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the European Union



Games 4 You

Game-based digital learning. Playing
to teach

ERASMUS+2023-ES02-KA210-ADU-000174J66



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Introduction

Welcome to our project Games 4 you. Thank you for reaching out and trusting us to learn about gamification for adults. We put all our expertise and effort into this project to produce a result we are particularly proud of.

You are about to discover a project on gamification for adults co-financed by the European Union. For 2 years we had long conversations not only about the learning theories, methodologies and tools but also about some ethical reflections about gaming and scoring in the process of learning.

All those involved in education share the main goal of making the learning process as motivating and interesting as possible, where the scoring should not be the main goal but a part of the learning process. We might not forget that we play to be competent and not to be competitive. Being competitive can be good in many situations, as it can motivate you to strive for excellence, set higher goals, and push your limits. Competition can lead to innovation and personal growth, fostering a drive to improve and succeed. However, it's important to strike a balance and ensure that competitiveness doesn't lead to negative behaviours, such as becoming overly aggressive, stressed, or disregarding others' feelings and needs.

Getting good scores should be the consequence of learning, as our main objective is to learn, to stimulate curiosity and to keep the learners motivated.



Let us go back to some very wise words written in 1911 by Greek poet Constantine P. Cavafy:

[...]

***And if you find her poor, Ithaka won't have fooled you.
Wise as you will have become, so full of experience,
you'll have understood by then what these Ithakas mean.***

It is the journey that is most important, we learn along the way, we get to see new things and we cope with situations we need to solve. This is the greatest part of the learning process. The reward at the end is also very important but we must be aware that it is just a part of the learning process as well.

Imagine an Olympic athlete. The biggest reward will be the gold medal at the Olympic Games, but this will not be possible without hours of training during years. Likewise, teachers need to make their students aware of the fact that making mistakes is also part of the process. No skier or biker has ever learnt to ski or ride a bike without falling, getting hurt and learnt to stand up again.

Our society focuses on results and not on the progress to achieve them. We follow people on Instagram where we see how their dinner looks great on the table, or how we lay down on a paradisiac beach. But we hardly see the picture of the cook who worked for hours in the kitchen for us, and we don't count the number of hours we worked to be able to pay our holidays.

An education focused on fast objectives and end results tends to activate extrinsic motivation, but this is quite ephemeral. We need to work on the intrinsic motivation of our students which will give more satisfaction in the long run and will last longer.

That's why gaming must be seen as a part of the learning process and not just as a result.

Our mission at Games4you is to develop a fair education for all audiences where playing is part of the process, not just an end in itself. Our project intersects with values such as respect for human dignity, freedom, democracy, equality, and human rights.

Here's how.

1. Respect for Human Dignity

Respect and human dignity are a big part of gamified learning, making sure everyone has access to learning tools regardless of their background or ability. By being inclusive, we're defending their right to education. In addition, gamification encourages a supportive and empathetic environment for students, which promotes their wellbeing.

2. Freedom and Autonomy

Gamification should empower students to take charge of their learning journey, offering choices and fostering autonomy. We always need to respect students' freedom to choose their learning methods.

3. Democracy and Participation

Gamified approaches can encourage teamwork and collaboration, reflecting democratic values by giving every student a voice and role in the learning process. Promoting active student participation in learning activities aligns with democratic principles of involvement and contribution.



4. Equality and Non-discrimination

Addressing the digital divide and ensuring that gamified tools are accessible to all students, regardless of their socio-economic status, promotes equality. Games should avoid reinforcing stereotypes or biases and should be culturally sensitive to ensure all students feel represented and respected.

5. Rule of Law and Accountability

Designing games that promote fair play and respect for rules helps students understand the importance of ethics and accountability. Being transparent about how student data is collected and used in gamified platforms respects the rule of law and builds trust.

6. Human Rights

Protecting student data and respecting their privacy rights is fundamental. Ethical gamification practices ensure that data is collected and used responsibly. Considering the impacts of gamified learning on students' mental and physical health is crucial, ensuring that their overall well-being is prioritized.

With the alignment of gamified learning with these European values, we can create an environment that promotes a just, inclusive, and equitable learning environment.

1. Introduction to Digital Gamification for Adult Education



This unit will provide an introduction to the concept of **digital gamification**, particularly within the context of adult education. It will cover the definition of gamification, its historical evolution, and the benefits and advantages it brings to adult learning environments.

1.1 Definition of gamification and its role in adult education

1.1.1 Introduction

As is known, all learners, even those who belong to the same educational level, are not the same, by extension, they have neither the same prerequisites, nor the same needs, nor the same preferences to stay busy and have the motivation they need to carry out the educational process (Furdu et al, 2017).

So, a way or that way should be found that will engage them and keep them engaged within the process. And this way is none other than the game, **which creates a kind of employability or engagement in the person-player, which is why it is part of the daily life of students nowadays, as they spend many hours during a day to play a game** (Mohamad et al, 2018). The so-called "serious games", in fact, have emerged as a particularly useful way of imparting knowledge and achieving the learning goals of adult learners (Landers & Callan, 2011).

Therefore, **gamification** can be the method by which learners will participate with similar interest in the learning process, because, through it, many **different learning styles are satisfied** (Arockiyasamy et al, 2016), while, at the same time, a number of other

demands, such as **improving confidence in learning, learning learners' style** and **providing adaptive learning** (Mohamad et al, 2018). In this way, their motivation and involvement increases, as well as their commitment to achieving their learning goals, which applies, among others, to adult education as well (Stott & Neustaedter, 2013).

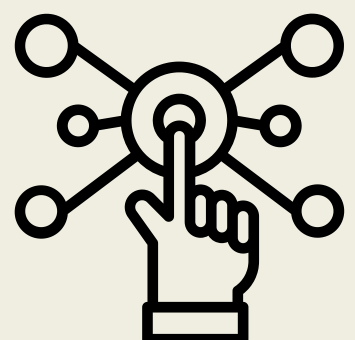
Of course, it should be mentioned that today's learners are particularly familiar with technology and this may have an impact on the learning process itself, because their attitude towards it changes.

Therefore, both pedagogy and education require new paradigms and follow new trends (Kiryakova et al, 2014). Thus, today more than ever, in the vast majority of the developed world, the digital game rises first in the list of methods that will offer everything the learning process is looking for, and this directly concerns the field of adult education. Since tablets and smartphones have proliferated, anything stationary (desktop, TV, game console, etc.) is no longer the only way to get online and play a game. For this reason, the number of educational institutions experimenting with the game is constantly increasing, which means that the interest in gamification has increased accordingly (Brian, 2014).

Gamification is used to make tasks more **interesting, playful, fun and easy**, thus causing behavior change and engagement (Da Rocha Seixas et al., 2015). Of course, that doesn't mean it magically turns a boring task into fun, or a poorly developed app into interesting or popular. On the contrary, through the various tools, which aim to motivate and involve users, the latter learn to use an application and become more involved in the whole program. In what way, then, or by what techniques can gamification contribute to adult education?

One of them is the gnostic. Games provide complex rule systems that players can explore through experimentation and discovery. So, by putting the player himself at the center of the learning process, they keep him engaged in potentially difficult tasks to which he is always looking for a solution (Koster, 2004). Of course, it should be clarified here that the techniques used in each game play a particularly important role. The purpose, in such a case, is to offer specific challenges that are perfectly tailored to the player's skill level, gradually increasing the difficulty as the player's skill increases. Specific, moderately difficult and immediate goals are what motivate students (Locke, 1991) and this is exactly the kind that games provide (Gee, 2008). The games also provide multiple paths to success, allowing students to choose their own goals and sub-goals each time in order to successfully complete their mission.

So, in this way, the learner becomes motivated and stays engaged, achieving the element of engagement that is required in the learning process (Locke & Latham, 1990). These techniques, applied in the field of education, are able to transform adult learners' perspectives on learning (Gee, 2008).



A second way is emotional. Games evoke a range of powerful emotions, from curiosity to frustration and joy (Lazarro, 2004). They provide **many positive emotional experiences, such as optimism and pride** (McGonigal, 2011). On the other hand, they help players to dwell on negative emotional experiences and turn them into positive ones.

This is what happens if we think about this: games involve repeated experimentation, therefore, they also involve repeated failure, because the only way to **learn to play a game is by constant failure, from which, however, each time something, at least, small or large, as knowledge** (Gee, 2008). So, in this way, they slowly and gradually build success, which builds on failure, as players keep trying until they reach a successful outcome. And the cost of all this is minimal. In education this is often not the case, which is why gamification is considered to enable the learner to fail and this is a key part of learning.

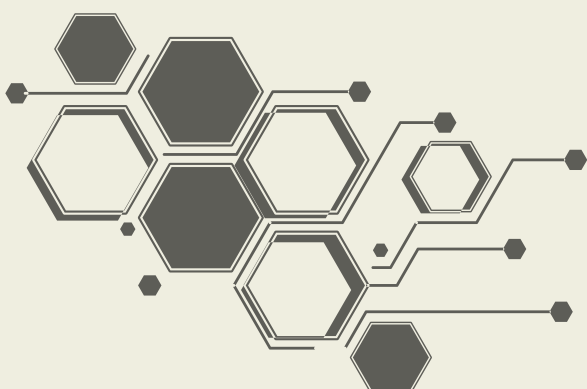


Finally, **another way is social**. Games allow players to try out new identities and roles, asking them to make decisions from their new vantage points (Squire, 2006; Gee, 2008). In video games, players can take on the role of soldiers, animals, elves, kings, etc., but even roles closer to reality, which, however, help to explore themselves and discover new sides. them in the safe play area. For example, *an introverted and insecure teenager can become a gang leader and choose dozens of other players to join that gang and clash with legions of enemies.*

Developing a strong identity helps learners learn in the long term (Nasir & Saxe, 2003). However, many adult learners do not feel that through gamification they can learn.

Gamification also allows learners to learn and explore different subjects by playing a game. On the other hand, **play can provide social credibility and recognition for academic achievements, which would otherwise remain invisible or even belittled by other learners.** Recognition can be provided by the adult trainer, but the player can also allow trainees to reward each other as the game progresses. Such a design encourages learners to foster the development of an identity both in other learners and in themselves.

Consequently, it is evident that a well-designed gamified system can help players take on meaningful roles, which are highly beneficial for learning. By developing a new identity within the game and rewarding it appropriately, we can help students think differently about their potential in education and what education can mean for them.



1.1.2 Educational Games in Training

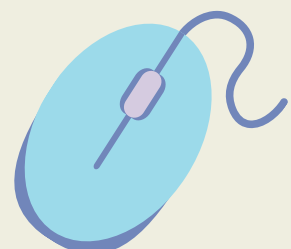
Role playing game

Role playing is one of the techniques that a trainer can use to ensure the participation of his trainees during the learning process. In Role Play learners enter a 'theatre situation', which provides the opportunity to 'play out' and 'experience' real everyday situations in a protected learning environment, in which trial, error and practice are allowed. The Role Play, through the feedback it provides to the "actors", after they have played it, and which is given by the co-learners, the trainer and themselves, contains educational benefits aimed at improving and developing the desired behaviors and abilities examined in educational program.

During Role Play, learners act out roles, connected to an examined situation in the professional or social field, in order to gain a deeper understanding of both the situation and their reactions to it. This educational technique is applied, mainly, when the analysis of problematic or conflicting situations is sought, concerning abilities, attitudes, communication, behavior (Kokkos, 1998: 205).

Specifications of the role game

- The 'script', the rules of the game and the instructions to be given to both players and observers must be precise and clear.
- The game must be closely related to the educational objectives.



- The training group must be "bonded", i.e. a climate of trust has already been created between its members and the trainer knows its members well, for example, it is not recommended to implement Role Play during the opening meeting or the first teaching session module of a one-day training program.
- The situation-framework in which the game will be developed must be close enough to the interests and real experiences of the learners to ensure their involvement and their ability to participate.
- The "actors" must be encouraged by the trainer to react spontaneously during the game according to its development and according to the reactions of the other "actors" with whom they interact.
- The trainer needs to have the basic knowledge of animating and leading the group.
- During the game, the flow of the game must not be interrupted by comments from observers or players.
- It is good to implement the game at times of the day when the trainees are rested and can perform.



Benefits of role playing

- It is one of the most active adult training techniques.
- Applies to learners of all levels.
- Through the direct experience, the learning ability of the trainees is enhanced.
- Leads to creative interaction between learners.
- It allows for the emergence of attitudes and behaviors that the trainees might otherwise have been inhibited from expressing or were not aware of.
- It is one of the best techniques for achieving attitudinal goals as it helps learners to critically reflect on their perceptions and behaviors.
- It helps the trainer to assess the progress of the trainees against the expected learning outcomes.



Simulation

Simulation is a large exercise in which learners mentally participate in the representation of a situation that corresponds to reality. They are asked to perceive how certain persons would think and behave in specific circumstances (businessmen, employees, customers, citizens, engineers, etc.) and to react like them, as if they were facing the same situations. With this penetration into the imagined reality, it is sought to make the trainees capable of a deeper understanding of its various aspects and to be able to behave effectively in similar situations. Therefore, simulation is an educational technique similar to role-playing, with the difference that learners are not asked to act in a theatrical way, but to understand how the people involved (should) behave in this situation.

Simulation specifications

- Objectives must be clearly defined.
- The story and instructions should be clear.
- The story and flow of the exercise should be such that it covers all the essential aspects of the subject under consideration.
- A climate of trust must have been created between team members.
- The trainer must develop the commitment of trainees in achieving the objectives of the exercise.



- It is a good idea to have specific role tabs created.

- Observers must have a specific observation task.

- The time limits for the duration of the exercise must be defined and communicated to the trainees.

- The team should be given adequate time to "exit" the simulated situation.

- Sufficient time should be devoted to critically commenting on the exercise so that conclusions can be drawn and linked to the objectives it serves.



Advantages of simulation

- All the advantages mentioned for the Role Playing technique as well.
- The **new knowledge, skills and attitudes** that are developed are directly related to the daily life of the trainees.
- Trainees **can practice in a calm, low-risk environment** and be trained to handle situations involving more stress and risk (eg simulating a fire in a building and training employees how to operate under from such difficult conditions).
- The possibility of **making a mistake and learning from it** is provided, without the consequences that a corresponding mistake might have in a real environment.

Quizzes

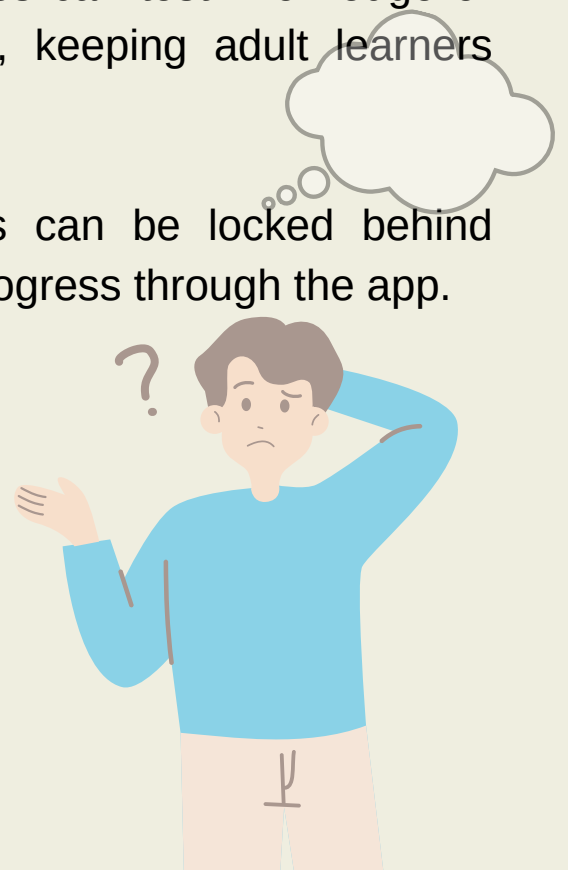
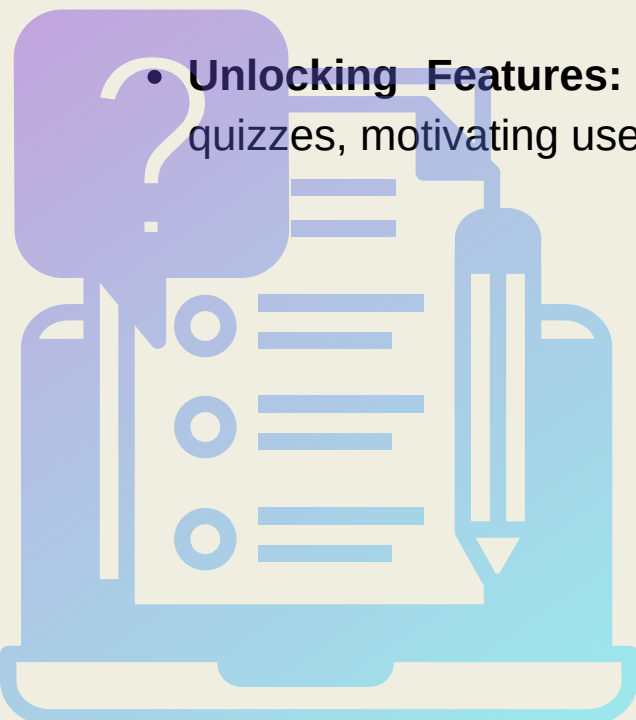
A well-designed quiz prompts learners to recall information, thereby strengthening memory retention. This process of retrieval practice is a cornerstone in the science of learning, as it enhances the ability to recall information in the future. For adults who might be balancing education with other responsibilities, this efficient method of reinforcing knowledge is especially beneficial.

When quizzes are used effectively, they can serve as motivational milestones, providing adult learners with short-term goals and a sense of accomplishment. This is particularly important in adult education, where maintaining motivation can sometimes be challenging due to the pressures of juggling education with work, family, and other commitments.

Quizzes can boost user engagement with:

Encouraging engagement and learning

- **Micro-learning:** Quick, bite-sized quizzes can test knowledge or introduce new concepts in a fun way, keeping adult learners engaged and coming back for more.
- **Unlocking Features:** An app features can be locked behind quizzes, motivating users to learn and progress through the app.



Fostering competition and fun

- **Leaderboards and Badges:** Quizzes can be linked to leaderboards and badges, igniting friendly competition and a drive to improve scores.
- **Timed Challenges:** Adding a time element to quizzes creates a sense of urgency and excitement.

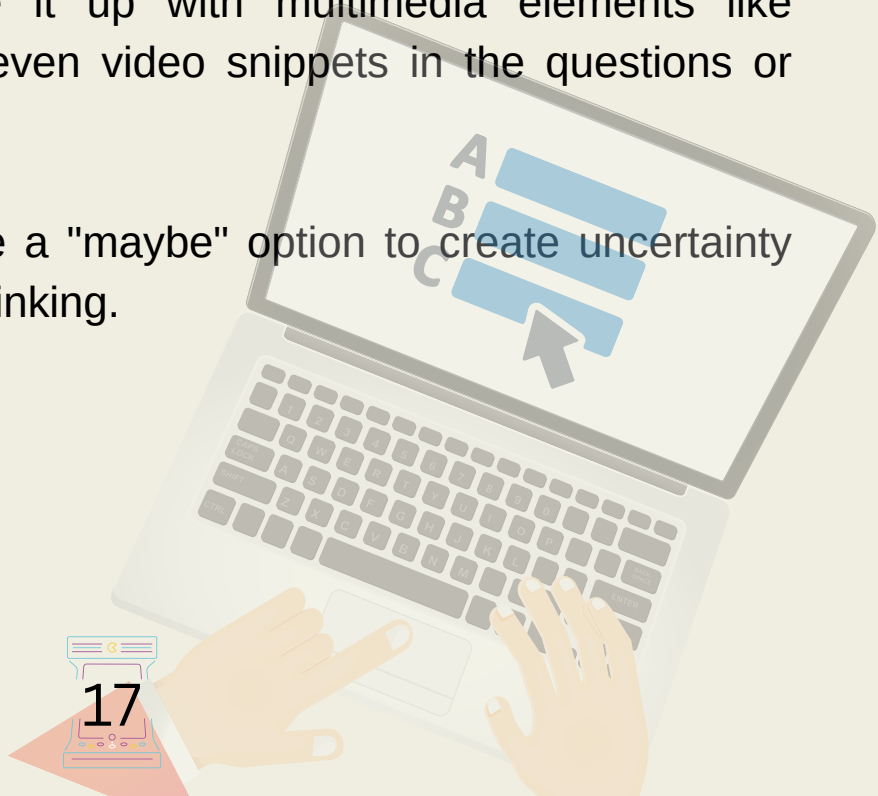
Personalization and user experience:

- **Adaptive Learning:** Quizzes can adapt to user responses, offering personalized challenges and recommendations based on their performance.
- **Content Recommendation:** Quiz results can suggest relevant content or features within an app, catering to the user's interests.

Types of quizzes used in mobile apps

Classic formats with a twist

- **Multiple Choice:** Spice it up with multimedia elements like images, audio clips, or even video snippets in the questions or answer choices.
- **True or False:** Introduce a "maybe" option to create uncertainty and encourage deeper thinking.



Interactive formats:

- **Image/Audio Identification:** Challenge users to identify objects, sounds, or landmarks based on pictures or audio clips.
- **Sequencing or Ordering:** Test users' understanding of processes or timelines by asking them to arrange items in the correct order.
- **Matching:** Pair related items, characters, or concepts in a fun and visually engaging way.

Creative formats:

- **Personality Quizzes:** Provide lighthearted quizzes that reveal user preferences or character traits, fostering a sense of connection with the app.
- **Trivia Challenges:** Cater to specific interests or themes relevant to your app's content, offering a fun way to test knowledge.
- **Fill-in-the-Blank:** Test user knowledge with blanks requiring short answers, promoting active recall and deeper engagement.

Live or asynchronous formats:

- **Live Quizzes:** Host live quiz events with leaderboards and real-time competition, creating a social and exciting atmosphere.

- **Asynchronous Quizzes:** Allow users to take quizzes at their own pace, offering flexibility and catering to different learning styles.

Interactive stories

Interactive stories are a way to carry a message or a lesson through a story, an example of a real situation. Interactive stories help you share an experience while involving people in a familiar and safe environment.

As it involves the adult learners into a concrete, believable and engaging scenario, it helps them gain knowledge through examples and encourages reflection and discussion. It helps the learners think about their past experience. The information collected is also easier to remember as the learner can identify himself in the situation and reproduce later what he has heard, seen and learned, and by doing so, change his behavior, habits and attitudes.

Interactive storytelling and gamification have emerged as powerful tools in the digital age, captivating audiences and transforming the way we engage with content. At the intersection of narrative and play, these techniques leverage the innate human love for stories and games, creating experiences that are not only entertaining but also deeply immersive and personal. This fusion of elements has given rise to a new paradigm in which the audience is no longer a passive consumer but an active participant in the storytelling process.



The concept of interactive storytelling is not entirely new; it has roots in various forms of entertainment, from choose-your-own-adventure books to role-playing games. However, the advent of digital technology has exponentially expanded its capabilities. Now, interactive stories can adapt in real-time to the choices of the audience, creating a unique experience for each user.

Gamification, on the other hand, introduces game mechanics into non-game contexts, motivating participation through rewards, competition, and the joy of achievement.

When these two concepts converge, they create a synergy that can be applied across various fields, from education to marketing, enhancing engagement and retention. Below is how interactive storytelling and gamification intertwining to create compelling experiences:

1. **Narrative Mechanics:** At the core of interactive storytelling is the narrative mechanic, which allows the story to branch and change based on user decisions.
2. **Player Agency:** Giving players the power to influence the story instills a sense of agency.
3. **Reward Systems:** Gamification often employs reward systems to encourage continued engagement.



4. **Feedback Loops:** Immediate feedback is crucial in both interactive storytelling and gamification.

5. **World-Building:** Creating a rich, immersive world is essential for interactive storytelling.

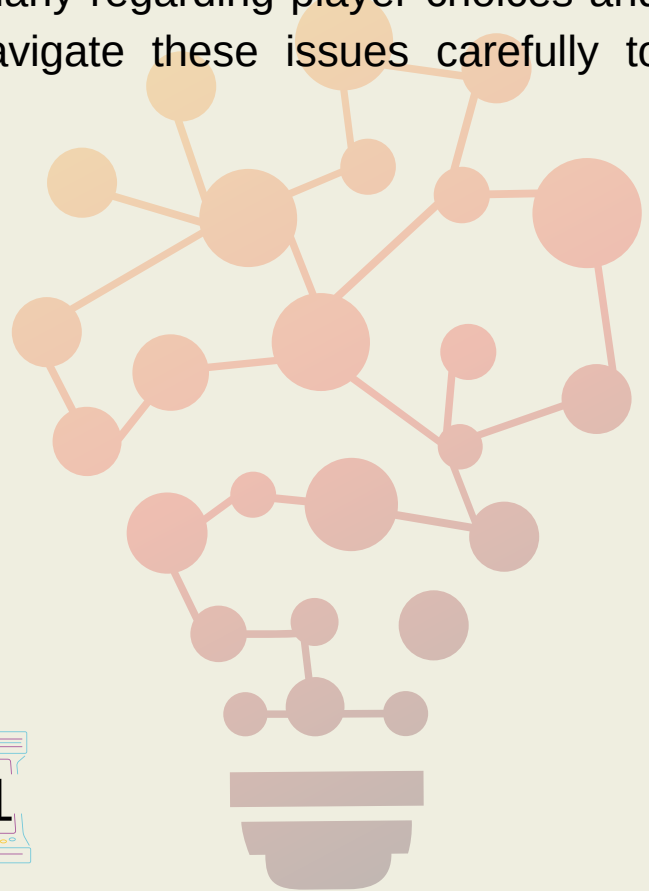
6. **Social Interaction:** Many interactive experiences incorporate social elements, allowing players to share their stories or compete with others.

7. **Educational Applications:** Interactive storytelling and gamification have significant potential in education.

8. **Marketing and Branding:** Brands use interactive storytelling to create memorable campaigns.

9. **Accessibility and Inclusion:** These techniques can make content more accessible and inclusive.

10. **Ethical Considerations:** As interactive storytelling evolves, ethical considerations arise, particularly regarding player choices and data privacy. Developers must navigate these issues carefully to maintain trust and integrity.

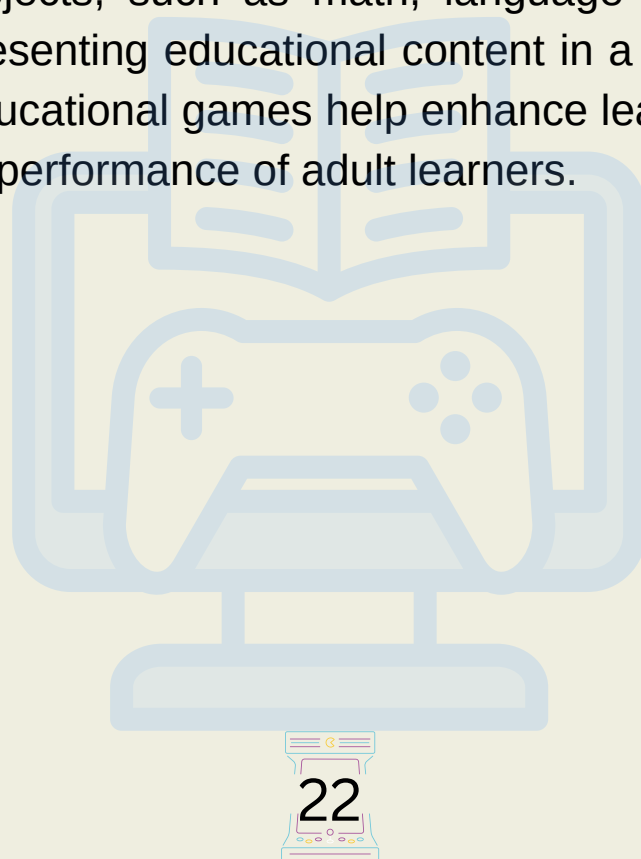


Educational backgrounds. These educational games offer a dynamic and engaging platform that can entertain but at the same time educate, promoting the development of various skills very important for success in the professional field.

Educational games, often referred to as "fun", are designed to combine entertainment with educational content. They include a wide range of options including digital apps, board games, card games, puzzles and interactive simulations. Their big difference from classic games is their focus on integrating learning objectives into the game.

Skills developed through educational games

- **Cognitive Skills:** Educational games stimulate cognitive functions such as problem solving, critical thinking and decision making. Learners are challenged to solve challenges and puzzles, encouraging analytical thinking and developing strategic approaches to problem solving.
- **Academics:** Many educational games are tailored to specific academic subjects, such as math, language arts, science, and history. By presenting educational content in a fun and interactive way, these educational games help enhance learning and improve the academic performance of adult learners.



- **Creativity and Innovation:** Some games, especially those that focus on building, designing or telling stories, promote creativity and innovation. Players are encouraged to think outside the box, experiment with ideas and express their imagination in a structured environment.
- **Cooperation and communication:** Multiplayer educational games enhance cooperation and communication skills by requiring players to work together towards a common goal. Whether working together to solve a puzzle or strategizing as a team, players learn the importance of effective communication and teamwork.
- **Adaptability and Resilience:** Games that present dynamic challenges and adaptive levels of difficulty help develop adaptability and resilience in players. By facing setbacks and overcoming obstacles within the game environment, individuals learn to persevere and adapt their strategies to changing circumstances.
- **Digital Literacy:** Educational games provide a hands-on opportunity for players to develop digital literacy skills, including navigating interfaces, using software tools, and understanding digital systems.



1.1.3 Importance of Play in Adult Training

Play is unique and can be rewarding, create optimism, innovation, make persistence fun, lead to mastery, and foster empathy. It can also create a sense of community.

Cognitive Benefits:

- It improves your brain function. Playing games that challenge the brain – such as chess and puzzles – can help prevent memory problems and improve brain function. This can also help ward off depression.
- Play leads to creative thinking and intelligent decision making, Play offers the unique opportunity to exercise both the analytical and creative aspects of our thinking. When it comes to important and complex decisions, we need as much mental strength as possible. Of course, we need to think carefully and logically, weigh the possible advantages and disadvantages. Also, consider the benefits and risks. But we need to think creatively, flexibly and outside the box. Many forms of play are a wonderful training ground for simultaneously exercising our abilities for analytical and creative thinking. Play offers an opportunity to think more creatively to solve problems.



- It stimulates your mind and boosts activity. And, it makes you more productive. More companies – like Google – have set up play stations and encourage employees to play and collaborate. This, in turn, helps foster team building and cooperation within the company. It's a win-win situation.

Psychological Benefits:

- It's good for your stress levels. Play can trigger the release of endorphins, the body's natural feel-good chemicals. These **promote an overall sense of wellbeing and can temporarily relieve pain**. When we play, positive imagination develops, we create new and interesting things that make us worry less and reduce our stress.
- It improves your relationships. A big issue in modern society is loneliness. Many of us in today's society are profoundly lonely. We are isolated because we don't really feel connected to the people we have in our lives. Although play can obviously be a source of new friendships and relationships (for example, making new friends in kickboxing), play can make our relationships more intimate and meaningful. This is truly the antidote to loneliness. *We often associate play with frivolity and childishness, but in reality, play helps us to be vulnerable and intimate.*

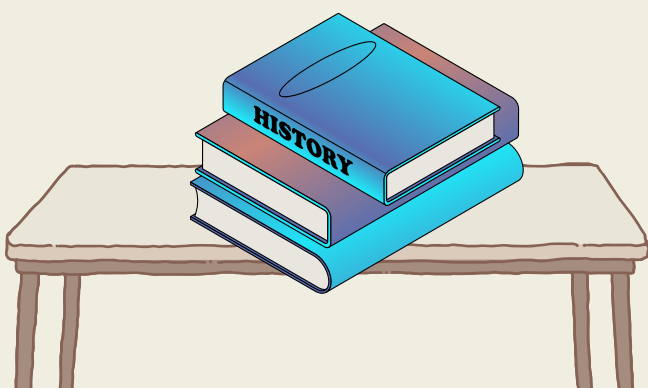


1.2. History and evolution of gamification

1.2.1 Initial concepts

The term gamification is modern, as it made its appearance at the beginning of the 21st century. More specifically, although the first mention of this term is in 2002 by Nick Pelling (Kim, 2015) and it is used once again in a blog post by Brett Terrill in 2008, it surfaced eventually and gained widespread use after the second half of 2010 (Deterding et al, 2011). Therefore, it is a term, an object, a concept, which, in practice and in essence, counts less than a decade of life. Nevertheless, *it seems to greatly affect our daily lives, even in a way that is not always perceived, as it is related to many areas with which the vast majority of people sometimes have less and sometimes more contact* (Lister, 2015).

Gamification, then, is a newly coined term that reflects a social phenomenon arising from a generation of digitally literate people (population) and is defined as the use of game-based mechanics and aesthetics and the game mindset to engage people, to motivate action, promotes learning and solves problems (Kapp, 2013). With a more general description, gamification could be characterized as the use of elements of a game by design, but in environments that are not related to the game. This means that gamification does not refer to the production or creation of a game, but transfers some positive characteristics of a game to something that is not a game.



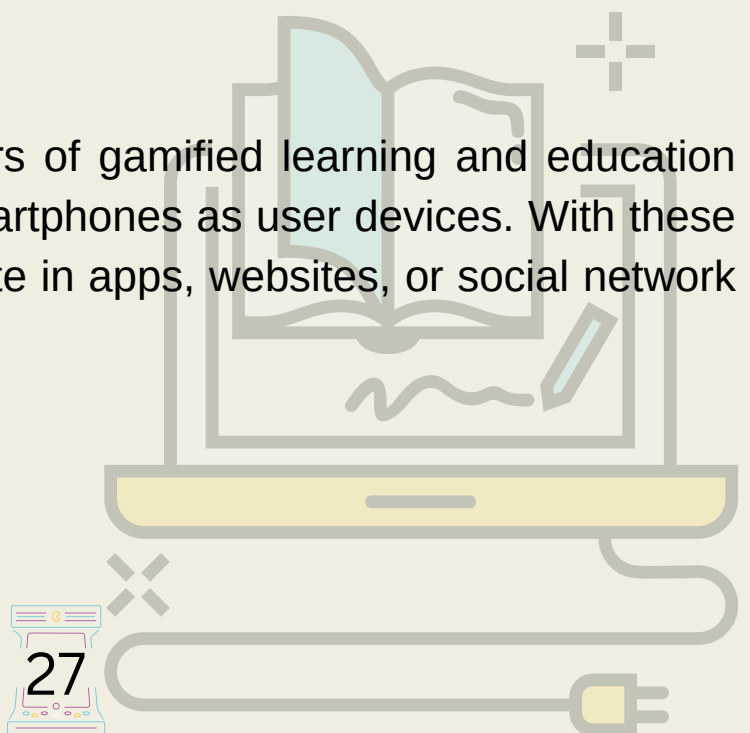
These characteristics are fun or enjoyable activity and have the ability to engage players in the activity. It does, however, have the **four basic features of a game**: goal, rules, feedback system and voluntary participation (McGonigal, 2011), which of course also appear in the game, but to a lesser extent and in a less intense way.

As is well known, however, all learners, even those belonging to the same educational level, are not the same, by extension, they have neither the same prerequisites, nor the same needs, nor the same preferences to stay busy and motivated needed to complete the educational process (Furdu et al, 2017). So, a way or that way has to be found that will engage them and keep them engaged within the process. And this way is none other than the game, which creates a kind of employability or engagement in the person-player, which is why it is part of the daily life of learners nowadays, as they spend many hours during a day to play a game (Mohamad et al, 2018). The so-called "serious games", in fact, have emerged as a particularly useful way of imparting knowledge and achieving the learning goals of adult learners (Landers & Callan, 2011).

1.2.2 Technological advancements

Gamification in learning and education needs various technologies to be implemented.

Wearable devices: Many users of gamified learning and education use computers, tablets and smartphones as user devices. With these devices, students can participate in apps, websites, or social network services that use gamification.



Augmented reality: Augmented reality is a technology that makes the real environment more valuable or easy to use by adding important information generated by information technologies. For example, augmented reality can add navigational information for someone walking or driving down a new road.

Gaming platforms: A gamification platform monitors, measures and records player behaviors within gamified learning and education. It provides players with feedback and rewards based on their behaviors. For developers and administrators, it provides the analysis tool and programming library that connects to legacy systems.

It is not always necessary to use a gamification platform to develop gamified apps and websites. However, with the gamification platform, development can be more convenient and efficient since the platform provides a wider range of resources (Zhu, Pei, & Shang, 2017). Especially when developing large-scale gamification programs, using a single platform can reduce development time, costs, and risks associated with requirements and specifications.



1.2.3 Current trends

Dozens of activities today involve us in a process of collecting points. From buying our morning coffee, visiting the neighborhood supermarket, to collecting points for our car fuel and travel. The above are examples of gamification in the everyday life of most of us.

Similar approaches exist in the field of education. The gamification of learning in the short term aims at the increased involvement of the adult learner with the teaching objects (Seaborn & Fels, 2015), while in the long term it is able to instill behaviors that will favor the acquisition of knowledge and correct social interactions (Furdu, I., Tomozei, C., & Köse, 2017; Yuan, 2017).

As technology and education continue to develop, it is probable that new trends and approaches to gamification will emerge. Virtual and augmented reality, for instance, possess the capability to revolutionize the manner in which students engage with learning material and participate in gamified initiatives. These technologies can supply immersive and authentic experiences, thereby boosting student participation and engagement.

Another developing trend is **social gamification**, where pupils can cooperate and compete with their peers in virtual environments. This stimulates social integration and teamwork while motivating student participation and involvement. Moreover, artificial intelligence and machine learning can be utilized to further personalize the learning experience and adjust it to meet the specific needs of each individual learner.

Gamification presents exciting opportunities for promoting inclusivity and a sense of belonging in educational settings (Muhamad JW, Kim S.). By incorporating gamification elements, students can be motivated to take an active role in their own learning and assume responsibility for their progress. Through the use of effective techniques, success stories, and available tools and resources, gamification has the potential to revolutionize the learning experience and foster an inclusive and enriching environment (Mahmud SND, Husnin H, Tuan Soh TM.).

1.3 Benefits and advantages of gamification in adult education

1.3.1 Accessibility

As we integrate gamification into our educational practice the critical issue of accessibility comes to the fore. Gamification can create barriers to engagement, due to different levels of digital literacy, previous experiences with games, personal idiosyncrasies, and different levels of access to digital tools among students, including those with disabilities. It is important to ensure accessibility before problems arise with it and always as a fundamental principle in our gamified educational design.

Gamification also has the potential to make learning more accessible. Many gamified platforms incorporate adaptive technologies that can be customized for students with various disabilities, ensuring that learning materials are within reach of every student.

Whether through text-to-speech functionalities, customizable interfaces, or interactive visual aids, gamification can break down barriers to learning.

One accessible design framework is **Universal Design for Learning (UDL)**, which is based on the understanding that accessibility benefits all learners. We can even incorporate multiple forms of participation to accommodate different levels of gaming familiarity and experience. We can maximize the effectiveness of gamification in the group we train through the application of design principles and a commitment to accessibility, ensuring an enriched experience for both educators and adult learners.

Finally, we can use the **Three Cs strategy** is used by many designers for coming up with accessible designs, these three Cs cover all the necessary accessibility issues with solutions on how a designer can overcome them:

Color Contrast: Ensure accessible color palettes for users with visual impairments. Use tools like Stark for accessibility checks. Also, prioritize conveying crucial information clearly through color choices.

Clickable Area Accessibility: Enhance usability for all users by ensuring easy navigation with keyboard tabbing. Apply hover effects for better mouse tracking, use pressed effects for button feedback, and provide clear labels and instructions.



Common Content Accessibility: Optimize typography by aligning text properly and ensuring adequate line and paragraph spacing. Maintain a responsive layout for accessibility on smaller screens. Aim for left or right alignment, 1.5x font size line spacing, and paragraph widths of no more than 80 characters.

1.3.2 Inclusion

The fourth **Sustainable Development Goal** (SDG) of the 2030 Agenda [35] aims to minimize the gender gap in education and offer vocational training to disadvantaged groups, such as individuals with disabilities, indigenous and marginalized groups, and children. Correspondingly, the foundational document of the United Nations, the Universal Declaration of Human Rights (Assembly UG. Universal declaration of human rights), asserts in its article 1 that all humans are born free and equal in dignity and rights. The same document affirms these rights and freedoms without distinction as to race, color, sex, language, religion, political or other opinion, national or social origin, property, birth, or other status.

In accordance with the above, the proposition to develop games that utilize narrative persuasion has the potential to remove obstacles and foster inclusivity by establishing an equal and approachable environment for all. **Techniques like personalization, transportation, identification, regular feedback, and cooperation are employed to inspire the involvement of all individuals, irrespective of their capabilities or traits.** The last of these are often overlooked, particularly when the intervention takes place online.

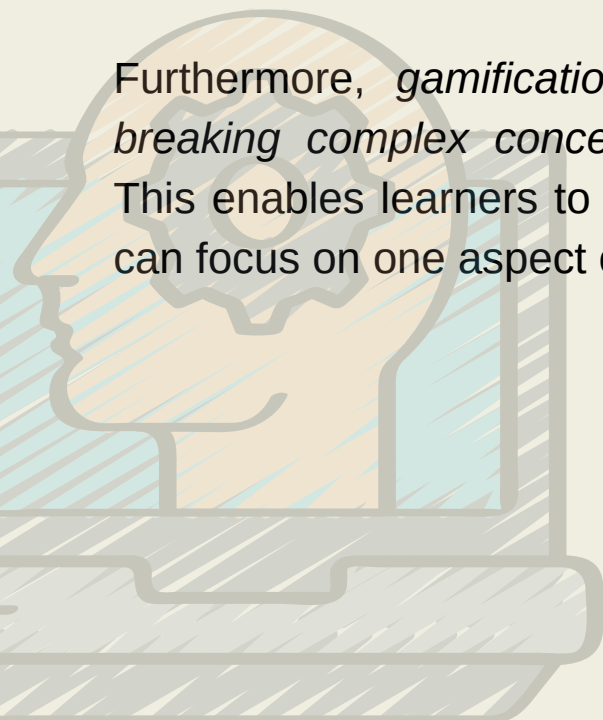


One of the key benefits of gamification is its **capability to encourage a sense of belonging and engagement through serious games**. By granting learners the chance to make decisions and take responsibility during the learning process, their feeling of ownership and empowerment is amplified. Some effective techniques for promoting ownership and engagement comprise enabling learners to set personal goals and aims, delivering constant and helpful feedback, and planning exercises that demand the utilization of knowledge in practical circumstances by means of problem-solving, cooperation, and originality. Designing challenges and assignments that require the use of these competencies allows learners to confront real-world issues and furnishes them with the resources they require to excel in the future.

1.3.3 Fun and engagement

Gamification can be an effective method to involve adults in the learning process. It uses game-based learning elements to make it fun, interactive, and engaging. Educators can amplify incentives and commitment among their students by incorporating the definition of gamification in learning. This is because gamification creates a sense of competition and achievement, which drives learners to put in more effort to achieve their goals.

Furthermore, *gamification can facilitate knowledge acquisition by breaking complex concepts into smaller, more manageable tasks*. This enables learners to grasp difficult concepts more easily, as they can focus on one aspect of the learning procedure at a time.



Moreover, gamification can improve academic performance by making learning more interactive and engaging. This is because learners are more likely to retain information that is presented in a fun and interactive manner, and they are also to stay engaged in the learning activity for longer periods of time.

1.3.4 Motivation

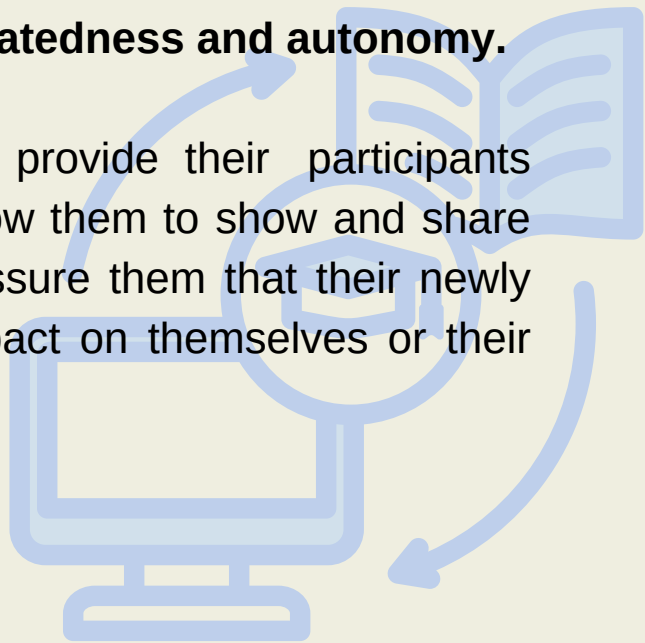
Another reason that is very important for using gamification is that it allows us to affect the inner motivation of our adult learners.

We know from behavioral economists that when we are facing tasks requiring cognitive activity, the ratio of success in them is directly connected to our inner motivation. And if we think about this relationship in the field of learning, we may agree that especially in education, cognitive activity is more than required.

With gamified design, we may be able to influence adult learners' initial motivation, (which could be based on external factors). If done properly, this will allow learners to become more engaged and participative in the learning community.

To support such an effect, gamification operates on the basis of the self-determination theory (SDT) (Deci, Ryan 2008). This theory assumes that inner motivation can be enhanced when **three core elements are achieved: competence, relatedness and autonomy.**

Building on this, gamified systems may provide their participants instant feedback of their progress and allow them to show and share their levels of competence. They also assure them that their newly acquired knowledge has a significant impact on themselves or their environment.



The narrative aspect of a gamified design can keep the participants engaged and prolong their attention. With support of meaningful choices we can foster a sense of autonomy, which is arguably an important aspect of learning and simultaneously the third core pillar in this theory.

1.3.5 Enhanced Learning Outcomes

A gamification activity involves the use of game development techniques in non-game environments. The techniques he uses include elements that motivate and interest the user. Its main objective is to promote the achievement of the goals set for the user (Brigham, 2015; De Sousa Borges et al., 2014).

Such an activity includes the following characteristics:

- *The determination of the learning goal by the teacher*
- *The existence of clear defined rules, which will be known to the students before the start of the process*
- *Functionality, since the game environment is important to offer ease of access and search, causing interest and commitment*
- *Challenge and competition, through the existence of multiple levels of difficulty, as well as the gradation of goals according to the level and capabilities of the students*
- *The utilization of pre-existing knowledge in specific areas (Gredler, 1992)*



- *Feedback, rewarding correct decisions and rejecting incorrect ones, so that learners can use this information to build new knowledge.*

The application of gamification in the educational process seems to have positive results, as indicated by the relevant research, as it increases the interest of the learners and highlights learning in a particularly attractive process. Gamification does not refer only to the lower levels of education, where students are minors, but to all of them. In higher education, for example, its implementation has led to increased attendance and engagement in teaching materials, which are of better quality. For this reason, gamification has been included in various educational activities of adult education (Hsin-Yuan Huang & Soman, 2013). In addition, it **leads to an increase in the emotional involvement of learners in the course process, pushes them to achieve their goals and takes the interest away from the grade.** The behavior of learners improves, their emotional involvement in the educational process and the degree of interaction with others increases. Based on the above, gamification is a particularly useful tool for the teacher of every level, who can use it to achieve the learning goals of the learners.

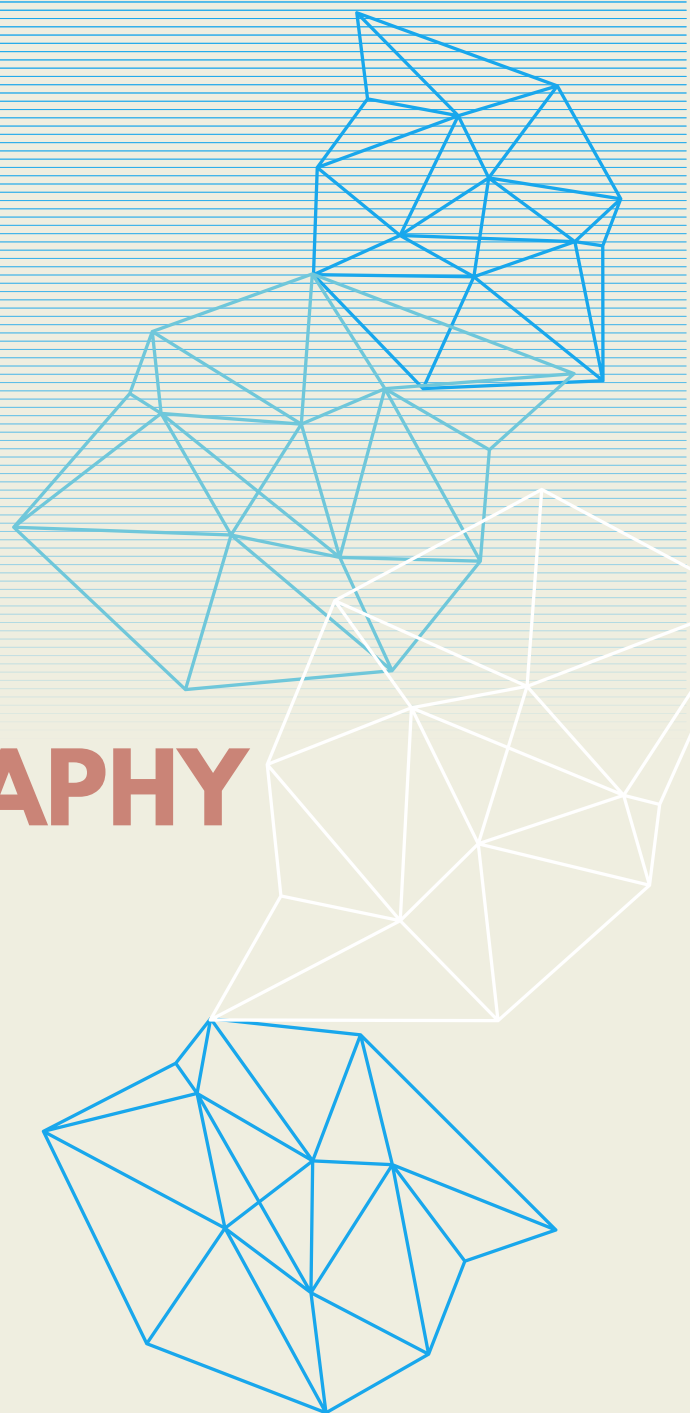
Gamification can be applied in any setting related to adult education, including vocational training (Pereira et al., 2014). Education, because it is a field that leads to the development and evolution of people, peoples and societies, is obliged to follow the contemporary data and keep up with them, bringing the outside world into the classroom. For this reason, in recent years, there has been a spectacular entry of technology into schools and all kinds of educational institutions, causing, in some cases, the frustration of teachers who are unable to adapt to the changes that the new generations bring with them.

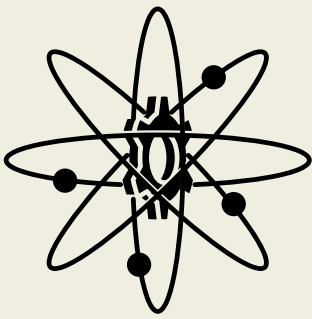
However, it is more than visible that today's learners live and operate in a world very different from that of their teachers and it is vital for their educational success that teaching is relevant to the demands and needs of the times (Mead, 2011).

So, in today's Information Society, where the development of Information and Communication Technologies has brought about significant changes in society and the revolution in technology, especially with the advent of android devices, has enabled even young students to have easy access on an electronic device, greatly facilitated digital learning (Sunmugam et al,2014). Given, therefore, that today's students are so familiar with video games that they go so far as to be labeled "digital natives" (Prensky, 2001), it was considered useful to connect the two domains in order to produce an interesting result. for students that will keep learning motivation high and promote problem-solving skills that will result in better learning outcomes (Chen et al, 2014).



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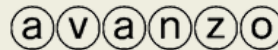
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Co-funded by
the European Union



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The product developed here as part of the Erasmus+ project "Game-based digital learning. Playing to teach ERASMUS+2023-ESO2-KA210-ADU-000174J66" was developed with the support of the European Commission and reflects exclusively the opinion of the author. The European Commission is not responsible for the content of the documents

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