerGarden, Socrative, Classcraft, Write.Fold.Pass
Link/ Website	http://www.scoalasfnicolae.ro/-urc-- adriana.html

CASE STUDY 2	
Name	
Description	The idea of the gamification in teaching the Romanian language and literature came from a shortcoming: lower secondary students didn't like reading. The teachers noticed that they prefer computer games, especially Minecraft, and decided to use this opportunity to improve the learning experience by integrating the game into the lesson. She created authentic situations based on the game, with levels, missions, trophies and prizes, hoping to raise the level of



	involvement and the students' motivation to learn. She tried to lower the effort of transmitting knowledge and behavior, and to determine students to develop their own strategy of acquiring them.
Key Stakeholders/ Provider	Mirela Tanc, Romanian language and literature teacher at Școala Gimnazială "Oltea Doamna", Oradea, România
Level (Organisational, Regional, Local, National)	Organizational
Type (Prevention, Intervention, Postvention)	Intervention
Impact	It had a great impact: it improved the learning process, making it more interactive and fun, and the students' ability to acquire knowledge and remember it.
Available Statistics (if available)	-
Tools/Resources/ Services	There are not mentioned any tools/resources.
Link/ Website	https://www.logiscool.com/ro/blog/2020-09/oportunitati-si-provocari-in-educatie





3.3 Greece

CASE STUDY 1	
Name	Educational Software for Primary & Secondary Schools
Description	Certified educational software for Primary & Secondary Schools which help students learn, through a series of activities created in the form of animation and with the support of interaction.
Key Stakeholders/ Provider	PI Pedagogical Institute – Greek Ministry of Education (GR)
Level (Organisational, Regional, Local, National)	National
Type (Prevention, Intervention, Postvention)	Intervention
Impact	This material is a useful tool for teachers and parents. It help teachers improve the learning process and make it more interesting and fun. Thus, students are led to a fuller understanding of the concepts, while at the same time they can follow their own learning path.
Available Statistics (if available)	-
Tools/Resources/ Services	Software
Link/ Website	https://ts.sch.gr/software

CASE STUDY 2	
Name	Playing with the tangram puzzle
Description	Educational game based on the idea of the Chinese tangram puzzle. Learning goals are to familiarize students with geometrical shapes, as well as cultivating the perception of pace.





	The game consists of 18 patterns of gradual difficulty. The students are given the opportunity to create these patterns, using basic geometrical shapes.
Key Stakeholders/ Provider	The Greek Ministry of Education and Religious Affairs
Level (Organisational, Regional, Local, National)	National
Type (Prevention, Intervention, Postvention)	Intervention
Impact	It addresses mainly students 4 to 9 years old, teachers but also the wider public
Available Statistics (if available)	-
Tools/Resources/ Services	Software
Link/ Website	http://photodentro.edu.gr/lor/r/8521/5623

CASE STUDY 3

Name	An Ancient Temple
Description	An online educational game on the architecture of Greek ancient temples. Its aim is to familiarize users with the function of the ancient temples, their design, their morphology, type, construction and decorative sculptures. Six characters, each one through its own role relating to the ancient Greek temple, present the game modules. One special application entitled "Learn More" completes the game and enriches its content with more expert knowledge on the topic.
Key Stakeholders/ Provider	The Acropolis Museum
Level (Organisational, Regional, Local, National)	National
Type (Prevention, Intervention, Postvention)	Intervention
Impact	It addresses mainly students from 9 years old, teachers but also the wider public.





Available Statistics (if available)	-
Tools/Resources/ Services	Online educational game
Link/ Website	https://www.theacropolismuseum.gr/polymesa/enas-arhaios-naos

CASE STUDY 4	
Name	Assembling the sculptures of the Parthenon
Description	The Acropolis Museum has created a new website with educational games, interesting videos etc. for children. Among this material there is the game “Assembling the sculptures of the Parthenon”, aiming at the familiarization of little children with the temple of the Parthenon.
Key Stakeholders/ Provider	The Acropolis Museum
Level (Organisational, Regional, Local, National)	National
Type (Prevention, Intervention, Postvention)	Intervention
Impact	It addresses mainly students from 9 years old, teachers but also the wider public.
Available Statistics (if available)	-
Tools/Resources/ Services	Online educational game
Link/ Website	https://www.acropolismuseumkids.gr/paixnidi/src/index.html





CASE STUDY 5	
Name	Traditional Greek costumes
Description	It is about a digital game familiarizing the students with traditional Greek costumes.
Key Stakeholders/ Provider	National History Museum
Level (Organisational, Regional, Local, National)	National
Type (Prevention, Intervention, Postvention)	Intervention
Impact	It addresses mainly students from 9 years old, teachers but also the wider public.
Available Statistics (if available)	-
Tools/Resources/ Services	Online educational game
Link/ Website	http://www.nhmuseum.gr/multimedia/foresies/index.html





III. THE DESIGN OF THE METHODOLOGICAL PLAN

1. Introduction

1.1. What is gamification?

Gamification is a technique which inserts gameplay elements in non-gaming settings, to increase the engagement of the user. By weaving suitably fun features such as leaderboards and badges into an existing system, the users' intrinsic motivations raises, as well as the results.

Gamification is the application of game-design elements and game principles in non-game contexts. It can also be defined as a set of activities and processes to solve problems by using or applying the characteristics of game elements. Gamification is also a methodology to inspire and drive users into action, by setting measurable goals and rewards for users.

Games and game-like elements have been used to Educate, Entertain and Engage for thousands of years. Some classic game elements are; Points, Badges, and Leaderboards.

Classroom gamification can include any or all of the following:

- Adding rewards (like badges) for completing certain tasks
- Keeping track of points
- Allowing students to create a character or an avatar
- Integrating proficiency based learning through 'levels' or 'platforms'
- Giving students opportunities to 'mod' assignments and projects (make small changes that still fit in the theme, while simultaneously allowing for individualization)
- Giving students an end-goal and allowing them to choose how they get there
- Having an in-class economy/money system

1.2 What is NOT gamification?

What "gamification" means and what it doesn't has been addressed and described by many researchers from a variety of different perspectives in the past. Similarities and differences of the methods between "gamification" and "games" (as well as "gamification" and "game based learning") have also been looked upon up until now. However, "gamification" and "game" terms are still being mentioned as substitutes for one another sometimes in many research articles. Although a mixture of methods are being used nowadays in the whole learning process (e.g. flipped learning together with gamification, mobile learning and infographics etc.), naming the "whole" learning methodology being used in an educational project/research only as "gamification" (or only as a game/GBL)--is yet another common issue that may lead us to misunderstand the gamification concept. (Çeker, Eser; Özdaml, Fezile, 2017)

Gamification is NOT:

- playing a game in class
- using a simulation to teach a lesson
- only integrating technology



- just about having fun, it's an users- engagement tool
- just a simulation, but use of game elements in different contexts
- restricted to any specific field
- only a competition between users
- only about points and leaderboards, these are motivational tools
- about the need of heavy graphics to engage users
- about requiring a large amount of resources, but plenty of creativity and ideas

1.3. Categories and types of gamification

STRUCTURAL GAMIFICATION

Structural gamification involves applying game elements to move a learner through content with no changes or alterations to the content itself. The focus of this type of gamification is to get the learner motivated to work through the content, keeping them engaged by offering rewards.

One example of this type of gamification in elearning is allowing learners to earn points for completing an assignment in which the assignment had no other elements of a game other than the offering of points.

There are some common components to this type of gamification:

Points. Learners earn points for doing specific tasks, like watching a video or completing an assignment.

Badges. These would be awarded to players as they reach certain goals.

Achievements. Similar to badges, achievements are earned as learners work through the various tasks and goals assigned to them.

Levels. As players move through the content, it continues to build on the previous concepts.

Leaderboards. The "ranking" of learners and their achievements is displayed on a leaderboard.

Social element. As learners see what their colleagues are achieving or possibly struggling with, they are encouraged to help each other along. Social learning is a key factor in success and it can be reinforced through educational programs.

It's important to remember that the use of structural gamification adds external factors to make an activity game-like, but doesn't change the content. Even if story elements, like characters, are a part of the gamification, the content remains the same.



CONTENT GAMIFICATION

In the case of content gamification, the content itself is altered to make it more game-like. It still doesn't turn the content into a game but rather adds games or activities to the content. The focus is to increase user engagement by attaching interactive elements.

An example of content gamification is starting a course with a fun challenge to grab the learners' attention as opposed to starting right off with a list of learning objectives. Another example is to add story elements as part of the content.

2. Why to use gamification in education?

The gamification theory in education is that learners learn best when they are also having fun. Not only this – they also learn best when they have goals, targets and achievements to reach for, of course in a way the learner still perceives as fun.

Because of the addictive features of video games that intrigue children (and adults) and get them hooked, it's only natural that we see similar engagement results when these game-based elements are applied to learning materials.

Gamification in learning involves using game-based elements such as point scoring, peer competition, team work, score tables to drive engagement, help students assimilate new information and test their knowledge. It can apply to school-based subjects, but is also used widely in self-teaching apps and courses, showing that the effects of gamification do not stop when we are adults.

Gamification has been shown to be tremendously effective, both in educational settings, e-learning settings and even for corporate companies using it to train employees.

Gamification works for the following reasons:

- Games play into basic needs (autonomy, value, competence etc.)
- Games can be social (games may have leaderboards, for example, or places where high-scorers are displayed so players can feel validated when they do well. Players may be able to challenge their friends or invite others to play)
- Games encourage ongoing engagement (gamification helps retain users by encouraging them to keep playing and gain more points, rewards, or simply discover more information)
- It gives players (learners) control (they feel like they are in charge of their own learning journey, going from point A to point B).
- Gamification works because it triggers real, powerful human emotions such as happiness, intrigue, excitement and accomplishment. All around the world, companies, institutions and household brands are using gamification, with marvellous results.

There are many proven benefits to using gamification in the classroom, such as:

- Students feel like they have ownership over their learning
- A more relaxed atmosphere in regards to failure, since learners can simply try again
- More fun in the classroom



- Learning becomes visible through progress indicators
- Students may uncover an intrinsic motivation for learning
- Students can explore different identities through different avatars or characters
- Students often are more comfortable in gaming environments, so are more proactive and open to making mistakes
- Higher engagement and concentration levels amongst students
- The opportunity to think outside of the box. Tasks are no longer just about filling in a worksheet – what are the wider, ‘gamified’ consequences?

3. Educational impact

Gamification in education can improve motivation and engagement. Game elements such as immediate feedback and learning badges for completing the challenges successfully are strongly influential on increasing the students’ motivation to actively participate in the gamified lessons.

3.1. Short term

Gamification improves extrinsic motivation – the kind of motivation that’s driven by external rewards – but has been shown to have no effect on intrinsic motivation. This is an important distinction because studies have shown that extrinsic motivation produces only short-term effects, at best. Once learners get the badge or complete the challenge, their motivation to continue wanes.

The most compelling evidence of gamification’s efficacy, in terms of impacting positively the engagement factors are the following:

- Time spent learning
- Volume of contributions
- Online learning platform use
- Performance
- Other healthy behaviors

3.2. Long term

As for the long term impact, even though there is not much research and studies on this topic, some long term effects have been encountered.

The social component of gamified learning, whereby students gamify in groups, leads to loads of benefits on the brain function. Social, intellectual engagement activates neurotransmission in the brain, brain plasticity, and rewiring, and mitigates brain inflammation and the deleterious effects of oxidative stress on the brain. The beneficial effects of social interactions have been interestingly highlighted in delaying dementia in the elderly population.



Gamification modifies the brain's reward and pleasure center and ameliorates learning. It is well established that games, whereby a person wins or receives positive feedback, can activate the brain's pleasure circuits by inducing the release of the neurotransmitter dopamine. Educational games are suggested to have the same influence given their elements of winning challenges or successfully achieving a goal. This pleasure during gamified education results thus in a long-lasting affinity for the academic subject or for solving otherwise complex problems.

Furthermore, the influence of games on the pleasure center has important effects on learning per se. Indeed, reward-related signals have been reported to promote the storage of new information into long-term memory through dopaminergic modulation of the midbrain, which activates the hippocampus, a structure primarily involved in learning and memory. Dopamine is also involved in controlling neuronal plasticity within the hippocampus, which is a significant brain phenomenon underlying the acquisition of new information and skills. Moreover, hippocampal memory has been reported to improve following the practice of video games in adults through the stimulation of the brain circuits.

4. Gamification and Game-based learning

4.1. What is game-based learning

Game based learning (GBL) is where game characteristics and principles are embedded within learning activities. In GBL learning activities promote student engagement and motivation to learn. Components of game-based learning include points systems, badges, leaderboards, discussion boards, quizzes and classroom response systems. Points may come with academic rewards such as having an extra week to submit an assignment once reaching a certain point threshold. Badges can be given if students reach a certain success level while classroom response systems like Kahoot or Top Hat encourage participation through points.

Game based learning is also an active learning technique where games are used to enhance student learning. The learning comes from playing the game and promotes critical thinking and problem solving skills. Game based learning can be accomplished with digital or non-digital games and may include simulations that can allow students to experience the learning firsthand.

4.2. The elements of games

There are a large number of tools related to the components of the game, since it is where there is the greatest similarity between them.

On the one hand, there are platforms that offer us a complete space to create our classroom with their avatars and skills, pose challenges, award badges.

- Chorewars (Davis, 2006), for example, consists of gamifying tasks. For it, use a series of avatars that have different abilities. The students should be improving them through the activities carried out. The tasks can be created by yourself, grant the experience points (XP) that deem appropriate, improve the skills that you deem appropriate



according to the task to be done and the possibilities of finding collectibles around the way. In addition, they can get objects, defeat final monsters to get treasure, etc. It is a very complete tool. The problem is that it is in English, which could be an obstacle for both the teacher and for the students. <http://www.chorewars.com/>

- Edmodo (Edmodo, Inc., 2013) is a similar example, the difference is an environment more formal and without storytelling, but they are making great strides in terms of gamification of it. You can create a classroom, plan activities, upload content and award badges. It is quite complete.
- Toovary (Advance Educational Entertainment S.L., 2011), is a very interesting, specifically designed for gamification. Create a character, improve it through the acquisition of points, create challenges.

4.3. Types of games

4.3.1. Video games

4.3.1.1 Video Games for learning: serious games

In the game-based learning field there are educational video games known as serious games. This specific segment of learning seeks to teach students specific subjects such as languages, or to train professionals like police officers, pilots, firefighters or healthcare personnel, among others. Educational video games are a booming market and are expected to be worth \$17 billion by 2023 — 485% more than in 2018 — according to forecasts published by the Statista portal. Let's take a look at some of these products:

Dragon Box is an introduction for small children to geometry.

Extreme Event prepares learners to deal with natural disasters and encourages teamwork.

Pacific gives training in leadership and team management.

Spore is useful for teaching biology, specifically the evolution of living beings.

Duolingo helps in the learning of languages like English, French and German.

Blood Typing, developed by the Swedish Academy, teaches about blood types and transfusions.

4.3.1.2 The benefits of playing video games

The impact of video games on society has been the subject of numerous studies. For example, in 2014, Andrew Przybylski, a psychologist at the Internet Institute at Oxford University, published an study in the journal *Paediatrics* establishing how long children should be allowed to devote to video gaming. He concluded that those who played less than an hour were more emotionally stable, while those who played for around three hours a day developed social problems. Therefore, when it comes to video games, moderation is key, because as well as improving learning abilities, there are other benefits. Let's take a look at some of them:



They speed up response times

Researchers at Rochester University have found that they improve troubleshooting skills by posing problems that must be solved in a set time.

They encourage teamwork

According to Californian organisation, the Institute for the Future (IFF), multiplayer games boost teamwork in problem solving.

They stimulate creativity, focus and visual memory

The University of California has found that they stimulate these aspects by setting goals that require concentration, imagination and remembering details to achieve them.

They improve strategy and leadership

Video games put players in command, honing their abilities to resolve disputes, interact with other players and make decisions, found Pittsburgh University.

They teach languages

Helsinki University found that they are useful for learning other languages through on-screen instructions, chats for communicating with other players or the narration of the story itself.

Critical thinking

Monterrey Institute of Technology published an article underlining the underlying ethical, philosophical and social basis of these games, and their ability to make players think and improve their critical thinking

4.3.2. APPs

Educational apps are making things easier for children to understand. Books are often found to be tiring and boring for children while replacing them with colourful pages and moving animations can make learning fun to the core.

Benefits of Using Mobile Applications in Education

Enhanced Interaction

Experts say that apps in education can make children more interactive and activate better engagement between parents and children. The most effective way is to engage with the children while they are using applications. Interaction tendency in children is enhanced by mobile applications.



Novel learning techniques

Thoughts of traditional methods of learning accompany a generic feeling of boredom. They do not favor drifting from the monotonous learning patterns of restricted and upright book learning, thus dissipating the engagement factor.

Technology in the guise of apps is helping those looking for some newness in the universe of learning. In addition to the feel of novelty, apps add an element of fun and involvement to the learning process. Through games, puzzles or other challenging tasks, app learning stimulates the brain cells to actively metabolize the input unleashing a new perspective.

Parent-teacher communication

The ideal concept of frequent parent teacher interactions finds its space in the articles and books regarding performance enhancement but not in reality. Owing to the tight schedule of both the parties, it is just not possible to maintain the rapport through physical interactions. But now, we have apps. Teachers can attend to the queries of the parents anytime and anywhere through an ominous device called the phone. This fosters transparency regarding the child's growth at school.

Online resources

The power of the digital world lies in the ginormous amount of resources that fill its nooks and corners. The wealth of this platform implicates its popularity among knowledge seekers. The reach of this platform makes it a favorite to people who cannot afford the luxury of full time courses in schools or colleges. Mobile applications help them access a compendium of ebooks and pdfs and other online materials and the freedom to access it beyond the boundaries of time and space.

Entertainment

According to studies, mobile apps promote entertainment. Learning is no more a passive activity, it's active with applications. Lessons transforming to games can change the face of education. Children will enable a kind of interest in learning. Level based apps instil determination to pass each level. Apps without doubt enhance education. No more boring homework and tough class lectures.

Availability 24/7

Unlike school, mobile applications are available round the clock. No need to be worried about schedules. Anywhere can be a classroom. App learning is not time-bound learning, its relaxed learning.



Most of the apps promote child-friendly control. Children should only need to reach out for the device when they feel like learning. Little ones can operate it without much effort.

Leisure Hours Utilization

No responsible parents want their kids to get addicted to the “idiot box”. Too much internet usage and talking over the phone for hours are not wise options for killing time. This is where mobile apps prove their worth. Mobile app learning is one among the wisest choices of utilizing your free time actively.

If a child has lots of leisure time, it can be utilized to learn something new with the help of a learning app. Entertainment guaranteed without wasting time.

Routine tasks

It's a relief to get all the mundane tasks done with a few taps. Be it tasks like fee payments, other transactions which require us to stand in a queue for hours or the laborious job of marking attendance that drives teachers crazy with the amount of paperwork smiling back at them each day. All this drudgery has been put to an end simply by having apps in place. The life of each individual associated with the ecosystem is now simple and functioning, more efficient.

Filling in the gaps

The wheel of time has spun to drive the progress to land us into the world we live in today. The advancement that schools have seen eliminated a lot many glitches that prevailed in the education system. A major one being the lack of interaction between the teachers and the teachers. Apps and websites have been created to help reduce the gap not just between the students and the educators but also among parents and the teachers. Students and parents can be kept in the loop of every event, schedule change or announcement.

Better Earth

While millions of trees are cut down for making papers for the traditional method of learning, mobile apps in education require just a download. It means a greener earth for future generations.

Mobile learning process has sustainability. Completing a lesson with an app is much more effective as it is learning from experience rather than from compulsion.

Systematic Learning Activated



Smart learning is one thing and systematic learning is next. App based learning enables both. Mobile apps help in systematic learning. Apps are arranged in such a way that it promotes not only a craving for learning but systematic learning.

The apps are arranged in a systematic way that it becomes possible for students to go with the flow without even realising.

Portability

There are no constraints for mobile phones. They can be constant companions of parents and students. Thereby, apps are available to children anywhere, anytime. Learning will not be confined to the classrooms alone.

More Than Just Children

It's a misconception that only children benefit from the apps. Teachers and parents also benefit from using educational apps. Teachers can make use of apps in classrooms. There are apps that help teachers to plan teaching materials. App based learning allows teachers and parents more time to discuss lesson plans for better interactive classes. While selecting apps for children, parents and teachers can contribute a lot.

Sustainability

Using mobile apps for learning is more sustainable compared to the traditional learning methods which include papers, pencils, and pens. Getting reference notes is very simple in mobile learning- just download it. This results in a lesser number of trees being cut down every year.

Instant Updates

There are some apps which are not only meant for learning but also to stay updated about campus events, timetables, alerts and other important information. Soon apps will allow you to do the educational related payments such as tuition fees, library fines, etc. They also provide opportunities to interact with students throughout the life cycle of prospects, enrolled students, and alumni.

Track Your Children's Progress

With some apps, you can track your children's progress which is one of the important things that every parent wants to know. Along with the progress, you can visualize how each app is helping your children to improve their skills such as reading, maths and much more.

Staying connected



Educational apps are the best way for children to stay connected with their teachers. Though the way of learning through apps is entirely different from the traditional learning method, it adds value to the entire process.

4.3.3. Board games

4.3.3.1. Neuroeducation and board games

Neuroeducation presents us with a new model that places the current educational system in the judiciary, its curricular load, committed to create competent future professionals at the same time as competitive. The current system is talking about it excludes a large part of the population and causes high failure and dropout rates. More knowledge is not valid in the current technological era. It is more important to know how to use knowledge and learn to manage the resources we have available, learn to generate and produce. Most of the teachers are aware that this must be the goal, and that we must make substantial changes both in the curricular contents and in the teaching methodology.

Only since neuroeducation has represented a radical change in the goals of education and in the way of learning, it is clear that educational administrations are slow machines. For this reason, individual or collective initiatives arise, from the teacher, from the educational centers and associated groups that advocate for a change in the same cements. These initiatives keep up with current technology and, relying on the movement "Mind, brain and education ", to incorporate the contributions of educational neuroscience. An example is the work of David Sousa (2014), which underlines the importance for us to bring novel experiences that favor neuronal activation, the need to keep the focus and weight of feedback positive, that if it is also immediate it facilitates an effective learning. The straight, the rewards and the desire to overcome are components that chase the brain because Allow neuronal activation, favoring a learning context. When something is right for us, when you awaken our curiosity and excite us, we allow the activation of the amygdala, a part of the limbic system that activates dopamine secretion. Dopamine is a neurotransmitter that improves the performance of the area consequently better prefrontal the attentional processes that make learning possible.

This is the kind of "positive" experience that the brain likes to constantly replicate itself in its permanent search for satisfactory experiences. Only one can learn what he loves, only one through emotion and enjoyment we can learn (Mora, 2013), what is the same,

Only emotion and enjoyment allow us to learn. Immediate feedback and rewards they will also allow to maintain the necessary state of care.

The game is the place where we find all elements proposed by neuroeducation. There is no other activity that gives us a challenge, eagerness to improve, immediate feedback, rewards and, above all, emotion.

4.3.3.2. Attitudes and basic competences to develop through games

Through the board game we enable the social, cognitive and emotional connection that mirror neurons, establishing a system of effective teaching.



Verbal competence

Language is the most important instrument of relationship, communication and expression with others.

As a tool it allows us to build thinking and understand reality. The ability to see therefore allows us to reason, solve problems and work with content with a component culture. Its development facilitates the associative connection between different concepts, which is one of the most important aspects of brain development.

Although we relate this ability exclusively with language, is also related to the ability to interpret and extract information of graphs and tables and, therefore, with the dexterity of understanding and analyzing both verbal information as numerical.

The board game is one of the group activities that most favors intense intercommunication and dialogue; it requires a multitude of actions to exchange, agree, negotiate. The language thus becomes essential to be able to achieve the game objectives, activating listening processes and active and meaningful speaking skills.

One of the pillars of the primary stage is acquiring enough language skills to be able to understand the meaning of the text. In this sense, the development of the verbal area is implicit in each board game, since they all require understanding of some rules, which are more or less complex, to start playing, so that each of the games that we present here will contribute to acquiring that reading comprehension.

Numerical competence

It is the ability to reason with numbers and use them in an organized, agile and appropriate way.

It is related to the handling of basic mathematical concepts, arithmetic reasoning and ability to resolve situations that require the students to use numbers in their different demonstrations.

The best way to consolidate concepts is to carry out assiduous practices of manipulative activities, relating them to themes and contexts related to the students; again, for this reason, the board game is one of the most potent to strengthen this ability, since allows to apply the concepts acquired in a meaningful, making the student body the protagonist and active part of their learning.

Spatial competence and logical reasoning

Spatial competence is the ability that allows mentally representing shapes, dimensions, coordinates, maps, proportions etc.. It allows us to imagine objects rotating in space, thus developing a three-dimensional perspective. It favors the sense of orientation, the interpretation of maps or the ability to properly position objects within a delimited space.



Logical reasoning, on the other hand, allows us to establish causal and logical connections, solve problems and draw conclusions, so it takes part in many of the mental functions.

Both are related to the visual perceptual ability to construct visual representations and think with images and are very direct with the acquisition of skills in reading, writing and mathematics.

Attention and memory

Attention is a process of perceptual targeting that allows us to orient the activity to a specific stimulus and control it. An essential requirement for any learning, it is a process complex whose stimulation cannot be detached from many other brain functions, since other processes, such as memory, orientation or executive functioning are interdependent on it; therefore its stimulation will favor an improvement in the cognitive efficiency of many other mental functions.

Memory “is a neurocognitive function that allows you to record, encode, consolidate, retain, store, retrieve and recall previously stored information. While learning is the ability to acquire new information, memory is the ability to retain learned information” (J.A. Portellano, 2005).

The interdependence between attention and memory is obvious: to be able to record the information, attention processes are required; later there is a process of storing the information and finally a recovery process. All this requires cognitive strategies in which in addition to interpreting the information received, an analysis of this is carried out, a categorization, association and relationship with other knowledge already acquired.

The effectiveness in training attention and memory is achieved mainly in an ecological context, that is, by performing activities that have a direct relationship with the natural environment of students, activities that are meaningful and of great interest to them. The board game allows the child to approach this environment, since the themes are related to your interest. Also not related to a training program in attention and memory, but rather are presented as a playful challenge, which, as we have explained previously, triggers various processes of neuronal activation.

All activities implies an attention process; if we add to that that a habitual practice incorporates knowledge of the theme of the game, we easily get to the conclusion that there is no game that does not exercise both functions.

4.3.3.3. Examples of board games

Board games to develop verbal competence

Verbalia, characterized by its versatility, as it presents 50 game modes, helps the acquisition of grammatical concepts, favors lexical enrichment and is useful in phonological and syllabic processes.

Set, an ideal game to stimulate visual perception, which helps to improve the processes of discrimination and visual attention. Allows you to set sequences and associate them to different categories and sequences.



Bug salad, bug soup, especially indicated for the development of semantic flow, since they are simple games that also test the ability to react together with lexical retrieval.

The forbidden desert or the forbidden island, cooperative games with a great narrative force that facilitate dialogue and consensus in decision-making decisions and planning, and thus encourage intense dialectical activity.

The Hare and the Tortoise allows a greater understanding of the fable, in a playful way.

King of Tokyo, with numerous action cards, indicated to stimulate understanding reading and analysis of texts.

Fauna and Terra enhances training in descriptive reading and in the establishment of associations that allow the acquisition of words meaningfully.

Secret code, an innovative resource, allows you to establish associations between different words in a very creative way.

Board games to develop numerical competence

The Piggy Gang, Turtle Race and Hedgehogs on the run, helping the most small in understanding and handling of number, in literacy systems numerical and counting, consolidating sequential processes from lowest to highest, and in the introduction to the + and - symbols, thus facilitating the real understanding of numbers.

Coloretto, which provides approximate and mental calculation strategies, as well as serialization and planning related to logical reasoning.

Machi Koro City, Dominion and Sushi go !, very related to planning capacity, mental calculation and consolidation of operations numerically, and that also promotes the development of working memory, essential for good mathematical competence.

Moving !, which consolidates the perception, orientation and spatial representations and allows mental calculation of operations related to processing speed.

Fila Filo, which in addition to favoring the counting and sequencing allows the internalization of complex spatial notions to develop through a three-dimensional space.

Terra and Fauna, which by using measurement units (kg and gr, m, cm) and maps, allows approximation strategies and measurement estimation keeping in mind an intuitive component and developing inductive reasoning

Board games to develop spatial competence and reasoning thinking

Cacao, a resource management game, with the ability to reason, and whose design allows us to stimulate graphic interpretation and raise awareness in visual perception processes, thus facilitating the development of the space area.

Carcassonne and Carcassonne Junior allows the development of the sense of orientation and directionality through the construction of roads or cities.



Moving! will enter the players into an intuitive mode in the world of volumes, as they will have to take into account the dimension and volumetric value of the strips to calculate the space they will occupy.

Magic Labyrinth or Ricochet Robots combine two areas that are not usually worked together: spatial orientation and operative memory. Thus, it is essential to maintain an active attention, which will promote an optimal performance in attention processes. The second game will also use techniques of mental representation to calculate distances and displacements. This form of working on orientation favors in the smallest the consolidation of basic processes of prewriting.

Calisto and Ubongo, games in which the sense, the direction or orientation of the pieces will complete their resolution; promote processes interpretation and compression of the spatial area, thus facilitating orientation and hand-eye coordination.

Board games to develop attention and memory

Terra and Fauna are two games that activate associative processes, relate the new information with previous knowledge acquired, strategy that allows to improve memory.

1, 2, 3! Now you see me makes it easy to acquire strategies of repetition, grouping, classification and memory of images.

Cocoricó, cocorocó! It is appropriate to start with the little ones in care processes and memory. Use a strategy similar to "memory".

Spooky stairs is an ideal resource for basic processes in these areas.

Phantom blitz allows the development of sustained attention.

The magic labyrinth is an original resource since it combines attention and memory together spatially oriented, something unusual.

4.3.3.4. Types of board games

Abstract

Board games with no theme at all, or what theme is offered is so disconnected from the actual experience of playing that it might as well not be there. Draughts and Go are the purest examples of abstracts, while chess - with its set of named pieces and suggestion of historical warfare - is relatively thematic by the standards of the category.

Examples: Draughts, chess, Go, Tak, Shobu, Hive, Santorini, Azul and its sequels.

Area control

Board games with some form of map or board defining a space that players compete to dominate, usually through adding their own pieces to regions or areas or removing opponents'



pieces. Sometimes the control can come through denying access to areas rather than taking them yourself - it could be argued that Scrabble is an example of the genre!

Examples: Small World, Risk, Nanty Narking, Blood Rage.

Campaign/legacy

Campaign board games are defined by individual plays following a series of connected scenarios, where the actions and outcome of one scenario will usually affect the next. Legacy board games are a specific type of campaign game where your choices and actions cause you to make permanent (often physical) changes to the game and its components, such as applying stickers to the board or tearing up cards, often providing a one-time experience.

Examples: Gloomhaven, Pandemic Legacy, Charterstone, Betrayal Legacy.

Deckbuilder

Each player starts with their own identical deck of cards, but alters it during play, with more powerful cards being added to the deck and less powerful ones removed. Deckbuilders are sometimes conflated with deck construction games such as trading card games, with the difference being that in deckbuilders the act of creating and customising your deck is part of the core gameplay experience, instead of something that usually happens away from the table between plays.

Examples: Dominion, Star Realms, Undaunted: Normandy, Harry Potter: Hogwarts Battle.

Deck construction

A type of board game where the players use different decks of cards to play, constructed prior to the game from a large pool of options, according to specific rules. There are two main distribution models: trading or collectible card games sell booster pack products with a randomised set of cards in each, while living card games and expandable deck games provide a fixed set of cards in each expansion. (Living card game applies specifically to such games produced by Fantasy Flight Games, which has trademarked the term.)

Examples: Magic: The Gathering, Android: Netrunner, Marvel Champions, Arkham Horror: The Card Game.

Dexterity

Board games involving physical skill, whether using the whole body as in Twister or just the fingers for moving things about, as with removing blocks in Jenga. This can include flicking discs or other objects with your fingers like Flick 'em Up, balancing things in games such as Beasts of Balance or even throwing objects around, like Dungeon Fighter.



Examples: Cube Quest, Catacombs, Flip Ships, Flick ‘em Up, crokinole, Beasts of Balance.

Drafting

Drafting is a mechanic where players are presented with a set of options (usually cards, though sometimes dice) from which they must pick one, leaving the remainder for the next player to choose from. The selection may be made from a shared central pool of choices, or from a hand of cards passed between players. This can be a small part of a game, such as selecting an ability for use during a round, or the entire decision space for a game.

Examples: 7 Wonders, Sushi Go!, Villagers.

Dungeon-crawler

Players take the roles of characters making their way through a location, often depicted by a map with a square grid or a page in a book, defeating enemies controlled by another player, a companion app or the game system itself.

Examples: Gloomhaven, Mansions of Madness, Star Wars: Imperial Assault, Mice and Mystics.

Engine-builder

Over the course of an engine-building board game, you’ll build an “engine”: something that takes your starting resources and/or actions and turns them into more resources, which turn into even more resources, which - somewhere along the line - will usually turn into a form of victory points.

Examples: Res Arcana, Century: Spice Road, Race for the Galaxy.

Eurogame

Often shortened to just ‘Euro’, these are strategy-focused board games that prioritise limited-randomness over theme. Usually competitive with interaction between players through passive competition rather than aggressive conflict. Named for the fact many of the early games of this style were developed in Europe - particularly Germany - in contrast to the more thematic but chance-driven “American-style” games of the time. (Sometimes referred to as ‘Ameritrash’ by those who dislike the high luck element.)

Examples: Agricola, Paladins of the West Kingdom.

Push-your-luck

Board games that invite you to take ever bigger risks to achieve increasingly valuable rewards - or to decide to keep what you’ve got before you lose everything. Think of the card game



blackjack or deciding whether to give an uncertain answer on Who Wants to be a Millionaire? Sometimes also called press-your-luck.

Examples: The Quacks of Quedlinburg, Port Royal, Deep Sea Adventure.

Roll-and-move

Board games where you roll one or more dice and move that many spaces - commonly on a looping track of spaces, or a path with a start and finish. Often landing on certain spaces will trigger specific actions or offer the player certain gameplay options. Simple as that.

Examples: Monopoly, The Game of Life, Snakes and Ladders, Formula D.

Roll-and-write

Roll some dice and decide how to use the outcome, writing it into a personal scoring sheet. Each decision impacts your options for the rest of the game, so even in games where everyone uses the same dice, slightly different choices at the start can lead to very different end results. Some games twist the name by replacing the dice with something like cards for a 'flip-and-write' (Welcome To...) or the writing with something like placing miniatures for a 'roll-and-build' (Era: Medieval Age).

Examples: Yahtzee, Railroad Ink, Ganz Schon Clever, Corinth.

Social deduction

One or more players around the table have a secret, and the rest of you need to figure out who! Expect lying, bluffing and wild accusations all round. Players are often secretly assigned hidden roles that only they know, and must achieve their own objectives - commonly either finding the odd one out, or hiding the fact that you are the odd one out yourself.

Examples: Blood on the Clocktower, One Night Ultimate Werewolf, The Resistance.

Storytelling

Board games with a focus on narrative and description that is directed or fully created by the players. This could be an overarching story lasting the whole game - or across a campaign of multiple sessions - read from pre-written passages, or a sequence of vignettes as players are tasked with inventing and describing something prompted by a single card.

Examples: The King's Dilemma, Tales of the Arabian Nights.



Worker-placement

Board games where you choose actions from spaces on the board by assigning your pool of “workers” - often thematically actual workers in your employ - to them. Usually Eurogames, with player interaction created because actions one player has taken often can’t be taken by or come with a cost for anyone else.

Examples: Charterstone, Agricola, Caverna, Lords of Waterdeep.

Wargame

Players pit armies against each other, represented by collections of miniatures or tokens on a map, with a grid or actual measured distances for movement. Eliminate the opponent’s figures or achieve objectives to win, with combat usually dictated by dice rolls or card play.

Examples: Warhammer 40,000, Memoir ‘44, Risk, Axis & Allies.

4.3.3.5. Types of players

Marczewski proposed six user types that differ in the degree to which they can be motivated by either intrinsic (e.g., self-realization) or extrinsic (e.g., rewards) motivational factors [27]. Rather than basing the model on observed behaviour, the user types are personifications of people’s intrinsic and extrinsic motivations, as defined by SDT.

Accordingly, the four intrinsically motivated types in the Hexad model are derived from the three types of intrinsic motivation from SDT, namely relatedness, competence, and autonomy, with the addition of purpose. The figure below illustrates the six user types from the Hexad model. Below, we list the user types and the game design elements suggested by Marczewski to address the motivations of each type, which we investigate in this work.



Philanthropists are motivated by purpose. They are altruistic and willing to give without expecting a reward.



Suggested design elements: collection and trading, gifting, knowledge sharing, and administrative roles.

Socialisers are motivated by relatedness. They want to interact with others and create social connections.

Suggested design elements: guilds or teams, social networks, social comparison, social competition, and social discovery.

Free Spirits are motivated by autonomy, meaning freedom to express themselves and act without external control. They like to create and explore within a system.

Suggested design elements: exploratory tasks, nonlinear gameplay, Easter eggs, unlockable content, creativity tools, and customization.

Achievers are motivated by competence. They seek to progress within a system by completing tasks, or prove themselves by tackling difficult challenges.

Suggested design elements: challenges, certificates, learning new skills, quests, levels or progression, and epic challenges (or “boss battles”).

Players are motivated by extrinsic rewards. They will do whatever to earn a reward within a system, independently of the type of the activity.

Suggested design elements: points, rewards or prizes, leaderboards, badges or achievements, virtual economy, and lotteries or games of chance.

Disruptors are motivated by the triggering of change. They tend to disrupt the system either directly or through others to force negative or positive changes. They like to test the system’s boundaries and try to push further. This type is derived from SDT, but from empirical observation of this behaviour within online systems. Although disruption can sometimes be negative (e.g., cheaters or griefers), this is not always the case because disruptors can also work to improve the system.

Suggested design elements: innovation platforms, voting mechanisms, development tools, anonymity, anarchic gameplay.

4.3.3.6. Online platforms

4.3.4. *Breakout Edu and Escape Rooms*

An **escape room** is part theater, part team building exercise, and all about solving puzzles and interpreting clues within the context of a theme or subject area. “The most literal definition of an escape room is a game which requires players to escape from imprisonment by exploiting their surroundings.” (Hallaway, 2015) Educational escape rooms or games have applied this concept to engage students within a particular subject matter. The educational escape room concept is basically an organized form of problem based learning that uses aspects of the curriculum within the context of an engaging scenario or theme . The format of most educational escape rooms takes the form of students trying to get into a series of locked boxes rather than necessarily trying to escape a room. Students follow the clues to find and solve the puzzles to



discover the lock combinations to get more clues or puzzles. Students eventually solve the final big puzzle.” In the process students are inspired to learn the lesson content in order to “win.” “Educational escape rooms can be super effective in schools because of their ability to be adapted to any subject. Students will be excited and motivated to learn different subjects in an immersive, engaging environment.” (Aaron, 2017)

In recent years, Educational Escape Rooms (EERs) have become a promising scientific field and have raised great interest in researchers and educators in terms of new Game-Based Learning (GBL) approaches to break out from the traditional classroom and affect various specialties and educational contexts. Most ERs have been created for recreational purposes. However, the use of ERs in education reflects their constantly increasing rate, because schools need to operate with different paradigms in the learning process. The first generation of Ers focused on difficult logic puzzles, whereas ERs have now evolved into fully immersive environments with high-quality props and effects. This means that participants in a game transfer from their real-life context into the game context and are lured into a story or a particular problem. ERs for education are problem-based and time-constrained pedagogical activities requiring active and collaborative participants, a setting that teachers want to achieve in their classrooms for the promotion of students’ learning .

Breakout EDU is a modified version of escape rooms to be used primarily in educational settings to teach content as well as other skills like creative thinking, problem-solving, collaboration, and so on. Teachers set up a series of locks on a closed box. Then the teacher provides puzzles and challenges for students to solve in order to open the box. A limited amount of time is provided for students to solve the challenges.

5 steps to create a Digital Escape Room (DDE)

Step 1: Write your prompt

A great escape room will have a fun backstory that will hook the reader.

Step 2: Create your clues

Decide what you want your “locks” to be then write your clues.

Step 3: Create your images

Images have two purposes in an Escape Room. They can add to the hook element of the story and they can contain clues.

Step 4: Create the locks

Using Google Forms, create “locks” with response validation so they know if they are right or if they need to keep trying.

Step 5: Create your site

Put all your information (clues, images, story, etc.) into a Google Site



4.3.5. Role plays

Role-play is a technique that allows students to explore realistic situations by interacting with other people in a managed way in order to develop experience and trial different strategies in a supported environment. Depending on the intention of the activity, participants might be playing a role similar to their own (or their likely one in the future) or could play the opposite part of the conversation or interaction. Both options provide the possibility of significant learning, with the former allowing experience to be gained and the latter encouraging the student to develop an understanding of the situation from the 'opposite' point of view.

In a role play, participants are given particular roles to play in a conversation or other interaction, such as an email exchange, typical of their discipline. They may be given specific instructions on how to act or what to say, as an aggressive client or patient in denial, for example, or required to act and react in their own way depending on the requirements of the exercise. The participants will then act out the scenario and afterwards there will be reflection and discussion about the interactions, such as alternative ways of dealing with the situation. The scenario can then be acted out again with changes based on the outcome of the reflection and discussion.

Possible technologies to support role playing

Role-play is a very flexible teaching approach because it requires no special tools, technology or environments, for example students could work through a role-play exercise just as effectively in a lecture hall as in a seminar room. However, technology can provide significant advantages, and even new possibilities, for using the approach as a learning activity.

At the most simple level, technology such as voice recorders, video cameras and smartphones/tablets allow traditional face-to-face role-play exercises to be recorded and stored online for later reference, analysis and reflection, as in this example of negotiation skills from EduCon, Korea. This can allow an exercise to be revisited at a later date and re-evaluated based on subsequent learning and experience, which isn't generally possible when the exercise has not been recorded. Other tools that can be used with this traditional style of role-play are an electronic voting system or Twitter, both of which would allow a group of students to observe the role-play and evaluate the situation and conversation as it develops, such as by voting on whether a character was too aggressive or submissive during a particular interaction. This information could be retained and, coupled with a recording, provide another resource for later analysis and reflection.

However, technology can be used to create role-play exercises beyond what is possible in a face-to-face session. Asynchronous technologies, such as online forums and discussion boards, Social Networks, Twitter, etc., allow role-play to take place over longer periods of time and in a more considered way. This means that role-play can take place outside of timetabled sessions and in situations where students are unable to physically meet at the same time. In this situation students would post their part of the conversation, wait until the other participant(s) have responded, and then post their own reply, and so on. This method allows participants to engage when they are able and gives them time to consider their responses, and while it may seem quite artificial compared to a face-to-face exercise, it can reflect situations such as email discussions quite closely.



Another advantage of using technology is that it can enable external participants to take a part in the role-play. Tools such as Blackboard Collaborate, Skype and Google+ Hangouts all provide an online space where live conversations, including video, can take place. This means that a person with experience or expertise in the area being role-played can take one of the parts, producing a much more realistic experience for the student. For example, a clinical psychologist, drawing upon their own experience to make the interaction realistic, could play the part of a patient with students taking the part of the psychologist, or a chartered engineer could play the role of a project manager while students play the role of the engineers during a meeting. All of these tools can be accessed freely over the internet and only require a microphone and speakers/headphones, meaning the technical barriers are quite low. The tools typically have recording facilities that would allow the interaction to be permanently captured. These tools are also useful for role-playing among students where they are all available at the same time but can't physically meet, such as on distance learning courses or during placement periods.

4.3.6. Other types of games: outdoor, physicals, sports related, etc.

Outdoor and physical games involving movement are an important complement in the gamification. Gamification can leave the classroom in the form of **treasure hunts, clue hunts, orienteering quizzes, outdoor escape rooms**, etc. and still be all linked to the gamification strategy of the class/school, connecting the activities through storytelling.

The outdoor activities involving movement are beneficial in order to avoid the routine, by changing the scenario. Moreover, outdoor physical activity provided during school hours helps children become smarter, healthier and stronger. Outdoor play offers a variety of developmental benefits to children and mixed with an educative scope, ensure not only a sensory motor development, but also a cognitive one.

4.4. Rules and mechanics of the games

The mechanics are a series of rules that try to generate games that can be enjoyed, that generate a certain "addiction" and commitment on the part of users, by providing challenges and a path to travel, whether in a video game, or in any kind of application (Cortizo, 2011). They are directly related to Jon Radoff's theory and his 42 FUNdamentals:

Identify patterns	Gain knowledge	Be an hero	Tell stories	Create	Be afraid
Collect	Organize people	Be a villain	Predict future	Excitement	Strengthen relationships
Find treasures	Keep contacts	Be wise	Compete	Win conflicts	Improve health
Complete things	Be the center of	Be wild	Psychoanalysis	Relax	Connect with the past





	the attention				
Be recognize	Admire the beauty	Be a dictator	Mystery	Bizar	Explore the world
Make order in the chaos	Romance	Live a fantasy	Have abilities	Do silly things	Improve society
Personalize worlds	Make presents	Listen stories	Make justice	Laugh	Enlightenment

Based on this idea, Herranz (2013) proposes several types of game mechanics:

- Challenges, taking users out of a comfortable environment to introduce them to game mechanics (Werbach, 2013). Be careful not to frustrate participants.
- Opportunities, competition and collaboration, proposing the ideal way to behave in the game the participants.
- Within the opportunities the player will have different turns, different ways to interact against the game or against other participants.
- There may also be associations between players as a cooperation or form teams to meet the challenge or goal.
- Overcoming challenges or obstacles will give the participants points.
- Other elements will be the classification of participants based on their points, and the definition of levels.
- Feedback or feedback, will indicate the fact of obtaining prizes for actions well performed or completed.
- It is important that the participant feels recognized and for this they establish rewards, which can be staggered based on the effort, level, risk, among others

4.5. Engagement and flow

One of the principal theories associated with engagement and gamification is flow theory, also known as optimal experience theory (Guo et al., 2016). Csikszentmihalyi's (1975) research sought to understand how performers expend considerable energy and time on their activities. His research coined the term flow experience whereby concentration, interest, and enjoyment are experienced simultaneously (Csikszentmihalyi, 1997). The theory further argues that three channels exist for learning: *boredom channel*, *flow channel*, and *frustration channel* (Sharek & Wiebe, 2011). As a learner proceeds through a task, one's flow state is likely to be preserved if the task difficulty increases to match the developing skills. Furthermore, the "boredom area" will result if the challenge fails to increase as the learner's skills and ability develops. In the boredom channel, the individual is not interested in the task and quickly disengages from the activity. Alternatively, an individual can fall into the frustration area if their skill/ability level is not comparable to the difficulty inherent within the task. The tasks within the frustration



channel may be of interest to her or him, but the task becomes so challenging that they lose motivation to persist. The goal is for the activity to fall between these channels so that interest and challenge is maintained over time (Csikszentmihalyi, 1991).

As the theory evolved, Csikszentmihalyi (1991, 1997) defined the following eight dimensions of flow to define optimal flow performance:

- Clear goals and immediate feedback
- Equilibrium between the level of challenge and personal skill
- Sense of potential control
- Merging of action and awareness
- Focused concentration
- Loss of self-consciousness
- Self-rewarding experience

4.6. The narrative in the gamification process

Narratives can be used for gamification – bringing in engagement, meaning and clear calls to action for the students.

To be able to use narrative as an element for the design of gamified projects, especially for education, the term narrative should cover at least the following features:

The existence of the actor (as the user / student), the element of choice (while options available for content progression), interactivity (the system must respond to user actions), sequence of events (there must be a logical chain of these actions so that progress makes sense to the user), space (as the virtual space), date (as the information presented), time of interaction and mainly, so that it is constituted in an element capable of motivating the student, the feature of the user experience.

“The Gamification narrative element can be understood as the process in which the user builds his own experience through a given content, exercising their freedom of choice in a given space and period of time, bound by the system’s logic.” (Palomino et. Al., 2019)

Key benefits of using narratives for gamification:

- Narratives tell players what to do
- A narrative helps the player easily understand his path to mastery
- They increase excitement and attention
- If there is conflict within the narrative players will always want to reduce it and they will always strive for a resolution. When conflicts are resolved people feel good.
- It is easier to form memories when something is told as a story, and therefore better undergo on-boarding, learning and training
- Narratives can easily hold complex scenarios, requiring behavioral change on multiple levels rather than keeping players focused on just one objective
- Game mechanics promote competition, but mixing group narratives within them promotes cooperation.



4.7. Digital applications to gamify

Examples of gamification Apps

- To gamify
 - Myclassgame
 - Alianza Tierra Koi
 - Captain UP - <http://academy.captainup.com/>
- Based on badges:
 - Open Badges Factory
 - Credly
 - Badges OS
 - ClassDojo
- Gamified
 - Duolingo
 - Codeacademy
 - Socrative
 - Classdojo
 - RibbonHero
 - Boom writer <http://www.boomwriter.com/>





IV. GAMIRHT GAMIFICATION STRATEGY

Gamirght gamification strategy was planned in 3 different modules, according to the level of complexity of the elements and mechanics, in order to address the need of teachers with no experience in gamification, the ones with little experience and also the ones with more experiences in gamification.

Teachers may choose to apply one module or another based on their knowledge of the gamification system.

1. Module A (Basic)

MODULE A (Basic) based on a reward system offline or through online platforms such as Classdojo.

Students will receive points based on their behavior, attitude, and learning in class, which can be translated into some type of privilege (change avatar, get, special cards of direct application – example: sit in the teacher's place for 10 minutes etc.).

This module is advised for the teachers who have never implemented gamification before.

Online mode: Classdojo (<https://www.classdojo.com/>) where teachers have to create their own class, customize it and pupils choose their avatars and accumulates points).

Offline mode: Printed (and plastified) avatars and privilege cards, a poster to keep the track of the points (which will be provided in pdf.)

2. Module B (intermediate)

MODULE B (Intermediate) is strictly online and it introduces the narrative (synopsis or complete) and other gamifications elements and mechanics (further explained).

This module is advised for the teachers who have implemented some gamification elements before.

The online platform MyClassGame (<https://www.myclassgame.es/>) will be used, the teachers customizing their classes. Module B contains the following elements (which will be explained in the following slides):

The avatars from the narrative “Save the school of mythological beings”.

- Badges
- Battles (duels & combats)
- Narrative



3. Module C (Advanced)

Module C is advised for the teachers who are experienced in gamification.

The online platform MyClassGame (<https://www.myclassgame.es/>) will be used, containing the following elements (which will be explained in the following slides):

- The avatars of the narrative “Save the school of mythological beings”.
- Badges
- Battles (duels & combats)
- Narrative
- Objects (durability, trades and exchanges, possibility of being stolen in battles)
- Inventory bag (maximum of 3 objects in the bag)
- Searches (of objects)
- Secondary missions
- Events

4. Elements of the gamification strategy

4.1 Avatars

AVATARS for Module A can be online (on the platform Class Dojo) or offline – printed.

AVATARS in My Class Game (for Module B and C) have 3 stats:

- Experience Points (XP)
- Life Points (Vitality)
- Money (Gold).

4.2 Point / Experience points

POINTS – Module A

The points represent the avatar experience in the adventure.

The points will be decisive to pass the level.

Students will gain or lose points through:

- Their behavior
- Their daily work
- Their attitude
- Their collaboration etc.

(Each teacher needs to predefine the criteria of receiving points)

Online: through the platform Clasdojo points will be given or taken to the pupils’s avatars



Offline: on the poster with the avatars glued on it points will be given or taken to the pupils's avatars

EXPERIENCE POINTS (XP) – Modules B & C

XP represents the avatar experience in the adventure.

XP will be decisive to pass the level.

Students gain XP through:

- Their behavior
- Their daily work
- Their attitude
- Their collaboration etc.

! Each teacher needs to predefine the criteria of receiving points!

Students can loose XP through:

- Duels
- Combats

4.3 Life points

LIFE POINTS (Vitality) are used in modules B & C.

Life represents the wounds that the character can bear before dying

The avatar loses life (wounds) in duels and battles that it has lost.

Certain events and special items can help the avatar regain its life or clear a number of wounds.

Inside the school, life is guaranteed by the Vital Energy Protection Spell, but outside it, the damage is real, both in combat and in a duel.

If an avatar reduces its health to 0 or lower, it can no longer be used again.

However, throughout the adventure, characters or items with healing abilities may appear that wounded creatures can use to their own advantage.

If an Avatar dies as a result of a combat, duel or an event, the student will have to choose another of those available, LOSING the items previously obtained and the XP points up to the level achieved with their badge.

4.4 Money (gold)

Money (gold) is used only for Modules B & C.

The XPs and gold coins can be exchanged at certain times for basic, epic and legendary magic items (objects) that you can use at ANY time.



You will be able to get coins and gems that will accumulate in your avatar with the daily work (represented in the narrative by following the adventure with your avatar).

Gold can also be used to buy XP (1 coin will equal 3 XP).

Gems can only be obtained in a group (cooperative work), granting 5 XP to all members of the group, losing the gem once it is exchanged.

It can even use trading with other companions or characters that appear in the narrative or in unforeseen events.

If you lose a Duel or Combat, money can be stolen from you.

Gold can be used also to buy chromos and to collect them

4.5 Levels

LEVELS are used in all modules.

The Levels will be marked in advance, although each teacher can freely decide the points for each level, depending on the progression of their own group.

Leveling up will grant new powers and abilities, which can be used in the real world with some kind of award or privilege.

4.6 Badges

BADGES are used in modules B & C.

The Badges will be obtained each time the level is passed.

Allows the avatar to continue advancing in the story, accumulating new XP points.

Once achieved, they are never lost (XP points may be lost and go back to the previous level, but the badge is kept) .

It is not possible to commercialize (pupils cannot exchange badges, nor sell/buy it using coins).

4.7 Events

EVENTS are used in module C.

Events have the following role:

- Appear in event cards (whenever the teacher decides to draw one event card), or in the narrative (if used the narrative).
- Will mark turning points in the narrative.
- Can be unforeseen or scheduled.
- Help to alter the normal development of the narrative or the rules.
- Maintain a surprising flow.



- Keep the hook to the narrative.
- Grade the difficulty.
- Motivation in overcoming obstacles.

4.8 Battles

Battles are used in modules B & C

DUELS – appear from the event cards or narrative

- With other Mythological Beings (between pupils' avatars)
- Between two characters individually.
- Marked by events (from the cards or from the narrative)
- In the magic school (in the narrative), XP can be won by the winner.
- Outside the magic school (in the narrative) , the winner can steal gold or objects that the loser had in his hands.

COMBATS - appear from the event cards or narrative

- Fights against the monsters
- Villains are very powerful; they also have a level.
- Join your force to defeat them (almost the same force or more).
- Many times you will need the help of more people.

4.8.1 Duels

Mythological beings (the avatars of the pupils) will be challenged to a duel by others (randomly or due to some unexpected event).

The duels will be resolved, so that one character wins the fight and another loses it, stealing the specified XP / Gold in the duel itself.

Life will not be altered by these duels, because they are considered as training sessions and the Vital Energy Protection Spell is in effect while at the School.

The judge of the duel will be the teacher, who will determine who is the winner.

The duel occurs through the platform @Myclassgame or simply by drawing two random numbers from the class, it will be determined who will face in a duel.

The first of them will begin in his fictitious struggle, represented in reality by the answer to a question that the teacher asks about the subject he wants and that is from the contents seen in class. It is recommended that the teacher have a series of prepared questions of increasing difficulty that they would use to review the topics before the corresponding exams (2 to 3 questions per player).

IMPORTANT: if both duelists do not have the same level, the one with a higher level will lose 1 XP for each level difference with the other, as a matter of dishonor.



4.8.2 Combats

In combat the monster always attacks first, causing all students to lose 1 XP due to surprise. Then the actual combat would begin.

The teacher would ask "X" number of questions of the subject/s that are within the gamified system, which coincide with the number "X" of the monster's life.

The villain will attack the characters individually, at random, being determined by any of the platforms, apps or custom random systems.

If the student answers correctly, the monster receives the damage that character can do by himself, added to the attack value of the objects that are equipped, subtracting the defense value of the monster.

The level is very important in a combat: in principle, the combats are carried out individually, between the student (random) and the monster, as long as both combatants have the same level or the monster has a lower level; in this case, the rest of the teammates do not intervene until the next question (the opponent chosen again at random).

If the monster has a higher level than the student's avatar, he will have to choose other companions to help him until he matches or exceeds the level of the monster and therefore be able to fight more equals.

4.9 Objects

Objects may appear from the gamification cards and will be used in module C.

The different objects can be equipped (take it in the hand and / or in the body) or stored in the inventory bag. (space for 3 objects of any size, shape or weight).

Weapons, defensive or magic items equipped in the hand or on the body add their strength to the combats or duels like a bonus.

If the fight is lost, the winner can steal those equipped items.

Objects have a useful life (durability) that gives them limited use. If the durability runs out, the item breaks and cannot be used again unless some healing spell can fix it.

The Durability of the objects will be marked on the card (an "x" will be made in the squares for each use), and can be broken or damaged after one or more uses. If the object marks infinity (∞), the item's durability lasts indefinitely. If the object is stolen, the durability is maintained with its current properties.

4.10 Inventory

The INVENTORY will be used in module C and it represents a (metaphorical) small cloth bag that all the Mythological Creatures that come to the Magic School carry around their waist.



Inside, there are 2 magic gems (which are represented by cards), one black and one white:

Black gem:

- Front: current level (example L0, L1, L2, etc.)
- Back: XP is needed to go to the next level (example 230).

White gem:

- Front: Current XP you have (example 156).
- back: Life (example 8).

This inventory is able to carry inside 3 other objects, of any shape, size or weight. Items inside are magically protected and cannot be stolen.

4.11 Searches

Searches will be done in module C.

Searches will be carried out in a location as a coordinate map (numbers and letters).

Since doing a search consumes energy, students who want to search will have to pay 1XP to do so.

Each avatar can only perform a weekly search (it will be at the discretion of the teacher).

The object cards found will need to be added to inventory or carried equipped on hand.

4.12 Thefts

THEFT OF OBJECTS, WEAPONS OR GOLD will be done in module C.

In case of victory in a duel or combat, items can be stolen ONLY if the duel or combat allows it (it will come in the description itself).

You cannot steal an item if there is no physical space in your inventory or you already have multiple items equipped. You will have to leave objects to get others, making movements between the inventory and the equipped objects.

THE VILLAINS ALWAYS STEAL THE EQUIPPED ITEMS, and use them for new battles (they have no inventory). If they are defeated, the previous owner of these objects will be able to claim them (in case he does not want them, he will be the one who will decide who can use them).

The theft of objects and weapons during duels or combats will only occur if the description of the theft or combat allows it. In this same description, the maximum number of coins that can be stolen will appear (for narrative purposes, it is as if the thief is caught in the middle of the register and does not have time to carry out the entire assault).

While you are at The mythological school, theft of objects, weapons and gold are NOT allowed, as it is considered an act of "dishonor".



HONORABLE COMPENSATION: If the winner of the combat / duel decides NOT to steal the fallen character, even if he can, he will receive 1 XP as "honor".

4.13 The narrative

The narrative is a fictional story, called SAVE THE SCHOOL OF MYTHOLOGICAL BEINGS, containing 30 chapters, that can be read during the school year.

If there is no time to read the story, the synopsis can be introduced to the pupils, in order to connect the avatars and the events with the narrative.

If it will be used and read to the pupils, it is advisable to be done by the same teacher (to keep the track of the pages/chapters read).

It can be read either in the English class or in the language class and used to practice reading comprehension, by asking some questions at the end of each chapter.

The avatars of the heroes (pupils) and the monsters are the same that appear in the narrative. However, we cannot expect that the cards of events and battles (duels and combats) will appear in the same moments when the event/battle occurs in the narrative.

SYNOPSIS:

The School of Mythological Beings is in danger, affecting the balance between Good and Evil. A new Messiah has been revealed, but he has become a clear target for the dark forces.

Hugo, a shy and seemingly normal boy, begins to have dreams about it in the real world. A Mission has been entrusted to him: it seems that the enchantment that held back a Primeval Evil God has been broken after 222 years, and now this demonic being is after the Messiah. The countdown has begun. Hugo will need all the help he can get from the Mythological Beings. Do you want to help Hugo save the world?



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