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Introductory Chapter: Games, Gamification, and Ludification, Can They Be Combined?

Ioannis Deliyannis, Polyxeni Kaimara, Sofia Maria Poulimenou and Stamatella Lampoura

1. Introduction

The importance of games has been explored by many researchers, educators, and psychologists [1–4]. The word “game” is used to convey both the concept of the game as an object and the experience of the game as an action. In English, the differentiation of concepts is very perspicuous. The word “toy” is used for the object, the word “play” for the game experience, and the word “game” for the structured game. Caillois [5] proposed a two-axis taxonomy of games. The first axis is a continuum between what he called “paidia” (from the ancient Greek word/pe.ði'a/) and “ludus” (from the Latin words ludus and ludere, which respectively mean “game” and “to play”). More specifically, on one end of the axis he placed the term “paidia,” which refers to spontaneous activity without rules (play) and on the other end he placed the term “ludus,” that is, a highly structured game characterized by discipline and directed by rules to achieve specific goals [6]. The second axis concerns the classification of games into four types, based on: (1) competition (agon), (2) luck (alea), (3) imitation or role-play (mimicry), and (4) passion or sense of balance or vertigo (ilinx). According to Caillois [5], all types of games fall somewhere on the continuum between “paidia” and “ludus.” Play and games have attracted interest in the natural sciences, social sciences, and humanities [7]. Interdisciplinary research findings from the fields of anthropology, psychology, sociology, and technology demonstrate that “games” are significant mediators between learning and socialization throughout people’s lives, and thus game-based learning (GBL) has evolved into a remarkable place of dialog on education, formal and informal, of minors and adults [8, 9]. Regardless of the type of games as objects or processes, the experience of play offers people multiple opportunities to learn and interact with the natural and man-made environment.

In digital age, games get a digital form, with modern research recognizing their potential to engage children’s attention and motivate them to explore the limits of their abilities, skills, and knowledge [10–12]. The synergy of technology with pedagogy that utilizes digital games in the learning process is called digital game-based learning (DGBL), a term credited to Marc Prensky [13].

DGBL leverages three elements of game design: challenge, response, and feedback, known as the magic circle of playful learning utilizing fundamental structures, such as rules, purpose and goals, adaptability, outcome and feedback, conflict and competition, problem-solving, interactivity, social interaction, and story and win state [14, 15].

Features of game design, that is, motivation, mechanics, esthetics, narrative, and background sounds, support the learning experience. The dynamics of learning are based on the quality of these features, which are common whether it is classic games or gamified applications [16].

2. The concept of gamification so far

When we refer to less structured game applications, which use some of the games' elements and features, such as rewards, for example, points, prizes, and leaderboards, we define the concept of gamification [17]. Gamification can be considered a subset of applied behavioral psychology because of its deep emphasis on motivation, feedback, progress, and reward, and is an integral part of any game, not necessarily digital [18]. Gamification is applied to many human activities, for example, health services, education, museum, and cultural heritage studies as it presents many advantages for behavioral change and learning [19, 20].

Designing gamification, especially for educational purposes is a complex process that requires the transdisciplinary collaboration of experts from the fields of psychology, pedagogy, game design, and programming [21]. The reason game elements are added to educational material is because they enhance social interaction and improve student performance by motivating them to participate in a learning activity that they would otherwise not engage in due to a tedious, demanding, or boring process [14, 21].

If the goal of educational activity is to learn skills that are valuable in everyday life (e.g., crossing streets), gamification-based rewards can be effective. During the learning process, learners are rewarded and when they apply the targeted skills in real situations, they recognize their value. Thus, the rewards will no longer be needed because learners will continue to practice the skills for their real benefit and not for the rewards. The risk arising from the use of rewards occurs when the goal is to create long-term changes in learner behavior. Although game designers introduce rewards to increase extrinsic motivation, it is preferable to leverage the structural elements of games to rise intrinsic motivation. That is, rewards should quickly be replaced by more substantial elements, such as narrative, plot, and freedom, to choose paths to explore and activities that are themselves mini-games and opportunities for reflection [22, 23]. This process is known as meaningful gamification. In educational environments, "meaningful gamification" is a learner-centered approach that incorporates elements of game design to develop learners' intrinsic motivation [24].

The term "meaningful" is based on Mezirow's [25] "transformational learning" model, where meaningful creation results from connecting educational activities to people's lives, providing them with a variety of experiences and ways of participating. The goal is to increase the chances for each person to find something meaningful in a game-like activity that satisfies their needs and interests. Transformative learning theory fits the principles of universal design for learning and transmedia learning, where learners access content through different media allowing them both to choose their preferred media and to evolve the narrative. The applications directly related to meaningful gamification are simulations.

While DGBL focuses on structural elements of games, such as rules and goals [26], gamification and simulation are based on unstructured game features that are about players' exploration, experiments, and actions within a virtual environment. This virtual environment provides a learning environment free from the pressure and negative consequences that can result from wrong choices [27].

Mitgutsch [26] proposed the term digital play-based learning (DPBL) to describe the learning offered by a circular and nonlinear process of learning and relearning, combined with the unstructured dimension of the game experience. The most dynamic element of gaming activities, whether it is a game, a gamified application, or a simulation, is the experience of playing [14].

3. The concept of ludification

According to Walther and Larsen [18] ludification, although based on the same conceptual framework as gamification, differs in its areas of application. Thus, ludification is connected to both, gamification and transmedia intended for specific nongame purposes, such as contemporary media productions (e.g., interactive fiction) and consumption practices where the coexistence of game structures and mechanics together with modes of storytelling across media become more and more dominant. Consequently, gamified applications are nongame structures and objects using specific game components, while ludified applications are nongame story structures and story objects focusing not just on motivation, feedback, and reward but on ways of designing, developing, and storytelling in new modes and digital media.

4. Can we combine games, gamification, and ludification?

Digital media, such as computer games, have an inherent ludic dimension that is related to multimediality, virtuality, interactivity, and connectivity [7], making the computer-game platforms ideal for the application of all of the above theories. However, creating a successful experience that combines all of the above is not a task that can be simply implemented in a straight forward manner as the most important aspect of the game is the “flow” condition that needs to be achieved, where according to Csikszentmihalyi’s words: “*flow is a state in which people are so involved in an activity that nothing else seems to matter; the experience is so enjoyable that people will continue to do it even at great cost, for the sheer sake of doing it.*” At this point, it is important to note the power of transmedia storytelling, a term introduced by Henry Jenkins [28] that can be introduced within the game world scenario, which may act as the “gluing” material between the three components: games, gamification, and ludification.

5. The “BRENDA: digital gastronomy routes” case study

In order to create a proof of concept, we have already employed such a scenario within one of our research projects that led to the implementation of the “BRENDA: digital gastronomy routes” game publicly available on <https://game.brenda.gr>, which is a research-based implementation and is cofinanced by the European Regional Development Fund of the European Union and Greek national funds through the operational program competitiveness, entrepreneurship, and innovation, under the call RESEARCH–CREATE–INNOVATE (project code: T1EDK-05099).

The game developed targets the wide area of the Kilikis prefecture in Greece and focuses on visitors or those who wish to explore the local recipes and history. This experience is developed using state-of-the-art web-based technologies and the game is in fact a responsive database that handles the gamified elements: user progression,

score, content discovery level, and media delivery. Four main components make up the game experience: the map/point of interest (POI) /questioning component, where users can explore the information, the recipe/restaurants/local products component, the score/user progression section and the storyline/user settings component.

In order to cover the main issues that arise when creating ludified content, developers have to come up with a design that balances out the required end-system functionality and the sense of “flow” described above. In that sense, transmedia content is an ideal choice and can be actively employed to provide a sound platform for the development of narratives that can be combined but at the same time can be totally different. In that sense, and in our case-study scenario, we wish to educate the player with local historical information and at the same time allow them to explore the culinary heritage that exists in the area. Normal games achieve that aim by imposing a strict content discovery approach through the player scenario that governs the experience. The current system proposes that the player can follow a specific method through the call-to-action video, but then users are free to explore the content using their own strategy.

After the call-to-action experienced at the introduction level where the user is asked to help the main character “Brenda” to discover the local recipes and history, the user can approach the task using different strategies. A typical approach supports discovering local information either via the web interface or also by using the WEB-AR scenario, where they discover local hidden information. Both those approaches enable them to gain game credit (coins), which can then be used within the recipe section to uncover local recipes by purchasing their ingredients. They get to keep the recipes forever in their book and a number of other options are also available to them. They can either cook the recipe or try it out at a local restaurant, an action that allows them to earn additional credit (coins) that can be used to reveal more recipes.

This scenario can also be played differently. The restaurant/local products purchaser can use the AR functionality to first sample the recipes and then reveal the recipes, providing a gaming route that focuses mainly on culinary information. However, as the points are not enough to reveal all the recipes, the players have at some point explore the historical information in order to discover the complete recipe collection.

Therefore, we see how a gaming scenario can functionally support ludification by employing various aspects that suit the interests of different target groups. Gamification is also present within the score/user progression section and it is communicated through the interface at the top of the screen by displaying the player’s competence.

6. Conclusions

When the terms game, gamification, and ludification are used to describe the playful aspects of processes, it is common for developers to often not use them accurately in order to describe that particular function of their designs. Clearly, a gaming experience contains the gaming process and supports gamification design practices, but those aspects do not guarantee that the end system will be enjoyable. In other words, a gamified process can end up in a highly competitive and stressful task that does not necessarily generate the intended feelings.

In our case study, we have demonstrated how this is achievable by providing a system that combines all three terms. The narrative components allow users/players to experience the breadth and depth of the historical content and culinary experiences that can be either virtually or physically visited. The game components implemented through questions and quizzes on the historical information are clearly the method

that allows users to advance the game and reveal the culinary information that is gradually revealed by the system within the cookbook. However, an alternative way to explore the information is to visit the businesses and gain the necessary game points, a process that is actively supported by the gamification design. Ultimately, as the points from one or the other process are not enough to reveal the whole recipe data set, the user is drawn in and completes part of the available tasks to gain access to the information, offering a customizable yet ludified process that builds up dynamically.

Hence, when “ludification” needs to be implemented, we need to be able to describe the design of the enjoyment mechanisms that take place and generate that feeling. This process is still in its infancy and more work is required, in order to produce a method that describes in a deterministic way the functions of systems that focus on enjoyment, as today, this function is overlooked in existing system designs, such as educational software and other application areas of gamified systems.

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