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GAMIFICATION: ANALYZING ACTIVITIES FROM THE WEBSITE FLIPPITY

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FROM THE WEBSITE FLIPPITY

Trabalho de conclusão de curso apresentado ao curso de Letras-Inglês do Departamento de Estudos da Língua Inglesa, suas Literaturas e Tradução da Universidade Federal do Ceará, como requisito parcial à obtenção do título de licenciado em Letras-Inglês.

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À minha mãe, Elesandra, e às minhas tias Elissandra e
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"*Well, in this world, you get what you give.*"
(Wood Sprite em *Pinocchio, by Guillermo Del Toro*)

RESUMO

Nos últimos anos, os jogos tiveram um aumento em influência e popularidade, especialmente entre as gerações mais jovens. Com a pandemia, eles passaram a ser uma das poucas formas de lazer disponíveis no lockdown. Paralelo a isso, no mesmo período, houve também uma queda no interesse e no foco por parte dos alunos pelos conteúdos apresentados em sala, e que de certa forma se mantém até os dias atuais. A partir dessa situação, fez-se necessária a criação de um ponto de interseção entre a sala de aula e os algo que chamasse a atenção dos estudantes, como os tão populares jogos. Como ferramenta para essa integração, podemos citar a gamificação, que de acordo com Deterding et al. (2012, p. 2) é o uso de elementos de jogo em contextos em que o foco não é o entrenimento. Essa funcionalidade está presente em diversas plataformas, como por exemplo o website *Flippity.* A partir daí, surgiu o objetivo específico desta pesquisa, que foi analisar como os elementos de gamificação são trabalhados nesta plataforma, com os objetivos específicos de verificar os elementos presentes e a frequência em que eles foram encontrados nas atividades analisadas. Utilizando a teoria de Werbach & Hunter (2012) que mostra elementos importantes para a gamificação de atividades, juntamente com as adaptações feitas por Paixão & Cordeiro (2021) analisamos 3 atividades e 1 elemento de jogo, verificando através de uma tabela os elementos da teoria presentes e ausentes em cada um. Após a análise, foi observada presença de 6 elementos em comum entre elas, sendo esses elementos todos ligados a um principal, que foi a emoção.

Palavras-chave: Gamificação; Elementos; Jogos; Flippity.

ABSTRACT

In recent years, gaming has seen a rise in influence and popularity, especially among younger generations. With the pandemic, they became one of the few forms of leisure available during lockdown. Parallel to this, in the same period, there was also a drop in interest and focus on the part of students in the content presented in the classroom, which in some ways continues to the current days. From this situation, it was necessary to create a point of intersection between the classroom and something that caught the students' attention, such as the popular games. As a tool for this integration, we can mention gamification, which, according to Deterding et al. (2012, p. 2) is the use of game elements in contexts where the focus is not entertainment. This functionality is present on several platforms, such as the Flippity website. From this point, the general objective of this research emerged, which was to analyze how gamification elements are worked on this platform, with the specific objectives of verifying the elements present and the frequency in which they were found in the activities analyzed. Using the theory of Werbach & Hunter (2012), which shows important elements for the gamification of activities, alongside the adaptations made by Paixão & Cordeiro (2021), we analyzed 3 activities and 1 game element, using a chart to check the elements of the theory that were present and absent in each one. After the analysis, the presence of 6 elements in common between them was observed, with these elements all linked to one main thing, which was emotion.

Keywords: Gamification; Elements; Games; Flippity.

SUMMARY

1 INTRODUCTION

The influence of games on modern society is evident, with the majority of people having at least one game installed on their smartphones nowadays. These games are not just fun but also great for learning. Gee (2003) points out that when you learn to play games, you are learning a new literacy. McGonigal (2011) even talks about how games can help solve real-world problems. In their works, the authors explain how games can teach us important skills, make us think, solve problems, and work together.

This idea has led to something called "gamification" in education. Deterding et al. (2012, p. 2) define gamification as the use of game elements in non-entertainment contexts, such as rewards and competition, in places other than games, like in classrooms. By making learning more like a game, teachers can make it more interesting and fun for students. This way, students are more likely to get involved, work together, and keep trying, just like they do when playing games.

Based on the previously mentioned ideas, the following central question was generated: "How are the gamification elements used on *Flippity*?" with the central objective of analyzing how the gamification elements are used in the website, and the specific objectives of verifying what elements are present in the gamified lessons and checking the frequency they appear in the analyzed activities.

The questions and objectives in this paper emerged based on the previous experiences of the researcher with gamified activities in class as a student during his school time, bringing not only good memories but also making it possible to understand the mechanisms behind the exercises.

This paper is organized into 5 chapters, starting with this introduction and then a Literature Review, in which we will present cases of effective use of gamification and the theories we will use to analyze the data we collected. The theory we will rely on and which will be better understood later in Chapter 2 is the idea of Werbach & Hunter (2012), which talks about the game elements that must be present in a gamified activity. Complementing the authors, we also used some ideas of Paixão & Cordeiro (2021), who gave us broader descriptions of the elements present in the previously mentioned theory.

In Chapter 3 it is possible to find our methodology and understand a little bit more about how the website *Flippity* works. The chapter also contains the activities we will analyze, and the chart we used to do it.

Chapter 4 contains the analysis of the activities, showing what elements were or

were not present in each one of them, analyzing how they were used in the gamification process, and how these elements influenced the participants' experience.

Last, but not least, Chapter 4 concludes the findings of this paper and provides a little bit of the researcher's ideas on what was found in this study.

2 LITERATURE REVIEW

This chapter aims to explore the theoretical bases and relevant research related to gamification in the education field, providing a solid conceptual basis for the analysis and evaluation of its application in the educational context, as you will see in Chapter 4 of this research. This literature review will not only clarify the fundamental principles of gamification but also highlight examples of its successful implementation, identifying the challenges and opportunities that shape the use of gamification in modern education.

2.1 GAMIFICATION

Deterding et al. (2012, p. 2) propose in a general way the definition of gamification as "the use of game elements in non-entertainment contexts", and in the case of the education field, these elements are added to enhance learning, and additionally, have to do directly with the motivation and engagement of the students. For this reason, some studies have shown gamification as a promising methodology for teaching and learning, since it involves the best of both worlds for teachers, who can explain the subject content, and their pupils, who can play and learn at the same time, using a funnier and more attractive way.

Teachers all around the world face many challenges to keep their students engaged and concentrated in class, mainly because this new generation of students was already born in a different era, with many other resources used to get their attention, such as the internet and games (SERRA 2020). These challenges were even more evident in 2020 and 2021, years in which the world faced the worst scenario of the COVID-19 pandemic. With online classes, teachers had to reinvent themselves and find new ways to gain the students' attention, and gamification was one of the tools that helped at this moment.

A study carried out by Nieto-Escamez and Roldán-Tapia (2021) mentions an application created by da Silva et al. (2020a) to teach Chemistry, originally designed to be used in a classroom context. However, the pandemic required it to be used online. The app was used by a group of 44 pharmacy undergraduate students, and their performances and knowledge were compared to another group of 40 students who did not use the app to learn the content. The results showed that it was very well rated by the ones who played it, and even though the grades were very similar in the pre and post-exams, the learners who studied using the gamified context liked it more, because of the more pleasing environment compared with the regular problem-solving classes.

The authors still mention a study carried out by Pearson (2020), in which the gamified activity involved a crossword. Again, pharmacy undergraduate students, now in their first and second year, were asked to solve chemistry crossword puzzles as a complement to the lectures and problems content. Like the study mentioned before, the exam performances did not present significant differences, but more students answered the question about the content taught alongside the crossword exercises. The authors point out that the student's confidence level increased when answering questions about contents prepared using this gamified activity. Besides, learners' marks were higher compared to the academic year before the study. The author suggests that the students became not only more confident answering the questions, but also engaged, and this change influenced their exams.

These two studies give us evidence to understand the point raised by the two authors who mentioned them. They say that since the games have appealing elements, especially for teenagers and adults, they tend to influence our lives, and adding these elements into everyday student activities, such as a review, or an exam, might foster their sense of achievement.

2.2 GAMIFICATION VS GAMES

In recent years, the fields of gamification and games have gained rising attention for their potential to improve involvement and motivation in various fields, including education, healthcare, and business. Because they are similar, the concepts may be confusing and even used interchangeably (RICHTER, 2015). However, it is important to understand the difference between them in order to be more specific regarding their purposes and goals.

Huizinga (1949) mentions that the act of playing is even older than culture, since culture implies the existence of human race. He points out that animals play much like humans: they invite each other, pretend to be angry to add emotion to the game, and have their own rules, such as not bite in certain places or not bite very hard. Throughout these interactions, they can experience joy naturally. According to the author, games are characterized by a voluntary engagement that creates a separate reality within which players operate under agreed-upon rules.

Games have inherent structures designed to immerse players in experiences where they make choices, face challenges, and receive feedback. This structured nature differentiates games from gamification, which takes a more modular approach to engagement. According to Muntean (2011), games are focused on leisure and entertainment, but their appealing features made it easier to implement these characteristics into different contexts, as mentioned before, creating the 'serious games'. This type of game is classified as complete games with serious intentions and designed accordingly.

Summarizing, the difference between game and gamification lies in their nature, purpose, and implementation. Games are self-contained experiences with structured rules and objectives, often used for entertainment and education. Gamification, on the other hand, incorporates game elements into non-game contexts to enhance engagement, motivation, and participation in various activities, and the need for its use and its effectiveness are proven by many studies, as we saw in the last section.

2.3 CRITERIA FOR GAMIFICATION

Werbach & Hunter (2012) mention that they have analyzed more than 100 gamification implementations and many of them started with the same elements, what the authors call "The PBL triad", which stands for points, badges, and leaderboards. However, it is important to highlight that gamification cannot be reduced to only these elements, as many people do. They are part of gamification, but they alone are not necessarily enough to say that an activity was gamified. In spite of this, "The PBL triad" mentioned before, is considered by them as a good starting point, but it is very important to understand more about their pros and cons.

2.3.1 The PBL triad

Concerning points, Werbach and Hunter (2012) mention them as an important way to keep score and motivate the players, define levels, and give the sensation of progression as they keep playing (when gamified properly). The importance of the points has to do with the feedback they provide because this quick answer keeps the player focused and makes them want to keep playing to earn more points or even recover the lost ones if that is the case. On the other hand, some players may also feel the opposite, and instead of feeling motivated, they feel discouraged. That is why is important to keep in mind that points are limited since they are uniform, abstract, and interchangeable.

Status is another thing that points can provide, especially when shared within the community. Again, we find the same problem: while some players may feel good about their high scores being shared with others, others may feel uncomfortable if the number of points is not very high or good. Another pro that points can bring is the data. Gamification websites, such as *Socrative* and *Kahoot*, provide not only feedback to the players but also data to the gamifiers (the person who gamified the task), giving a much broader understanding of how the participants are absorbing the content, for example.

The second item on "The PBL triad" is the badges. They are defined as chunkier versions of points because they represent, in a graphical way, something that was accomplished throughout the game or the gamified task. For being more visual, they are commonly found combined with the point system, and also as an equivalent term for 'achievements' in gamification.

These emblems are an essential game element as they offer a goal to players, who may feel more engaged to get them, and in addition, they are a representation of what the player is capable of, being strictly linked to their reputation, which leads to the enhance of the sense of identity with certain groups, and create an environment in which the gamer feels like they belong more easily.

Badges are very versatile, and this versatility is especially helpful when fitting this element into different contexts. The gamification designer is the one responsible for creating the different styles of emblems, and this variety will hopefully be something interesting and engage the players. With websites such as *Flippity*, it is possible to create badges for students in different categories. For example, a teacher can award an anti-cyberbullying student, a student who has completed all the homework on time, or even a student who participates actively in class. The possibilities are very broad and, as mentioned, they depend on the imagination of the person who is gamifying the activities.

The last item of the "PBL Triad" is the leaderboard. This is possibly the one that creates more problems. The leaderboard, as the name suggests, is the chart that shows the points and the position of the players in relation to others. However, even though it is one of the essential features in games that has more than one player, and performance is important, its use must be done wisely. This ranking can be either a motivator, in cases when the difference in score among the players is not very high, and they feel engaged to keep trying and surpass their opponents, or very demotivating in cases when the difference is substantial, and it is not worth trying anymore since there are no chances of winning.

Another negative aspect about using the leaderboards is that, for some people, it might make them act in a competitive and unhealthy way. This can end up disturbing the gamification experience, not only for the person at the top of the list but also for the other players who are trying to get there as well. The authors also mention that previous research proved that introducing rankings like these would decrease performance rather than improve it since the players would only think about being well positioned on the chart.

Werbach & Hunter (2012) also point out that a leaderboard need to be dynamic and track multiple attributes, with the possibility of having more than one list to track these aspects separately, but these characteristics must be chosen by the gamification designer.

As we have seen, although the "PBL Triad" contains essential features we can use to gamify tasks they are not enough in some cases, and we must take some aspects into consideration before using it.

2.3.2 Game Elements Important to Gamification

Werbach & Hunter (2012) designed a pyramid with the categories of game elements that are important to gamification. They follow a hierarchy in decreasing order of abstraction:

Figure 1: Game elements
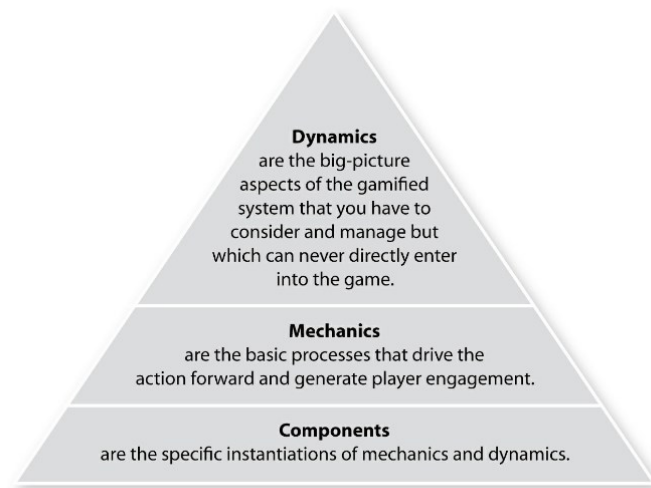
Source: Werbach & Hunter (2012)

Paixão & Cordeiro (2021) adapted Werbach & Hunter (2012) pyramid with broader descriptions of the elements in each category. These three categories reunite a set of 27 elements, and the more integrated these items are, the greater the probability of generating interesting and memorable experiences. These elements are going to be used later in our analysis.1

Chart 1: Elements of the categories

DIMENSION	GAME ELEMENT	DESCRIPTION
DYNAMICS	Emotions	Has to do with the feelings the game seeks to arouse in participants, such as curiosity, happiness, frustration, fun, etc.; that is, it has to do with the emotional effort that the game seeks to imprint as a way to keep users playing.
	Narrative	Gives coherence and purpose to the gaming system, not allowing it to become the sum of random elements. It is the narrative that creates the system's feeling of purpose.
	Progression	The idea of experiencing players the feeling of progressing in the game instead of being stuck.
	Relationship	This element aims to bring users close to their friends and family members during a game.
	Restrictions	The attempt to limit what can and cannot be done. It creates obstacles that players need to overcome to prevent the game from becoming monotonous.
MECHANICS	Resource acquisition	Allows users to collect items that help them achieve specific goals.
	Chance	Inserts randomness to the player's actions as a way to create a feeling of surprise and uncertainty.
	Competition	Provides participants with the feeling of victory or defeat in terms of a contest with other teams or people.
	Cooperation	Unlike the previous mechanics' item, the goal here is to make users experience a feeling of victory or defeat

		with other people.
	Challenges	The objectives that users must accomplish.
	Feedback	Allows players to investigate how they are progressing in the game.
	Rewards	The benefits players can get from achievements in the game.
	Victory	The "state" that defines that the game has been won.
COMPONENTS	Avatar	The visual representation of the player in the scope of the game.
	Virtual Goods	Items inside the game that players can collect and use their virtual form, but that still have value to the player. The players can pay for the items with game currency or real money.
	Badges	Visual representations of achievements inside the game.
	Boss	The typically difficult challenge at the end of a level must be overcome to advance in the game.
	Collections	They are formed by items collected inside the game. Cards and badges are frequently present in collections.
	Achievements	The rewards received by the player for completing a set of specific activities.
	Unlockable Content	Items not available at first. To access them, the player must do something specific.
	Social Graph	The ability to see friends who are also in the game and interact with them.

	Mission	Consists of a set of achievements.
	Levels	Representation of the players' evolution. The players' level increases as they get better in the game.
	Points	Type of unit accumulated with successful actions that allow increasing one's levels.
	Gifts	The items given by a player to another or the system itself.
	Ranking	List of players with the highest scores and achievements in a game.
	Teams	A resource that allows gameplay with other people to achieve the same goal.

Source: Paixão & Cordeiro (2021).

In conclusion, to consider an activity as gamified, it must follow a series of criteria, which should be used properly, and evenly to ensure a positive experience for the players and generate the behavior expected by the gamification designer. This allows them to analyze the observed aspects with property and accuracy.

3 METHODOLOGY

This chapter will present the methods used in this research and how it is classified according to scholars taking into consideration its nature, sources, objectives, approach, techniques, and procedures. Furthermore, we will present the steps taken to carry out the study, and the reasons that led to the choices made in it, such as our research object, the website *Flippity*, and the activities taken from it. We will also present in detail how each one of them works.

3.1. RESEARCH TYPE

Following the criteria established by Gil (2017), the present research is classified as bibliographic since it is based on previously published materials such as books, theses, dissertations, and databases. The author provides valuable criteria for classifying research in bibliographic form. The first criterion is the research's nature, which can be classified as exploratory, descriptive, explanatory, or applied. Bibliographic research often falls into the exploratory category, because as mentioned previously, it aims to gather existing information, theories, and concepts to improve the understanding of a topic. In our case, it is not different.

The second criterion is the research's objectives, which can be divided into exploratory, descriptive, explanatory, and evaluative. In this research, we sought existing literature to describe elements from games and analyzed not only the way but also the number of times they appeared in the chosen activities taken from the research object. Additionally, we also explained how the presence or lack of these elements would affect the student's interest in the examined activities. Therefore, regarding its objectives, this research can be classified as both descriptive and explanatory.

In relation to the approach and techniques used in the research, according to Gil (2017), in bibliographic research, the focus is on the critical analysis and synthesis of existing literature. Researchers employ techniques such as literature review, content analysis, and citation analysis to draw conclusions and make recommendations based on the existing body of knowledge, similar to our approach in this study.

Still following the author's criteria concerning quantitative and qualitative studies, this research can be classified as mixed-method research, since it combines quantitative and qualitative approaches. It brings elements from quantitative research when it shows numerical data analyzing the number of times an element from the chart appears, and it also brings

elements from qualitative research when the numerical data is analyzed in a broader and more detailed way, in verbal descriptions.

3.2. RESEARCH OBJECT

The object of this research is the website *Flippity* (flippity.net). This platform aims to create gamified activities and teach content using game elements to enhance the teaching-learning process. It was chosen to be part of this research because of its versatility, gathering not only the gamified activities but also game elements themselves that can be used freely for classroom management. It is possible to gamify simple activities such as choosing a student to erase what is written on the board using randomizers for example. Creating a leaderboard in class to encourage reading and more participation in the lessons is also another possibility, as well as creating a badge board to reward them for being anti-bullying students, or for being helpful in class with friends who have difficulties with certain content, etc. The possibilities are broad, and it is up to the teacher to decide what to do with this diversity.

Figure 2: *Flippity* logo
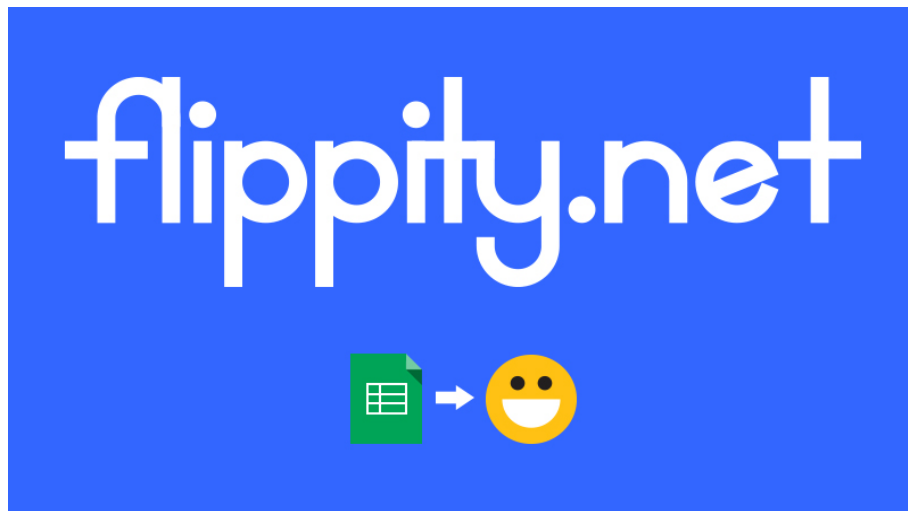
Source: Flippity.net

As mentioned before, the website provides a lot of gamified activities and game elements to help with classroom organization. All of them are completely customizable, so it is possible to add the student's names to the activities the teacher would like them to learn and/or reinforce, and also to the other everyday tasks they would like to add game elements. All the

activities and game elements on the site have their demo version and the instructions tab, with orientations about how to customize them, as shown in Figure 3.

Figure 3: *Flippity* home page
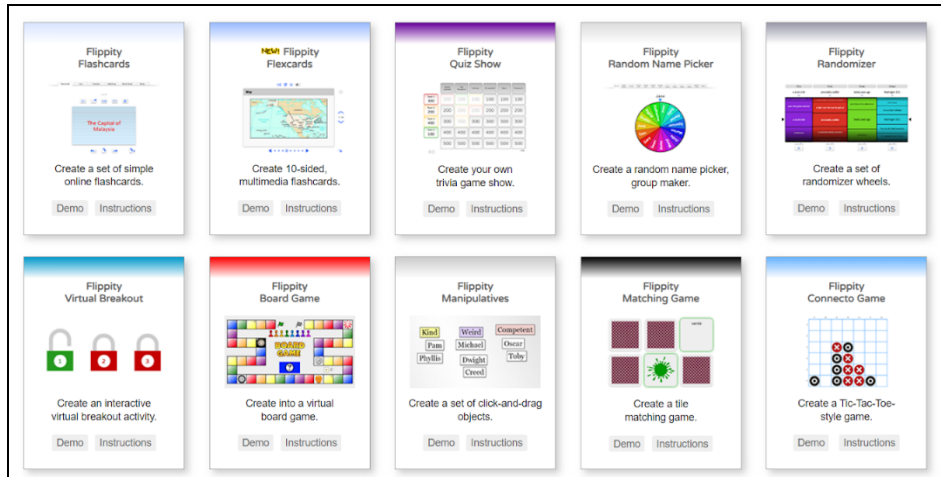
Source: flippity.net.

Figure 4: Instructions tab

Source: https://www.flippity.net/QuizShow.htmppity.net

When the activity is chosen, the personalization must be made by Google Sheets, and you must click on "instructions" to open the instructions tab and see the step-by-step to customize the activities or the game elements you are interested in. An important step you must not forget is to publish your spreadsheet on the web. This is the only way to get the activity with the customizations you have made previously.

3.3. RESEARCH PROCEDURES

The procedures adopted in this research played a crucial role in obtaining the results we had. The methodology used was planned and executed thinking about a method that could be simple and at the same complete to analyze the elements we intended to. In this section, we will describe in detail the steps we followed to conduct this research systematically and accurately.

We started by choosing the website, for the previously mentioned reasons, and the activities we chose were "Quiz Show", "Virtual Breakout" and "Snowman" (a version of hangman that can be customized to other forms, such as a tree with fruits falling each time they make a mistake, etc). We also chose one game element, "Progress indicator", that could be used in both activities or alone if the teacher wanted to. Both the activities and the game element were chosen considering the students' preferences, that is, the activities they would be most interested in if they were proposed in the classroom.

The second step was to adapt the chart created by Paixão & Cordeiro (2021) gathering the elements they describe and the variables we intended to analyze, as shown in chart 2.

Chart 2: Analysis of the activities

DIMENSION	GAME ELEMENT	FOUND	NOT FOUND
DYNAMICS	Emotions		
	Narrative		
	Progression		
	Relationship		
	Restrictions		
MECHANICS	Resource acquisition		
	Chance		

	Competition		
	Cooperation		
	Challenges		
	Feedback		
	Rewards		
	Victory		
	Avatar		
	Virtual Goods		
	Badges		
	Boss		
	Collections		
	Achievements		
	Unlockable Content		
	Social Graph		
	Mission		
	Levels		
	Points		
	Gifts		
	Ranking		
	Teams		

Source: Adapted from Paixão & Cordeiro (2021)

The third and last step was analyzing the chosen activities using the chart and how the presence of the elements in the list would affect the students' engagement. Furthermore, the frequency of appearance of the elements was also analyzed, and what this could tell us about how the activities would be received by students.

In summary, the methodology adopted in this study, which included quantitative and qualitative research with an analysis of game elements present in the website *Flippity*, was chosen with the aim of answering the research questions in a comprehensive manner. The selection of this methodological approach was based on the need to evaluate the variables with

high statistical precision. In addition, the choice of methodology also considered the availability of resources and research deadlines. The information collected through this method served as a basis for analyzing the results and discussing the implications of our study.

4 ANALYSIS AND DISCUSSION

Using the theories of Werbach & Hunter (2012) and the adaptation made by Paixão & Cordeiro (2021) as presented in our Literature Review, in this chapter, we analyzed three activities and one game component. As shown in the charts below, we checked what elements were found or not in each activity. Additionally, we discussed the effects that the presence of some of these elements would have on the students.

The first analyzed activity was the Quiz Show, which was basically a group of questions that varied in difficulty and subject. Students received points for each correct answer, and the team with the biggest number of points at the end of the activity would be the winner. It was chosen based on the students' preferences and feelings towards the activity when it was previously applied in class, without using the website; only simple resources such as the board and some flashcards were used.

Chart 3: Quiz Show analysis

DIMENSION	GAME ELEMENT	FOUND	NOT FOUND
DYNAMICS	Emotions	X	
	Narrative		X
	Progression	X	
	Relationship	X	
	Restrictions		X
MECHANICS	Resource acquisition		X
	Chance	X	
	Competition	X	
	Cooperation	X	
	Challenges	X	

	Feedback	X	
	Rewards		
	Victory	X	
COMPONENTS	Avatar		X
	Virtual Goods		X
	Badges		X
	Boss		X
	Collections		X
	Achievements		X
	Unlockable Content		X
	Social Graph	X	
	Mission		X
	Levels	X	
	Points	X	
	Gifts		X
	Ranking	X	
	Teams	X	

Source: Adapted from Paixão & Cordeiro (2021)

The Quiz Show incorporated 14 elements from the pyramid designed by Werbach & Hunter (2012), and all these elements were described in the chart adapted by Paixão & Cordeiro (2021). These game aspects worked together to achieve some of the possible desired effects on the students. As shown in the chart, the game elements were separated into three categories, as explained by the authors. They were dynamics, mechanics, and components.

In the field of dynamics, we identified three elements. Following the chart's order, the first one was "emotions." This element became evident in this activity when students expressed curiosity about the next question, experienced happiness when they answered correctly or even felt frustration when they answered incorrectly.

Emotions were closely connected to the second element we found, which was "progression." As defined by Paixão & Cordeiro (2021), progression refers to the idea of enabling players to experience a sense of advancement within the game instead of feeling stuck. This aspect became apparent when participants encountered various categories of questions, accumulated points, and faced different levels of difficulty, which provided them with the sensation of evolution, and this sensation can cause them positive and negative emotions.

The last aspect in this field was "relationship." This feature was particularly noticeable as the game was played in teams. According to the authors, this unit is associated with users becoming closer to their friends or family during a game. It is important to mention that this can also have the opposite effect, causing individuals to grow apart, especially when some of them are on different teams. Since relationships are intertwined with emotions, the frustration of seeing a friend win instead of you may not be well-received by all the students.

In the field of mechanics, we identified 6 elements. Following the chart's order, the first one was "chance". We could see the presence of this unit when they did not know what question would be asked, providing the sensation of randomness, as described in the chart present in our Literature Review.

The second element present in the activity was "competition". Since they participated in teams and there would be only one winner in the end, competition was a factor that for sure would appear in this activity. Alongside this feature, we could mention another one, that was connected to it, which was "challenges". The authors define it as the objectives they must accomplish, and in this case, this goal was getting more correct answers, earning more points, and getting another important element in gamification present on the chart, which was "victory".

The last two elements present in this field were "feedback" and "cooperation." Cooperation was identified when participants worked together to achieve the same goal, and in the end, they shared the same emotions toward their victory or defeat, as defined by the authors. This cooperation resulted in feedback, which was the final item in mechanics. Feedback can be defined as the response they receive after an attempt, and it is essential for understanding how close they are to victory. In "Quiz Show" they received the response almost immediately after they answered the question, with the correct answer appearing on the screen when they ran out of time. This input can impact other elements such as emotions, relationships, competition, and even cooperation, as a positive or negative response may make students feel more or less engaged.

"Components" was the last field in the chart. We identified and observed five items within this scope: "levels", "ranking", "points", "teams", and "social graph", and it is possible to see a clear connection between all of them. The activity incorporated different levels of questions, progressing from easy to difficult as the students provided answers. Not only could these levels vary in difficulty, but they could also cover different subjects, depending on the preferences of the gamifier. Since they varied in difficulty, they also varied in points. The harder the question, the more points they received. These points were important to build the ranking with the teams that scored the most until the end of the game. Since the activity is carried out in teams, it made it possible to observe the social graph factor.

The next activity we observed was the "virtual breakout", as shown in Chart 4. In this analysis, it was possible to find 14 game elements among the three dimensions present in the theory developed by Werbach & Hunter (2012).

Chart 4: Virtual breakout analysis

DIMENSION	GAME ELEMENT	FOUND	NOT FOUND
DYNAMICS	Emotions	X	
	Narrative		X
	Progression	X	
	Relationship	X	
	Restrictions	X	

MECHANICS	Resource acquisition		X
	Chance	X	
	Competition	X	
	Cooperation	X	
	Challenges	X	
	Feedback	X	
	Rewards		X
	Victory	X	
COMPONENTS	Avatar		X
	Virtual Goods		X
	Badges		X
	Boss		X
	Collections		X
	Achievements		X
	Unlockable Content		X
	Social Graph	X	
	Mission	X	
	Levels		X
	Points	X	
	Gifts		X

	Ranking		X
	Teams	X	

Source: Adapted from Paixão & Cordeiro (2021)

This gamified activity can be played in teams or individually, and it consists of a set of locked lockpads with different questions that may or may not vary in subject or difficulty. The gamification designer chooses if the players will have clues or not. The participants' mission is to unlock all the lockpads in the least time possible to be the winners.

In the dimension of "dynamics," "Virtual breakout" contained four out of the five elements: "emotions," "progression," "relationship," and "restrictions." For the first one to appear, it is important to mention to the students that the winner is going to be the one or the team that opens all the locks in the shortest time. The feeling of time passing while they try to open the locks was exactly what had to do with the "emotions" aspect.

"Progression" in this gamified activity involved the students seeing each lock being opened. The more open locks, the closer to victory they could get. This development can influence their relationship since it is easier to get along with other teammates if they are cooperating by giving correct answers and helping the team progress rather than giving wrong answers and making the team get stuck. This connection made the third point, "relationship" observable in the activity.

"Restrictions" is defined as what can and cannot be done. It creates obstacles that players need to overcome to prevent the game from becoming monotonous (PAIXÃO & CORDEIRO, 2021). This unit was present when there was only one correct answer that opened the locks, which were the obstacles that must be overcome. This answer must be exactly as the gamification designer established. Since the answers were written by the participants, each detail counted.

In the "Mechanics" dimension, we found six aspects of "Virtual breakout". They are "chance", "competition", "cooperation", "challenges", "feedback", and " victory", all of them present in the previously analyzed activity, the quiz show.

"Chance" appeared in the activity as the students did not know what the questions would be. They had eight padlocks with different questions chosen by the gamification designer, and they could cover various topics. Even if the general topic is known by the students, the fact that the specific questions are not, makes the element of chance present here.

"Competition" was observable here when the students were competing against themselves to open the locks in the least time possible. Depending on how the teacher decided to organize the round, whether individually or in teams, this aspect could be seen in an even stronger way. The opposite of competition, cooperation, also appeared in this engaging exercise. This element was better observed when playing in teams, but it could also be seen individually when participants cheered for their friends and tried to help them in some way to solve the questions — which could be seen in this case as challenges.

The last two elements in the Mechanics field were "feedback" and "victory". The first one happened instantaneously, regardless of whether the answers were right or wrong. If they were correct, the padlock would open; otherwise, it would remain locked. This was connected to the last item, "victory", as the player or team who opened all the locks first would become the winner.

In the last dimension, components, we observed four game elements: "points," "teams," "mission," and "social graph." Three of them were also present in the Quiz Show. The first one appeared here when the activity was conducted in groups (teams), and the second one manifested when players answered questions correctly, earning an unlocked padlock that could be considered as one point, that counted to accomplish one more element, that was the "mission".

The last unit present here was "Social graph" which was defined by the authors as the ability to see friends who are also in the game and interact with them, and they could do it in this activity whether playing it individually or in teams.

The next analyzed activity was the Hangman. It was possible to find 10 game elements and most of them were in "dynamics" and "mechanics" dimensions, with only 1 out of 14 in "components", as shown in chart 5.

Chart 5: Hangman analysis

DIMENSION	GAME ELEMENT	FOUND	NOT FOUND
	Emotions	X	
	Narrative		X
DYNAMICS	Progression	X	

	Relationship	X	
	Restrictions	X	
MECHANICS	Resource acquisition		X
	Chance	X	
	Competition		X
	Cooperation	X	
	Challenges	X	
	Feedback	X	
	Rewards		X
	Victory	X	
COMPONENTS	Avatar		X
	Virtual Goods		X
	Badges		X
	Boss		X
	Collections		X
	Achievements		X
	Unlockable Content		X
	Social Graph	X	
	Mission		X
	Levels		X

	Points		X
	Gifts		X
	Ranking		X
	Teams		X

Source: Adapted from Paixão & Cordeiro (2021)

Hangman, or "snowman" as the website calls it, is a very famous activity. It involves guessing a word based on the number of letters and the given clue. In the website's gamified activity, each wrong letter causes the snowman to lose a part of its body. If it loses all its parts, the players do not win the round.

The first dimension, "dynamics," had 4 out of 5 elements present in this exercise: "emotions," "progression," "relationship," and "restrictions." The first two were interconnected; progression causes an emotion. In this case, seeing the word almost complete and having the chance to win the round brings positive emotions to the students. However, if the scenario was different and they were not progressing, the emotions would become negative.

It was also possible to establish a connection between the last two pieces from this dimension observed in the gamified activity. "Relationship" and "restrictions" were connected when the students had a limit of attempts according to the word, because in this exercise, each wrong attempt brings them closer to defeat, and usually the number of students is bigger than the number of available tries, so their guessing must be precise. This tension could cause some problems in the way they interact with each other since some students may not accept their friends' mistakes very well. The teacher must be alert in case anything more serious happens.

In the second field, "mechanics", 5 out 8 elements were observed. They were "chance", "cooperation", "challenge", "feedback", "victory" and "social graph".

The challenge in this activity was guessing the word correctly just by saying the letters. Since they did not know what the word was, it generated the element of "chance", making it harder to play sometimes, depending on the topic of the words. This challenge created an environment of cooperation as *Hangman* is typically played by the entire class rather than only by an individual or in a competitive manner between groups. This cooperation brought them together and made it possible to observe another aspect, the "social graph" since they see all the participants and can interact with them at the same time.

The last two observed elements were feedback and victory, presented here in a straightforward manner. Feedback was instantaneous, as the teacher immediately indicated whether the word contained the mentioned letter or not. This immediacy was essential to keep a continuous flow of mixed feelings such as nervousness, frustration, or happiness. Victory happened, as mentioned before when the students correctly guessed the word before they destroyed the snowman.

4.1 PROGRESS INDICATOR

The final analysis was not about an activity but a game element itself. This element could be added to the gamified activities or used alone to make simple tasks more interesting in the classroom. The Progress Indicator is a tool that shows a list of students with bars to display their progress in something. We chose this element to boost students' interest in activities like reading books, helping friends, or speaking English in class. Another reason we picked it is because of its easy to use on the website.

Chart 6: Progress indicator analysis

DIMENSION	GAME ELEMENT	FOUND	NOT FOUND
DYNAMICS	Emotions	X	
	Narrative		X
	Progression	X	
	Relationship	X	
	Restrictions		X
MECHANICS	Resource acquisition		X
	Chance		X
	Competition	X	
	Cooperation		X

	Challenges		X
	Feedback	X	
	Rewards		X
	Victory	X	
COMPONENTS	Avatar		X
	Virtual Goods		X
	Badges		X
	Boss		X
	Collections		X
	Achievements		X
	Unlockable Content		X
	Social Graph	X	
	Mission		X
	Levels		X
	Points		X
	Gifts		X
	Ranking	X	
	Teams		X

Source: Adapted from Paixão & Cordeiro (2021)

"Progress indicator" showed us 8 game elements, they were "emotions", "progression", "relationship", "competition", "feedback", "victory", "social graph", and "ranking". All of them worked together and were connected to each other so the analyzed element could provide the teacher with the expected results.

The emotions appeared here when the participants felt good for being on top, or frustrated for being in the bottom. Depending on what the teacher is using it for, being in lower positions would not bring frustration, but enthusiasm to achieve higher spots.

The positions on the ranking, which was one of the most important parts of this game element, could start a competition, but again, depending on how it was being used, it can be a healthy competition, If the teacher used a ranking in which the progression was based on who helped the most friends with content they did not understand in class, the competition here would generate positive actions instead of feelings of frustration, because even the ones who ended up in lower positions could feel good about the help they gave to their friends, influencing directly in their relationships in class.

Victory, feedback, and social graph here were all connected to the ranking. Each time they progressed was shown in the ranking and the victory belonged to the student in first place, as usual. Since they were in touch with the students in the ranking, this was when we could observe the social graph element.

In conclusion, it was possible to see how the elements relate to each other and how important they were to create an effective gamified activity. As mentioned before, gamification goes beyond a simple activity with ranking and points; there is much more to be added and analyzed.

4.2 FREQUENCY OF APPEARANCE OF THE ELEMENTS

Graph 1 shows how often the elements were found in the three activities and the game element we analyzed. It is noticeable that not all of them were found, but most were there and showed their importance in making the gamified activities successful.

Graph 1: Frequency of appearance of the elements
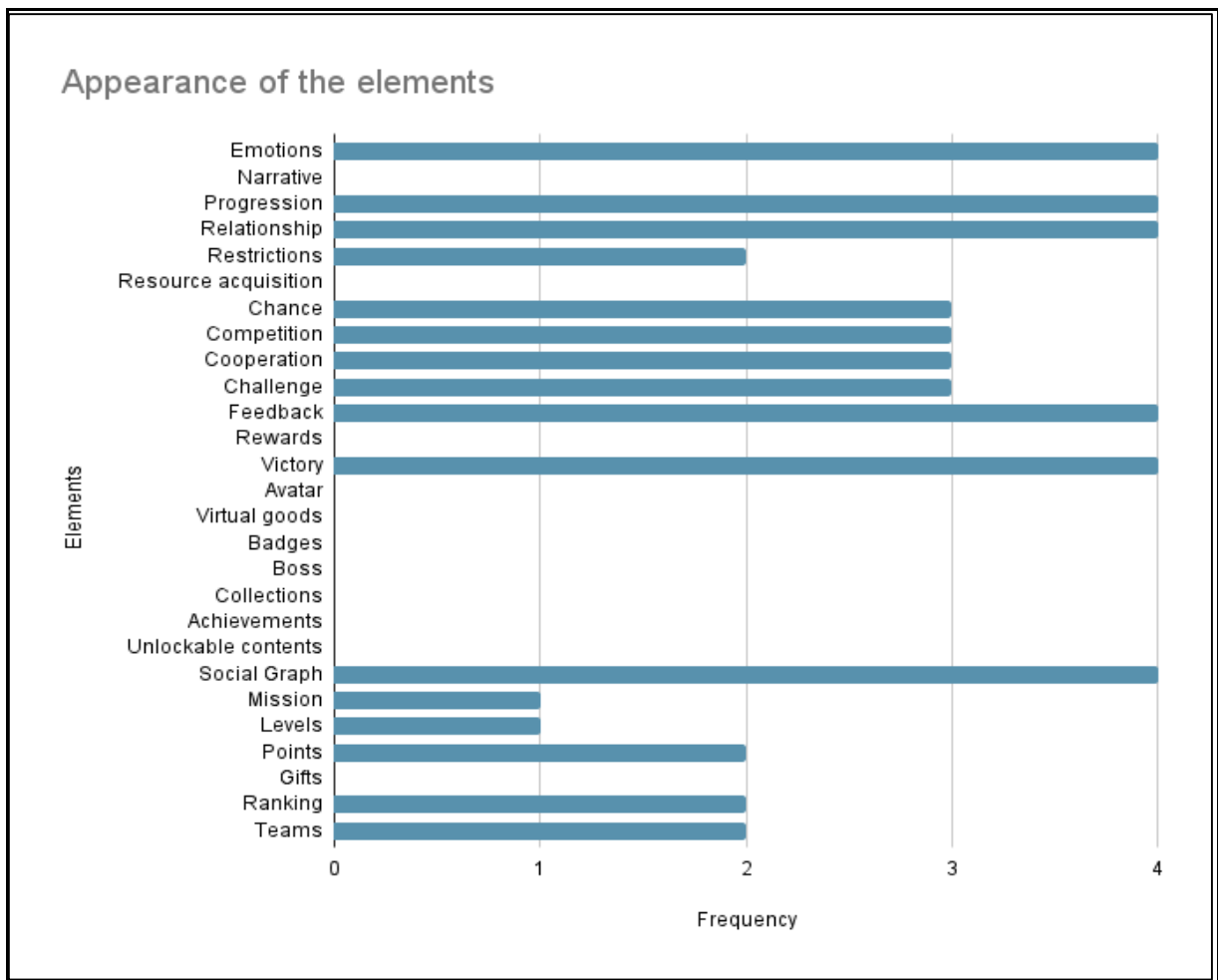
Source: Adapted from Paixão & Cordeiro (2021)

As shown above and throughout this chapter, some elements appear in all the analyzed objects, while others do not even appear in the charts, but even with the absence of a part of them, the activities remain effective, and providing the expected results to the teachers who use the website.

The elements that appeared the most were "Emotions", "Progression", "Relationship", "Feedback", "Victory", and "Social graph", and all of them were connected somehow. Werbach & Hunter (2012) mention that to build a house you need to be aware of the importance of the different elements because each one of them has their role in this construction. They still mention that no gamification will contain all of these elements, but

The role of emotions in the activities was to generate different feelings, and feelings are very important in gamified projects since it is from them that the engagement will appear, this is why this element appeared so much. However, the gamification designer must know all the

possible feelings generated by the activities, because from this information they can identify possible solutions if the exercise does not provide the expected results.

Progression was another unit that appeared in all the activities. This happened because all of them were divided into beginning, middle, and end. Even if this division is not clear, it is possible to notice them instinctively. For instance, you clearly know when the game starts and ends, and anything between this is the middle part. So it is possible to see the progress not only of the gamified exercise but also of the players throughout it. Sometimes some other elements can work together to make this idea of progression even clearer, and this is the case of the progress indicator.

The next element that appeared in all analyzed objects was relationship. This aspect was present in all of them because every activity is designed to be carried out in a classroom, and classes have more than one student, so they have to interact with each other to achieve their final goals.

Feedback was another game part that appeared at all possible times since it is a very important element and influences other ones as well, such as emotions and progression. It was not possible to know the player's progress in a gamified project if the participant did not receive feedback, so this element must be present in all the activities.

Victory is the key to understanding when the game ended, this is why it appeared in all the analyzed exercises as well. It is also the reason why all the players are in the project, and it is also the boost to generate specific emotions and the engagement the gamifier wants to add to the project.

The last element related to all the exercises was social graph. Connected with relationship, this element was heavenly present because, as mentioned before, all the activities were analyzed taking into consideration the classroom environment, so it is impossible for the participants not to see the other players who are in the exercise with them.

5 CONCLUSION

This research observed the game elements present in gamified activities on the website *Flippity*, in order to answer its central question "How the gamification elements are used on *Flippity*?", and achieve its central and specific objectives, as mentioned before, of analyzing how the gamification elements are used in the platform, verifying what elements are present in the gamified lessons, and checking the frequency they appear in the analyzed activities. As presented in the analysis chapter, some units were present in all the exercises, others appeared in just some of them, and other aspects did not even appear.

As mentioned previously, these results reinforce the idea present in our Literature review, which argues that gamified activities have more elements than just the ones present in the PBL triad, and all have their own importance. Still, one of them called out attention the most, and it was "emotion".

During our analysis, we noticed that most elements either needed emotions to appear or would generate a kind of emotion if they were present. This leads us to prove that the elements are used with "emotion" as a key factor in gamification, since they work together in order to generate feelings in the participants, making them more engaged in the proposed exercises.

Out of all the elements, six of them were present in all the activities, and "emotions" was one of them. The other five, "Progression", "Relationship", "Feedback", "Victory", and "Social graph" were all connected to it. For example, in exercises in which "progression" was observed, this progression would generate emotions, making the participants more engaged to keep progressing or disengaged and frustrated, depending on how their progress was. In activities in which "feedback" was found, this response would generate positive emotions if their answer was right, and negative emotions if their answer was wrong, and so it was with other elements as well.

The other ten elements, even not being found in all the activities, were also connected to emotions somehow. They were "Chance", "Competition", "Cooperation", and "Challenge", found in 3 activities each, "Restrictions", "Points", "Ranking", and "Teams", found in 2 activities each, and last but not least, "Mission" and "Levels", found in 1 activity each. All generate different feelings when found, or depend on these feelings to exist, such as cooperation, which needs a positive emotion to happen.

Some game units were not found, as we mentioned, but could be present in order to add more emotion or even improve other aspects, such as aesthetics in the exercises. Hence, we would like to suggest the possibility of adding avatars and earning gifts (defined by the teacher), or even badges in the analyzed "Progress indicator". We believe that seeing themselves

represented in avatars, and especially receiving things for their participation, would make them much more engaged and willing to participate in the proposed exercises.

To conclude, this research stands as a contribution to the area and can serve as a starting point for other research to be carried out in the future, using different platforms and materials, helping not only teachers who intend to create gamified lessons for their students but also platform developers who would like to understand better about the topic.

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