

## Papers

# Gamification practices in tourism: An analysis based on the model by Werbach & Hunter (2012)

Praticas de gamificação em turismo: Uma análise a partir do modelo de Werbach & Hunter (2012)

Prácticas de gamificación en turismo: Un análisis desde el modelo de Werbach & Hunter (2012)

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### Keywords:

Tourism;  
Gamification;  
Innovation;  
Experience;  
Werbach and Hunter.

### Abstract

Innovative tourism products have been surging throughout the world as a response to the rising competition in the sector. Some initiatives seek to engage people, motivate their satisfaction, and transform user experience through gamification. At the same time, there is a lack of studies regarding the elements used in those initiatives. With that in mind, the present study has as its objective to analyze gamification practices in tourism (national and international). Therefore, this exploratory-descriptive research study uses a systematic review method to identify gamification practices in tourism worldwide. The queries were made using keywords in English, French, Spanish, and Portuguese in the following databases: Portal de Periódicos CAPES (CAPES Periodical Portal), Science Direct, Publicações de Turismo (USP) (USP's Tourism Publications) and the site "Gamification in Tourism." After the initial survey, following the inclusion and exclusion criteria, 40 practices remained analyzed using the Werbach & Hunter (2012) model. The main finding of the study was that all practices fulfill at least one of the 27 gaming elements proposed by Werbach & Hunter (2012); the most common elements were "Challenge," "Progression," "Feedback," "Mission" and "Achievement"; the least common elements were "Boss," "Chance," "Teams," and "Gifts." The main conclusion of this study is that the frequency of the elements identified suggests a preoccupation with the practices analyzed in maximizing the experience for the visitors. In other words, gamification is being used to provide memorable experiences and not only as a pastime activity. Finally, it is important to mention that this is an original study whose value resides in the diffusion of knowledge about a subject that, although important, is still not widely discussed by the national scientific literature.

### Palavras-chave:

Turismo;  
Gamificação;  
Inovação;  
Experiência;  
Werbach e Hunter.

### Resumo

Produtos turísticos inovadores estão surgindo mundo afora como resposta ao clima de crescente competitividade no setor. Entre as iniciativas existentes, algumas buscam engajar pessoas, motivar a satisfação e transformar a experiência do usuário através da gamificação. Ao mesmo tempo, há uma carência de estudos sobre os elementos empregados nestas iniciativas. Diante disto, o presente estudo objetivou analisar práticas (nacionais e internacionais) de gamificação no turismo. Trata-se, portanto, de uma pesquisa exploratória-descritiva que empregou o método da revisão sistemática para identificar práticas de gamificação no turismo em todo o mundo. As pesquisas foram feitas a partir de palavras-chave em inglês, francês, espanhol e português, nas seguintes bases de dados: Portal de Periódicos da Capes, Science Direct, Publicações em Turismo (da USP) e website "Gamification in Tourism". Após o levantamento inicial, seguido da aplicação de critérios de inclusão e exclusão restaram 40 práticas, que foram analisadas à luz do modelo de Werbach e Hunter (2012). Os principais achados do estudo foram que: todas as práticas contemplaram ao menos um dos 27 elementos de jogos propostos por Werbach e Hunter (2012); os elementos de jogos mais frequentes foram "Desafio", "Progressão", "Feedback", "Missão" e "Conquistas"; e os menos frequentes foram "Boss", "Chance", "Times" e "Presentes". A principal conclusão do estudo foi que a frequência dos elementos identificados sugere uma preocupação das práticas analisadas em proporcionar uma maximização da experiência para o visitante; ou seja, a gamificação está sendo utilizada para proporcionar experiências memoráveis, e não simplesmente como um passatempo. Por fim, convém referir

que se trata de um estudo original e cujo valor reside em difundir conhecimento sobre um tema que, embora importante, ainda é pouco discutido pela literatura científica nacional.

#### Palabras clave:

Turismo;  
Gamificación;  
Innovación;  
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#### Resumen

Productos turísticos innovadores están surgiendo en todo el mundo en respuesta al entorno cada vez más competitivo del sector. Entre las iniciativas existentes, algunas buscan atraer las personas, motivar la satisfacción y transformar la experiencia del usuario a través de la gamificación. A lo mismo tiempo, faltan estudios sobre los elementos empleados en estas iniciativas. Ante esto, el presente estudio tuvo como objetivo analizar las prácticas (nacionales e internacionales) de gamificación en el turismo. Se trata, por lo tanto, de una investigación exploratoria-descriptiva que utilizó el método de revisión sistemática para identificar prácticas de gamificación en el turismo. Las búsquedas se realizaron mediante palabras clave en inglés, francés, español y portugués, en las siguientes bases de datos: Capes Journal Portal, Science Direct, Publicações em Turismo (de la USP) y el sitio web "Gamification in Tourism". Tras la encuesta inicial, seguida de la aplicación de criterios de inclusión y exclusión, quedaron 40 prácticas, que fueron analizadas a la luz del modelo de Werbach y Hunter (2012). Los principales hallazgos del estudio fueron que: todas las prácticas incluían al menos uno de los 27 elementos de los juegos propuestos por Werbach & Hunter (2012); los elementos de juego más frecuentes fueron "Desafío", "Progresión", "Comentarios", "Misión" y "Logros"; y las menos frecuentes fueron "Jefes", "Suerte", "Times" y "Regalos". La principal conclusión del estudio fue que la frecuencia de los elementos identificados sugiere una preocupación de las prácticas analizadas en ofrecer una maximización de la experiencia para el visitante; es decir, la gamificación se utiliza para proporcionar experiencias memorables y no simplemente como un pasatiempo. Finalmente, cabe señalar que se trata de un estudio original y su valor radica en la difusión del conocimiento sobre un tema que, aunque importante, aún es poco discutido en la literatura científica nacional.

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## 1 INTRODUCTION

According to Pine and Gilmore (1999), contemporary society is firmly settled in an experience-based economy. This means that the economic value has evolved, for it is no longer present only in commodities, consumer goods, or services. Value is now firmly attached to the experience users have while using a product or service as well.

In turn, the experience can be found at the core of the tourist activity. A travel experience can be more or less enjoyable depending on the level of innovation of the tourism products offered by the destination. Therefore, the economic utilization of tourism strongly depends on the capacity of destinations to propose innovative products that provide memorable experiences to their users (that is, the tourists).

Innovative tourism products have been surging throughout the world as a response to the rising competition in the sector to follow the constant change in expectations by the consumer (Rodrigues, Pereira, & Añaña, 2015). In the scope of this trend, the more innovative the tourism product, the more interesting it tends to be. As a result, the user experience as well, as Mazaró and Panosso Netto (2011) and Hjalager (2010) have shown. Among the existing innovative initiatives, some seek to gamify the visitation experience.

To gamify an experience means using the mechanics, aesthetics, and gaming frame of mind to engage people, motivate actions, promote learning, and solve problems (Kapp, 2012). Applied to tourism, it essentially means to re-think the way a tourist destination is experienced to create (or maximize) the tourist's involvement, and as such, to make the travel experience memorable (Souza & Marques, 2017; Souza, Varum, & Eusébio, 2017).

The profusion of Information and Communication Technologies (ICTs) offers the possibility to work with gamification. These technologies allow tourists to access information that is increasingly precise and real, using new tools provided to the market (Buhalis & Law, 2008). These include Augmented Reality – AR (which fuses the real and the digital worlds through mobile devices) and Virtual Reality – VR (which artificially recreates real-world situations through the use of Head-Mounted Displays (HMDs) that can reconfigure tourism through new ways of interaction with technological artifacts (Taufer & Ferreira, 2019), combining real and virtual elements to achieve the users' real-time immersion (García, 2017)).

AR and VR are examples of how ICTs can be used to improve visitation experiences (Luque & Correa, 2017), as explained by Carli, Gastal, and Gomes (2016), while discussing the indirect benefits brought about to tourism by the game *Pokémon Go*, as it projects georeferenced objects in tourist itineraries, stimulating visitation. Smart destinations are precisely this type of tourist destinations, as they are built upon a high-end technological infrastructure

that ensures the sustainable development of tourist areas, interaction and integration of visitors with the environment, and the improvement in the quality of the experience in the destination (Avila, 2015; Santos & Gândara, 2016; Gomes, Gândara, & Ivars Baidal, 2017; Soares & Conceição, 2016). When having these characteristics, a smart destination can make the use of resources such as gamification possible.

In the tourism segment, the profusion of initiatives employing gamification is evident (Souza, Varum, & Eusébio, 2017; F. Xu, Buhalis, & Weber, 2014; F. Xu, Tian, Buhalis, Weber, & Zhang, 2015; F. Xu, Weber, & Buhalis, 2017). Among cases cited in the literature are “TravelPlot Porto” in Porto, Portugal (Ferreira; Alves & Quico, 2014; Silva, 2014); “Hotel Prinz Luitpold” in Bad Hindelang, Germany (Negruşa, Toader, Sofică, Tutunea, & Rus, 2015; Weber, 2014); “Ilha Grande Mix” in Rio de Janeiro, Brazil (Nunes & Mayer, 2014) and “Ear your Wing” from Air Canada (Xu et al., 2015, 2017).

As gamification is a persuasion strategy with the power to influence and alter the behavior of users, it is mandatory to incorporate ethical questions in its processes (Kim & Werbach, 2016; Werbach & Hunter, 2012). Negrusa et al. (2015) call attention to the possibility of the unethical use of gaming elements in tourist destinations by pointing out the undesirable consequences in applying elements that generate excessive competitiveness. That is the case of an experience in Disneyland to motivate professionals in the hotel industry by using gaming elements, such as scoring and leaderboards. Unexpectedly, however, the initiative reduced productivity and deteriorated the organizational climate. Sigala (2015) also points out the adverse effects that the poor use of gamification can bring to users, such as the reduction in motivation and creativity. Otherwise, Rapp, Hopfgartner, Hamari, Linehan, and Cena (2019) observe that the ethical debate over the negative potential of the massive use of games to alter user behavior was also portrayed in the episode *Nosedive*, from the American series *Black Mirror*, in which people are continuously evaluated and rewarded for their social behavior.

Although there have been studies on gamification in tourism, there is a lack of works focusing on analyzing gaming elements employed in the practices described. This article is inserted in this context, as it aims to identify which gamification elements are employed in tourism gamification initiatives. As such, the present study **analyzes national and international initiatives that apply the gamification principles to tourism** in terms of the gaming elements employed by them.

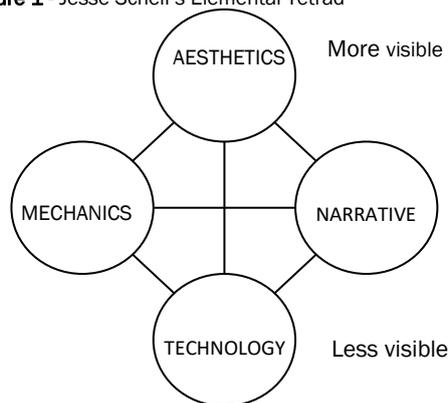
## 2 LITERATURE REVIEW

### 2.1 Design of gamified experiences

To Mora, Riera, González & Arnedo-Moreno (2015), many gamification initiatives fail primarily for not adopting a clear and formal framework. In this sense, the first step in designing the gamified experience is adopting a framework (Alves, 2015). Among the most widely used approaches in the conception of gamified practices are the MDA model, the Elemental Tetrad, and the D6 Model (Pereira, 2017).

The MDA model proposed by Hunicke, Leblanc, and Zubek (2004) is the acronym of *Mechanics – Dynamics – Aesthetics*. To the authors, these three components must be taken into consideration in the elaboration of any game. The Mechanics describe the specific components of the game in terms of data representation and algorithms; the Dynamics describe the behavior of the mechanical executions that act in the player’s actions and the results; the Aesthetics describe the desired emotional responses evoked in the player as he interacts with the gaming system.

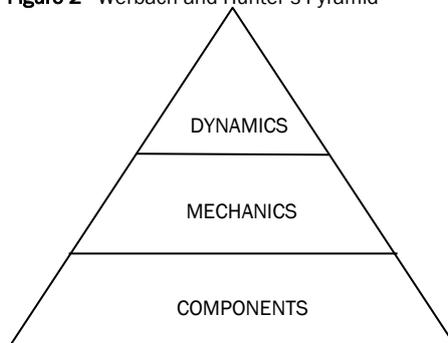
As for the Elemental Tetrad model developed by Schell (2014), it is based on the MDA model but expands it (Marins, 2013; Pereira, 2017). Schell presents a proposal based on four categories: Mechanics (describes the objective of the game and how players can or cannot achieve it. This category holds the proceedings and rules of the game); Narrative (a sequence of events in the game. The narrative may be linear and previously determined or ramified and emergent); Aesthetics (includes the appearance, sounds, smells and other sensations of the game); and Technology (the set of materials and interactions that make the game possible, such as paper and pencil, plastic pieces or other more sophisticated artifacts, including digital ones). These four elements of the Elemental Tetrad are essential and complementary and influence one another reciprocally (Figure 1) (Marins, 2013).

**Figure 1** - Jesse Schell's Elemental Tetrad

**Source:** Adapted from Pereira (2017).

Inspired by the *Mechanics-Dynamics-Aesthetics* structure of the MDA model (Hunicke, Leblanc, & Zubek, 2004), and especially in the gaming elements proposed in Schell's Elemental Tetrad (2014), Werbach and Hunter (2012) developed a more detailed proposal of the gaming elements (Pereira, 2017). This proposal consolidates in the shape of a pyramid (Figure 2), organized in decreasing order of abstraction, according to the following hierarchy:

- **Dynamics:** most abstract level in the pyramid has to do with implicit elements, that is, those that do not participate directly in the game but must be managed and represent the overall landscape of the experience;
- **Mechanics:** constitute the fundamental processes that generate player action and engagement. An item of mechanics relates to one or more items of dynamics;
- **Components:** constitute the elements in the more practical and specific level in a game. Components relate to each other to generate mechanics.

**Figure 2** - Werbach and Hunter's Pyramid

**Source:** Adapted from Werbach and Hunter (2012).

The Dynamics, Mechanics, and Components comprise a set of 27 items (Table 1). The more integrated these items are, the greater the probability of generating interesting and memorable experiences.

According to Werbach and Hunter (2012), creating a game must always begin with the game dynamics, followed by a reflection of the mechanics that best fit the game concept to delimit the components to make the game operational finally (Kuutti, 2013). A gamified project's essence consists of combining dynamics, mechanics, and components to achieve the desired outcomes (Costa and Marchiori, 2016).

According to Pereira (2017), the elements present in games are diverse, and there are many different ways to classify them. These classifications are called models, such as those by Werbach and Hunter (2012), Schell (2014), and Hunicke et al. (2004). We opted to adopt the model by Werbach and Hunter (2012) as a framework to analyze the gamification practices identified herein. That is because besides being a form of optimization of the model by Shell (2014) and Hunicke et al. (2014), it is considered one of the most influential models for the elaboration of gamified experiences (Pereira et al., 2019)

**Table 1** – Elements in the Werbach and Hunter (2012) Pyramid

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.
	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.
COMPONENTS	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: Adapted from Werbach and Hunter (2012).

## 2.2 Games & gamification

Throughout history, games have played a primordial role in learning tasks and developing the necessary skills for socialization and survival since infancy (Alves, 2003). According to Huizinga (2000), the history of games is also related to the history of men and work. To the author, in ancient societies, work did not have the same value as it does nowadays, and it also did not use as much time in day-to-day life. However, games have now incorporated a pivotal role as a social resource of unity and collective experience.

In the search for understanding in the universe of games, Huizinga (2000, p. 12) brings to the surface the idea of a "magical circle," where within it, the laws and customs of everyday life lose validity and all the beings are different and do different things. To Huizinga (2000) and Kuutti (2013), games can create their own reality. When an individual agrees to participate in this reality, he steps into the magical circle and agrees with its laws even if they do not make sense in the real world. Under this perspective, according to what Ferrara (2013, p. 17) points out, "what makes a game a game" is the combination of three components: (i) goals, (ii) environmental restrictions, and (iii) formal restrictions. In this case, the goal is the specific condition according to which all players are willing to achieve

or keep something; environmental restrictions are the physical conditions that limit players; and finally, formal restrictions have to do with the rules and mutual agreements that determine the limits of what can or cannot be done.

McGonigal (2011) views games as a combination of objectives, rules, and a feedback system accepted through voluntary participation. On the other hand, F. Xu et al. (2014) define a game as voluntary participation that clears the way to the experience of challenging and stressful activities in a pleasant manner. Huizinga (2000, p. 24), in turn, defines a game as "a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted but absolutely binding, having its aim in itself and accompanied by a feeling of tension, joy and the consciousness that it is 'different' from 'ordinary life.'" To Gee (2009), games are tools capable of motivating and engaging users to spend hours trying to achieve a goal in a certain activity. In short, a game is a playful activity made up of a series of actions and decisions aimed to create feelings of fun, entertainment, and interaction among users in a consensual way, with its specific universe and rules.

Gamification, however, is not mixed up with the game (Fraga, 2017). It primarily deals with using the mechanics, aesthetics, and thinking of games to engage people, motivate action, promote learning and solve problems in the most diverse areas (Burke, 2014; Chou, 2015; Kapp, 2012). Likewise, Deterding, Dixon, Khaled, and Nacke (2011) alert to the importance of not reducing the term to digital technology, even though the latter is present in the vast majority of examples of gamification currently. Indeed, Kuutti (2013), Deterding et al. (2011), Werbach and Hunter (2012), Y. Xu (2012), Fitz-Walter (2015), and Herzig (2014) are unanimous in stating that gamification is not about an act of game construction per se. Instead, it is about borrowing gaming elements and applying them in non-gaming contexts, supporting the motivation and participation of users, and positively impacting changes in attitude and behavior (Treiblmaier & Putz, 2020).

Zichermann and Cunningham (2011) go beyond. According to them, gamification can be used to truly involve users in resolving problems and in the collective practice of activities, establishing a sense of commitment. It is the same perspective advocated by Jane McGonigal, who, during a 2010 TED Talk (Technology; Entertainment; Design), called attention to the fact that more than mere entertainment, games have the potential to reshape behaviors to make the world a better place (McGonigal, 2010). To Hamari (2019), gamification refers to transforming activities, systems, services, products, or organizational structures through the gaming experience.

Gamification articulates itself, but it is not the same as gamefulness or gameful design (McGonigal, 2011; Fraga, 2017). Deterding et al. (2011) explain that gamefulness has to do with the behavioral and experiential quality, while gameful design has to do with designing to achieve playability, typically using game elements. Therefore, gamefulness is the state of mind provided by a given game, while gameful design is the deliberate effort to achieve that condition. Gamification implies the use of all these elements to engage people in non-gaming contexts.

According to Burke (2014), F. Alves (2015), Werbach and Hunter (2011), and Marins (2013), the idea of gamification began to take shape in 2003, when British programmer Nick Pelling founded the consulting company. His goal was to disseminate gamification in the scope of the promotion of consumer goods. Starting with McGonigal's talk in 2010, the term acquired comprehensive visibility, and examples of gamified experiences have become widespread ever since.

Chou (2015) points to examples of gamified solutions, such as Nike (which used gamified feedback to drive over 5 million users to achieve their personal physical activity goals), the gamified platform *Beat the GMAT* (by which students increased their study time, thus improving their scores by up to 370%), *Foldit* (whose players spent ten days solving a problem related to a protein existing in the HIV that had been puzzling researchers for 15 years), or the Entertainment Software Association (which uses gamification to improve the performance and training of its employees). On the other hand, authors such as Souza and Marques (2017), Souza et al. (2017), Negruşa et al. (2015), Nunes and Mayer (2014), F. Xu et al. (2014, 2015, 2017) e Pereira et al. (2019) call attention to tourism as a fertile ground for the use of this resource.

According to F. Xu et al. (2015), the use of gaming elements in the tourism sector provides benefits like an increase in brand recognition, the attraction of new clients, experience maximization, and strengthening engagement between visitors, products, services, and destinations. Therefore, it is not surprising to verify that gamification in tourism is already a reality (Souza & Marques, 2017). Indeed, it is now possible to find gamified solutions conceived to promote brand awareness, improve the tourist experience, engage and increase customer loyalty, or even entertain and train employees (F. Xu et al., 2017). Gamification applications can also help the marketing of companies and tourist destinations, the promotion and competitiveness of destinations, sustainability, and the overall tourist experience (Souza et al., 2017).

Weber (2014, p.1) points to a series of "ways to make the game more playable." by citing the use of augmented reality with geolocation, games to be played in theme parks, immersion in a cultural heritage environment, gamified narration, and other applications.

To Luque and Correa (2017), the pioneer strategy in tourism promotion through gamification was developed by the Irish National Tourism Board with the launching of Ireland Town on Facebook in 2011. The authors also pointed to the initiatives adopted by the Norwegian government and even the Brazilian government, which in 2012 launched the game *Brasil Quest* to promote and stimulate the development of tourism in the 2014 FIFA World Cup host cities. Other examples shown in the literature include *TravelPlot Porto*, in Porto, Portugal (Ferreira et al., 2014; Silva, 2014); *Hotel Prinz Luitpold*, in Bad Hindelang, Germany (Negruşa et al., 2015; Weber, 2014); *Ilha Grande Mix*, in Rio de Janeiro, Brazil (Nunes & Mayer, 2014); *Ear your Wing*, from Air Canada (F. Xu et al., 2015, 2017) and *Geopark Araripe* (Pereira, 2017).

Although gamified solutions have been adopted by various fields, including tourism (Tutunea, 2017), they can also promote the inverse effect, serving as a demotivating vector for visitation and causing problems for tourist destinations and products and services. Zichermann and Cunningham (2011), for instance, have alerted to the relevance of the level of complexity involved: games exceedingly complex or overly simple can lead players to feel discouraged. Werbach and Hunter (2012) also call attention to rankings as a demotivating factor to players. The frequent use of rewards, if poorly planned, can lead the player to a false interaction with the gaming environment. Finally, recent research studies warn us about the limited variety of gaming elements used (Rapp et al., 2019).

Having discussed the importance of gamification to tourism, we now explain how the selection of initiatives analyzed was made and the framework employed in this analysis.

### 3 METHODOLOGY

This is an exploratory-descriptive study. It is exploratory because it seeks to examine a seldom studied subject, as is the case of the analysis of gaming elements used in gamified tourist experiences, and descriptive because it analyzes gaming characteristics in-depth (Sampieri, Collado, & Lucio, 2013). The cases that make up the were collected through a systematic review.

According to Costa and Zoltowski (2014), the systematic review is a method that can maximize a query potential, finding the most significant number of results in an organized manner. Indeed, the product of a systematic review is not a simple chronological relation or a linear and descriptive exposition of a study subject, but rather a coherent and comprehensive survey about a given topic (Fernandéz-Ríos & Buena-Casal, 2009).

As shown by Costa and Zoltowski (2014, p.56), a literature review guided by an unstructured query in books or electronic databases tends to sort the material according to the authors' perspective. This, in turn, leads to bias, for "we, as authors, tend to overvalue studies that are in line with our initial hypotheses and ignore studies that show other perspectives." The systematic review method minimizes such bias; therefore, we chose to adopt this method.

According to Akonbeng (2005), the systematic review must comprise the following stages: (i) delimitation of the question to be searched; (ii) selection of data sources; (iii) selection of search keywords; (iv) search and storage of results; (v) selection of articles for the abstract, according to inclusion and exclusion criteria; (vi) data extraction from the selected articles; (vii) assessment of articles; and (viii) data synthesis and interpretation.

By performing the stages proposed by Akonbeng (2005), the following outline emerged:

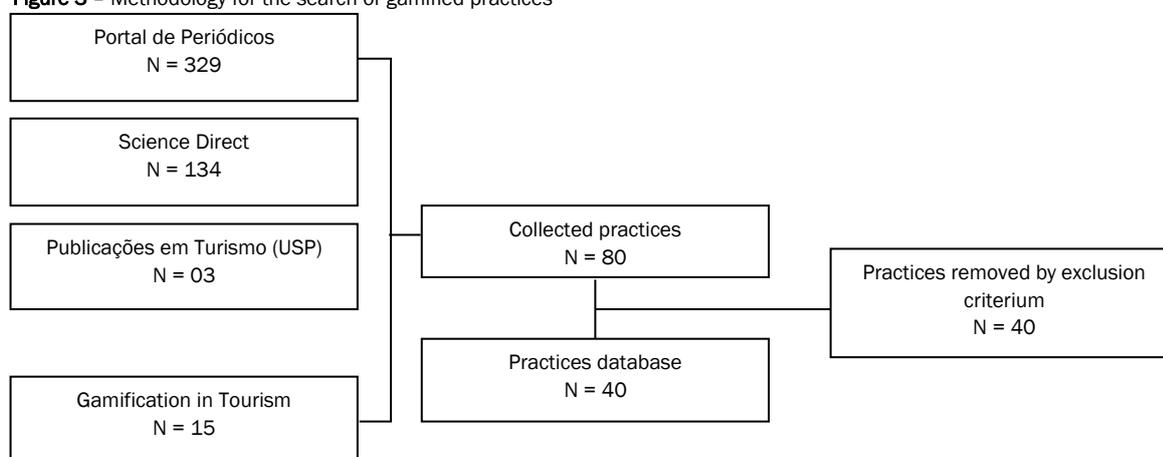
- I. The question delimited for the query was: what gaming elements have been used in gamification practices in the tourism sector?
- II. As to data sources, the following databases were consulted: Portal de Periódicos da Capes, Science Direct, Publicações em Turismo (from USP), and the website "Gamification in Tourism."
- III. The searches were carried out using the following strings with the boolean operator AND (in Portuguese, English, French, and Spanish): "Gamificação and Turismo"; "Game and Turismo"; "Gamification and Tourism"; "Game and Tourism"; "Gamification and Tourisme"; "Ludification and Tourisme"; "Gamificación and Turismo"; "Ludificación and Turismo."
- IV. As new articles are added to databases continuously, the search's timeframe is indispensable (Costa & Zoltowski, 2014). In this case, the searches were performed from July 2018 to September 2019,

according to the procedures described above. They returned 481 results, and 80 practices remained after the exclusion of repeated cases.

- V. We then proceeded to read the abstracts. The inclusion criterium was whether the gamification practice in question was related to the tourism and hospitality sector, and the exclusion criterium was the occurrence of incomplete information. Therefore, 40 gamification practices remained.
- VI. The process of extracting and storing the data included the insertion of the practice in question in a spreadsheet containing the following variables: ID, Practice Name, Organization or destination where the practice occurs, Practice Goal, Problem Mitigated, Segment, Practice Summary, Reference, as well as the 27 gaming elements proposed by Werbach and Hunter (2012).
- VII. The evaluation was done according to the 27 gaming elements (Table 1).
- VIII. Finally, the synthesis tried to promote the analysis of the gaming elements used in the practices analyzed.

Therefore, from the 481 articles initially identified, the research sample was restricted to 40 practices (Figure 3).

**Figure 3** – Methodology for the search of gamified practices



**Source:** The authors (2020).

It is worthy to point out that the initiatives were evaluated solely regarding whether they contained or not the gaming elements analyzed. Therefore, no considerations or value judgments were made regarding the logic or pertinence of those elements in the practices analyzed herein.

#### 4 RESULTS AND DISCUSSION

For the purposes of this study, we gathered and analyzed gamification practices worldwide (Annex 1). Among the countries, the United States (4) and France (3) stand out. The sample analyzed pointed to the predominance of initiatives (17 practices) in European destinations/organizations. In terms of the proposal of the practices analyzed, three of them (7.5%) were defined as referring to hospitality, three (7.5%) to aviation, three (7.5%) to education, and two (5%) to marketing. The remaining 29 practices (72.5%) were defined as gamified initiatives focusing on optimizing the user experience.

Another important element has to do with the problems that these practices set out to solve. According to Fitz-Walter (2015), gamified experiences can be conceived to solve four kinds of problems, namely (i) loss of users to competitors; (ii) distancing of users to product/destination; (iii) little interaction between the user and the product/destination; and (iv) undesired behavior on the part of the user.

By adopting this method, we found that among 28 practices (70%), the vast majority concerned the generation of engagement from participants. As such, they seemed to solve the problem of limited interaction between users and products/destinations. Five practices (12.5%) addressed the problem of undesired behavior on the part of users. In contrast, four of them (10%) focused on solving the problem of losing users to competitors, and three (7.5%) aimed to solve the problem of distance between users and products/destinations. In short, based on the sample analyzed

herein, there seems to be a tendency to apply gamification to the creation of memorable experiences to users while trying to engage them with the destination/product.

Further, among the 40 practices raised, 31 (77.5%) were operational through digital platforms, such as mobile applications or experiences in social media, whereas 9 of them (22.5%) involved interactions with physical elements at destinations or attractions, like in treasure hunt narratives, collection of items and theatrical performances.

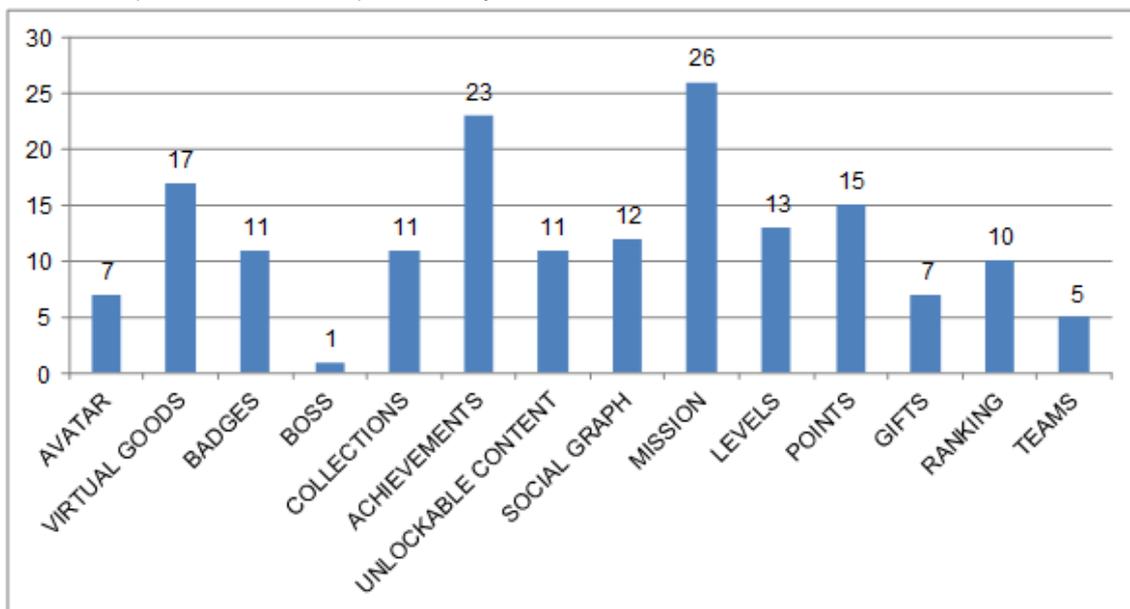
With these general considerations made, we now analyze the gaming elements (Dynamics, Mechanics, and Components).

## Components

Werbach and Hunter (2012) offer the possibility of using 14 **Components** to create a gamified experience. Of those, "**Achievements**" and "**Mission**" clearly stand out compared to the others. Respectively, 23 (57.5%) and 26 (65%) of the 40 practices analyzed employ one or the other element in the gamified experience. Achievements and Mission have a very close relationship: The Achievements represent rewards that the player unlocks by performing a set of specific activities, whereas the Mission constitutes a set of achievements.

However, a Component was present at most in 65% of the cases. That is, at least in the sample analyzed, there is no Component perceived as unanimous, not even a basic, intuitive and straightforward Component such as "**Points**." In this sense, it is intriguing to observe that over 50% of practices do not comprise scoring systems, even if they are present in many texts regarding gamification. Chart 1 shows the frequency of each one of the components in the 40 practices analyzed.

**Chart 1** – Components items in the 40 practices analyzed



Source: The authors (2020).

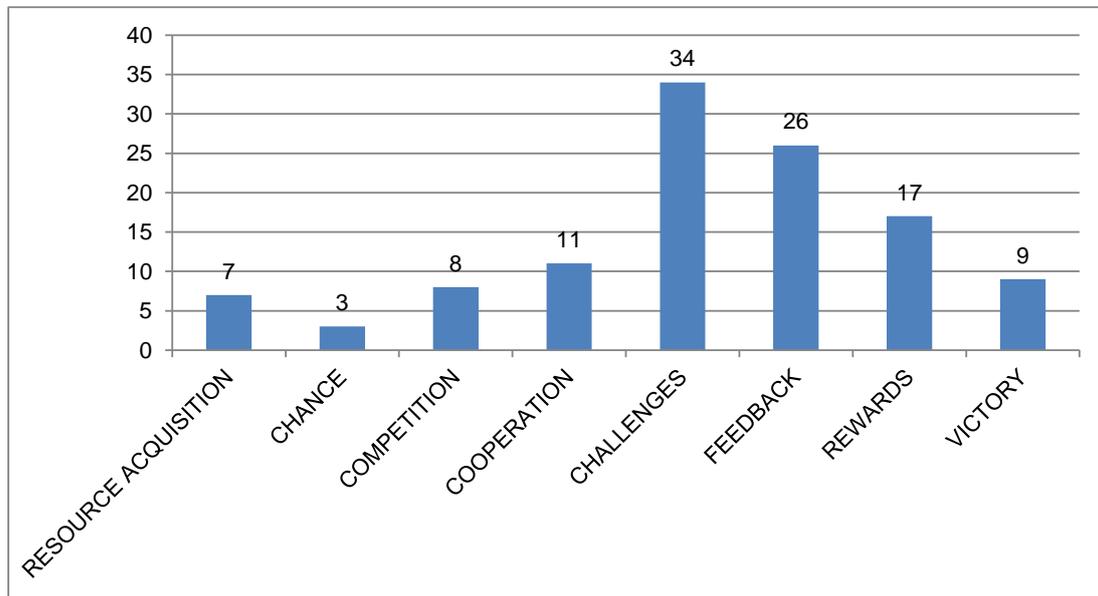
## Mechanics

In their model, Werbach and Hunter (2012) list eight items of Mechanics. Among those, the most recurrent in the practices analyzed was the creation of "**Challenges**," which was identified in 34 (85%) of the practices analyzed. Beyond this gaming element, the use of the "**Rewards**" element was evident, for it was adopted in 17 practices (42.5%). Above all, rewarding is a strategy to create a connection with players while also providing them with gains, whether through advantages to advance in the game or actual gains, as is the case of gamified fidelity programs.

It was also found that the Mechanics resources "**Competition**" and "**Cooperation**" used in respectively 8 (20%) and 11 (27.5%) practices, which would indicate, in theory, a preoccupation by designers of the game in promoting socialization among the users. Using the Competition or Cooperation Mechanics leverages users' engagement because it leads the player to perceive himself as a piece in a system that needs to interact with his game mates.

The Mechanics item "**Victory**" was identified in less than 25% of the practices analyzed. Such finding leads us to conclude that the goal of such initiatives is not to have players complete the game but induce them to advance towards other levels and missions *ad infinitum*. This was clearly the case in aviation initiatives, whose goal was to create loyalty among their customers, that is, a strategy to create a connection with consumers during an indefinite timeframe. Chart 2 shows the frequency of each Mechanics item in the 40 practices analyzed.

**Chart 2** – Mechanics items in the 40 practices analyzed

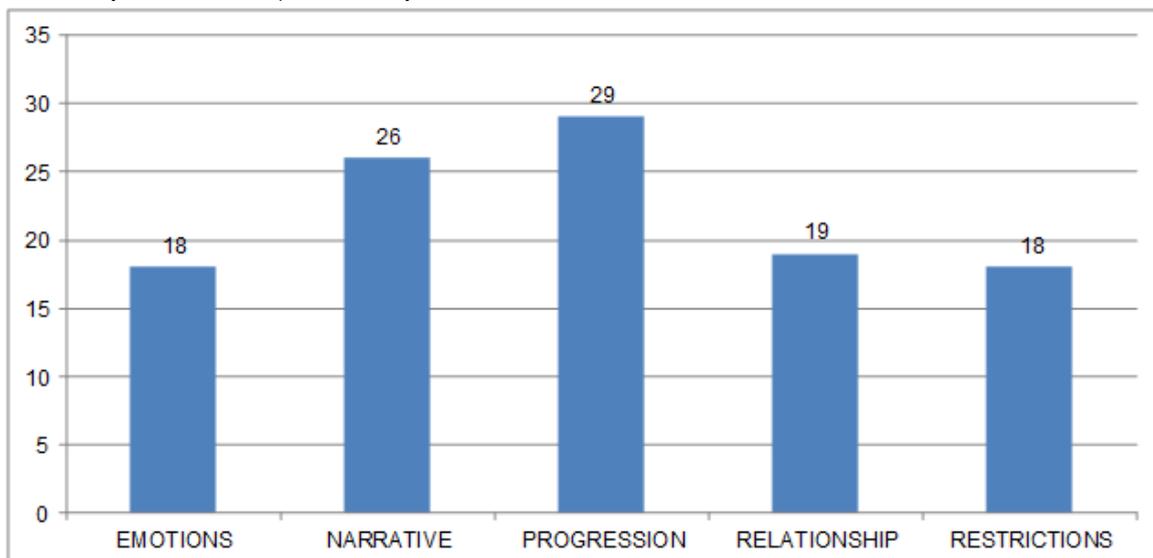


Source: The authors (2020).

### Dynamics

Finally, the observation of the **Dynamics** items involved in the practices analyzed pointed to a leveraging of results in "**Narrative**" and "**Progression**." Both elements are present, respectively, in 26 (65%) and 29 (72.5%) among all practices analyzed (Graph 3). The narrative is defined as the logical sequence of the game, and it is present mainly in the practices that use storytelling for immersion of the user in the experience. On the other hand, Progression appears as a more objective Dynamics item in terms of the user's progression in the game. Both are important for users' engagement because they create a connection between them and the actual game. After all, the immersion in a game needs a "justification" (provided by the narrative) and a systematic progression that avoids boredom among players. Finally, less than 20% of practices embrace only one Dynamics item, and more than 50% include three or more Dynamics items (Chart 3).

**Chart 3** – Dynamics in the 40 practices analyzed



Source: The authors (2020).

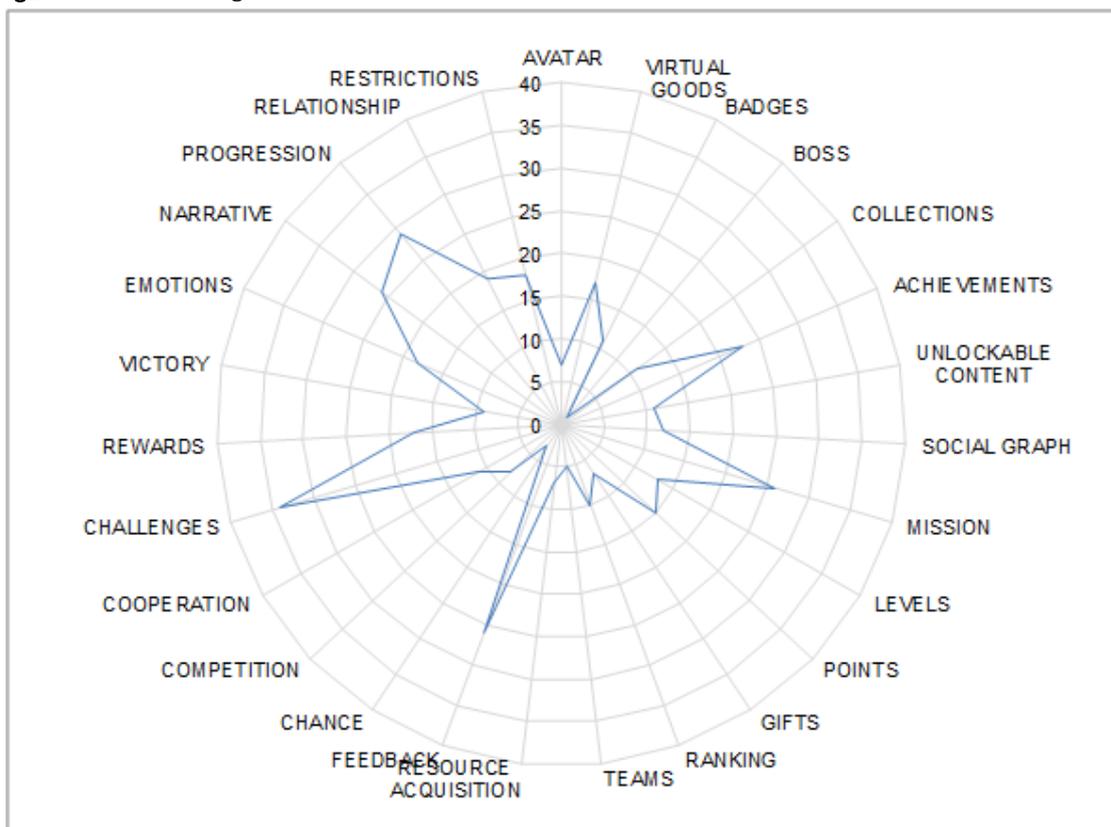
Another result of this research study is the number of gaming elements used in each practice. Although simpler gamification practices present five or fewer gaming elements, the average was 9.85 gaming elements (whether deriving from Dynamics, Mechanics, or Components) per practice analyzed. That is, of the 27 gaming elements listed by Werbach and Hunter (2012), only 36% are used in the formatting of a gamified experience. This is regarded as a small number, and this conclusion suggests that gamification as a maximizing element of the visitor experience is still far from achieving its full potential. There is no recommendation in the literature analyzed on the ideal quantity of gaming elements to be combined to provide a memorable experience. Besides, it appears that this is impractical, considering the specificity of each practice. However, new and remarkable experiences tend to arise as more components are mixed creatively.

## 5 FINAL CONSIDERATIONS

Gamification practices applied to tourism have been carried out throughout the world (F. Xu et al., 2015, 2017), and this phenomenon has attracted the attention of the scientific community. Therefore, we have witnessed a surge of studies aiming to describe or even analyze such practices' success (or failure). Nonetheless, there is a lack of analysis of the essence of these practices; in other words, the gaming elements that such practices employ. With that in mind, this study has analyzed 40 practices according to the model by Werbach and Hunter (2012).

The development of the present study allowed the analysis of gamification practices applied to the tourism sector throughout the world. The first conclusion extracted from the analyzed data is that whether their creators were conscious or not about the existence of Werbach and Hunter's proposal (2012), all the practices comprised at least one of the 27 gaming elements proposed by the authors (Figure 4).

**Figure 4** – Radar chart of game elements



Source: The authors (2020).

We have identified that the most common gaming elements were "Challenge," "Progression," "Feedback," "Mission," and "Achievements," while the least used were "Boss," "Chance," "Teams," and "Gifts."

Another finding concerns the preferences of game designers for the Dynamics, Mechanics, and Components items used in their initiatives. The results suggest a preference for the use of the "Progression" Dynamic, the "Challenge" Mechanic, and the "Mission" Component. However, whether those choices were made deliberately by the game designers is a question that this study (given its purpose) has been incapable of answering.

However, the highest frequency of elements identified suggests that the practices analyzed are concerned about providing a maximization of experience to the user, even if it is impossible to affirm if the same caused changes in user behavior. A higher frequency in gaming elements such as "Challenge," "Progression," "Feedback," "Mission," and as cited above, the "Achievements" lead us to believe that gamification is being employed to provide memorable experiences to users and not to serve as mere entertainment.

There also appears to be a tendency to insert Information and Communication Technologies (ICTs) as elements to maximize the game. Virtual Reality (VR) and Augmented Reality (AR) stand out, as observed in five of the initiatives analyzed. This tendency will probably widen even further, thanks to the popularization of technologies (smartphones and tablets) capable of supporting AR resources.

It is also worthy of mentioning the practical and theoretical implications of this study. From a practical point of view, it presents to those interested in tourism gamification the likely elements to be employed in the design of gamified experiences. In addition, the combination of practices addressed herein serves as a starting point for public officials who eventually become interested in developing gamified practices in their destinations. From the theoretical point of view, besides its originality and contribution to the diffusion of knowledge regarding the theme, scarcely discussed in the national scientific literature, this study presents the scenario involving a reasonable amount of practices, showing that gamification in tourism has yet to reach its maturity.

The primary limitation of this study is that it describes the scenario involving the practices but does not explain them. This has to do with the fact that the analysis is done here used secondary data. In order to understand why a practice adopts one or another element, it would be necessary to obtain data directly from the source, that is, interviewing those responsible for the creation of the practice.

Given the importance of the subject, especially for activities directly related to the emotion and motivation of users, it is suggested that future studies focus on other gaming tools for the application of gamification practices in the sector, considering that the number of practices has increased every day. This study opted to carry out a widespread analysis of the gamification practices, and therefore, only superficial information could be collected. As such, it is also recommended that future studies focus on gamification initiatives individually to carry out a detailed, in-depth analysis of their success (or failure).

## 6 ACKNOWLEDGMENT

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