

# LESSONS LEARNT FROM THE USER JOURNEY OF WELL-KNOWN DIGITAL GAMES FOR THE DEVELOPMENT OF EDUCATIONAL SOFTWARE

A. Pfeiffer<sup>1</sup>, N. Denk<sup>1</sup>, T. Wernbacher<sup>1</sup>, S. Bezzina<sup>2</sup>

<sup>1</sup>*Donau University Krems (AUSTRIA)*

<sup>2</sup>*University of Malta (MALTA)*

## Abstract

In addition to the actual core content of games, the user journey or user experience in digital games is becoming more and more important. The menu structure should be as intuitive as possible. Features that are important should be displayed to the player at the moment when the game engine assumes that access is necessary. The player should then reach the content with one tap or click. This persuasive design concept is called 'nudging' and is rooted in behavioural psychology. Therefore, in the design of the game environment, the viewpoint of goal orientation plays a major role. Two perspectives exist here. First, from the player's point of view: What is necessary to ensure a well-rounded game experience? The second perspective is from the producer's point of view and revolves around what do they want the player to accomplish next. Some of the top games have now also developed so-called "main menu games", which are challenges around the actual game to keep the players content and give them additional tasks that are as stimulating as possible. In this paper, the authors would like to demonstrate the above-mentioned mechanics by analysing four smash hits, namely "FIFA", "Clash of Clans", "Pokemon Go" and "League of Legends", with the aim of gaining learnings for the development of digital educational software. This new form of learning software should be user-centred and offer an outstanding learning experience through optimal design and mechanics.

Keywords: User experience, e-learning, game-based learning.

## 1 INTRODUCTION

The user journey or user experience in digital games is becoming increasingly significant, in addition to the actual core content of games. The structure of the menu should be as simple as feasible. Important features should be displayed to the player as soon as the game engine determines that access is required. After that, the player should be able to access the material with just one tap or click. There are two points of view here. First, from the perspective of the player: What are the requirements for a well-rounded gaming experience? The second viewpoint is that of the producer, and it focuses on what the producer wants the player to do next. Some of the most popular games have recently produced so-called "main menu games," which are challenges that take place outside of the real game to keep players engaged and provide them with as many interesting activities as possible. The authors of this work in progress paper like to demonstrate the above-mentioned mechanisms by analysing four popular games, namely "FIFA," "Clash of Clans," "Pokemon Go," and "League of Legends," in order to acquire insights for the development of digital educational software. This new type of learning software should be centred on the user and provide an exceptional learning experience through optimal design and mechanics.

## 2 METHODOLOGY

We have analyzed the menu navigation of the games League of Legends, Pokemon Go, Clash of Clans and FIFA, focusing on identifying the underlying game elements. Game elements, also called game design elements, are components that can make a game more entertaining, compelling, and motivating [6]. According to Deterding et al. [7] the composition as well as the orientation of these elements plays an essential role.

Game design elements can be divided into different components. One of the best-known classifications of game elements is the MDA model of Hunicke et al. [8]. This model describes game consumption by dividing the game into the individual components:

- Rules
- Systems

- Fun

These are subsequently broken down into design counterparts, resulting in the components:

- Mechanics
- Dynamics
- Aesthetics

The aim of this model is to better understand the design of games. Werbach and Hunter [9] also replaced aesthetics with components. This results in the subdivision into mechanics, dynamics and components, represented in the so-called MDC model. These are structured hierarchically, whereby each mechanism is connected to one or more dynamics and each component is related to one or more superordinate elements. Based on the MDC model, the games mentioned above were analyzed, specifically with the aim of gaining take-aways for learning game and learning app designers.

This leads to the following guiding questions:

- Which activities can be carried out in the menu independently of the core game?
- Are these activities attractive in the sense that they enhance the core game experience, or can they even be seen as a game experience in their own right?
- What learnings can be derived from the respective games for the creation of learning apps?

### 3 RELATED WORK

Our analysis also builds on the theories of nudging and gamification of user interfaces. The term nudge or nudging comes from the study of behavioral economics and refers to a soft form of persuasion with the objective of inducing a specific behavior. According to Thaler and Sunstein [1] nudging is a positive intervention that encourages a voluntary change in behavior without the use of external (negative) repercussions. For several years, the concept of nudging has been flourishing in the United States, but it remains mostly undiscovered in Europe. The emphasis is generally on the development of politically motivated interventions, with a special emphasis on health prevention [2]. Nudging is based on motivational psychology concepts and has links to the gamification idea. Nudges can also be viewed as a type of gamification, or as a component of gamification, in the form of achievement game mechanics [3]. In contrast to gamification, however, stimulus-response chains in the form of incentives and penalties recede into the background, while subtle methods and positive interventions for decision optimization emerge. Nudging strategies have the potential to increase the visibility of behavioral choices. In the case of physical activity, for example, nudging can make the stairs more appealing than a lift [4]. Although, according to Thaler and Sunstein, nudges should only be employed in a positive way, the mechanics of nudging can be utilized both "for good" and "for evil". It simply relies on who is responsible for the nudge and why the nudges were applied. Of course, one can debate whether negative nudges should also be termed that way.

Digital Nudging offers digital decision-making environments. Graphic design (such as text and colors), feedback, framing, and content layout are the most common design aspects. Possible applications include online commerce, public life (e.g., action campaigns), party politics (e.g., election campaigns), social media presences exemplified by competition for attention and likes, and, increasingly, the state-regulated sector (e.g. e-government). Digital nudges are also employed as "snudges," or self-nudges, in the context of self-optimization via self-tracking technology, as a help to attain self-imposed goals. The focus of digital nudging is on the design of the user interface, which can be utilized to benefit either the user or the designers of the interface [5].

Nudges also play an important part in (digital) game design, such as guiding the player in the proper direction or gently explaining why the user cannot select a specific object. Furthermore, nudging may be a very powerful aspect in the user experience design of gamified apps, for example, by making the user comfortable and ensuring that the program is utilized as intended [3].

### 4 RESULTS

We would now like to show the key results of the analysis from the four games:

**Pokemon Go** builds on the well-known Pokemon franchise. The particular feature is that it is an augmented reality game, so there is a very strong link between the game and the real world, allowing

you to see, catch and trade Pokemons via your own smartphone. The clear user interface is particularly well done, with iconic elements such as the Pokeball. The respective destination in the menu can be reached with a maximum of two clicks. The embedding of the virtual character, who continues the story and assigns the tasks, can be seen as particularly important in terms of inspiration for the design of educational software. This virtual character can be activated with one click, he or she then guides through the story, gives an overview of the status quo and the screen is then automatically displayed showing the next steps and goals in a concise form. A virtual teacher could be embedded in a similar way, providing assistance, pointing out the next achievable learning goals. These learning goals should be listed in an AI-controlled manner, keyword adaptive learning, and the learner should constantly have the feeling that he or she is making progress. The division into daily goals, where you can choose from different tasks, which then serves as the fulfilled daily goal, and the quest series, where a series of tasks have to be completed depending on the chosen theme, is particularly motivating for Pokemon Go players.

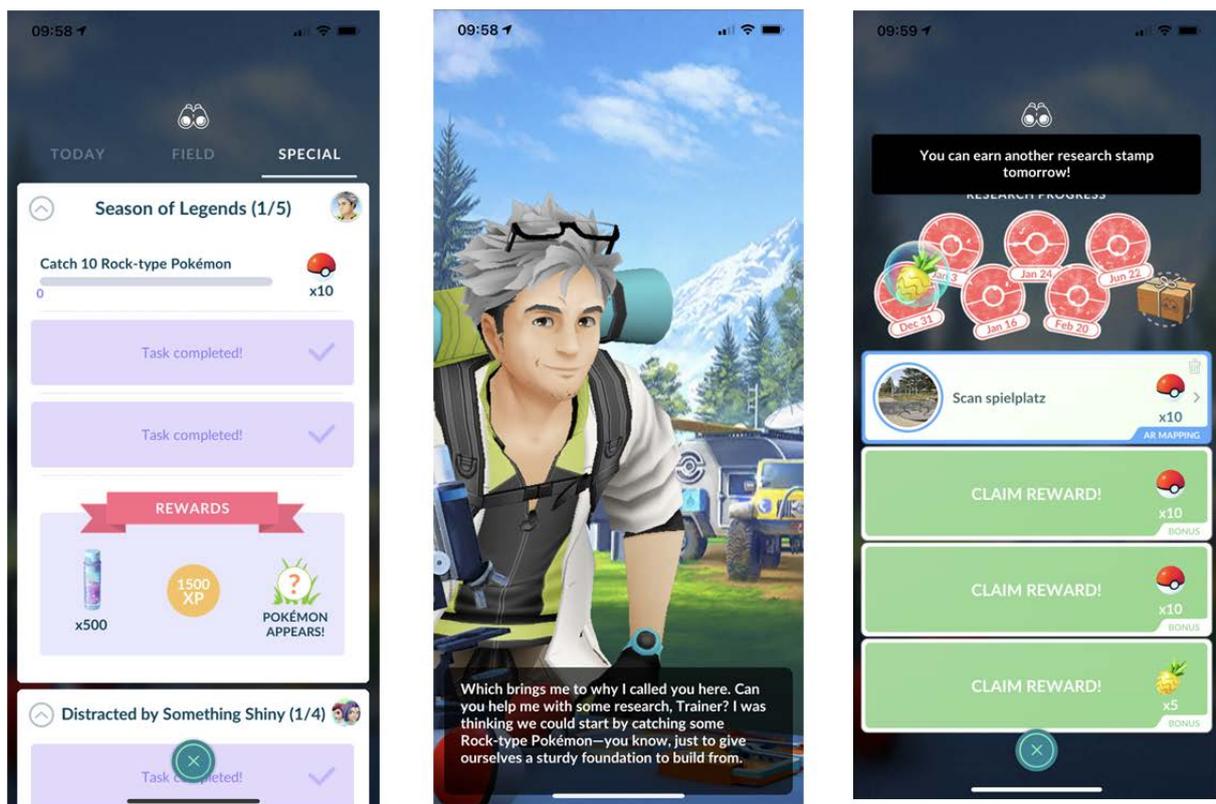


Figure 1. Screenshots from Pokemon Go, Tasks, Virtual Guide, Daily Goals

**Clash of Clans** is a building game in which you attack your opponent's village. What is particularly remarkable here is how the game uses nudging elements. Menu items are often made shinier or have a small animation. Small callsigns are also used as an overlay over a menu item when something is particularly important. Every building in the village is clickable and part of the user experience. The menu items themselves are very well thought out around the playing field, in this case your own village, and each button is clearly structured and assigned to its own chapter of the game or its own functions. It also only takes a maximum of 2 finger taps to reach the desired goal in the menu. For the design of educational software, special attention should be paid to how the above-mentioned design elements are handled dynamically and according to the occasion. This makes the learner feel optimally taken care of and he or she would not feel lost in the learning app. Special attention should also be paid to the team challenges, where the clan has to achieve goals together in order to unlock benefits for everyone. These team challenges could also be very effective applied in an educational context.

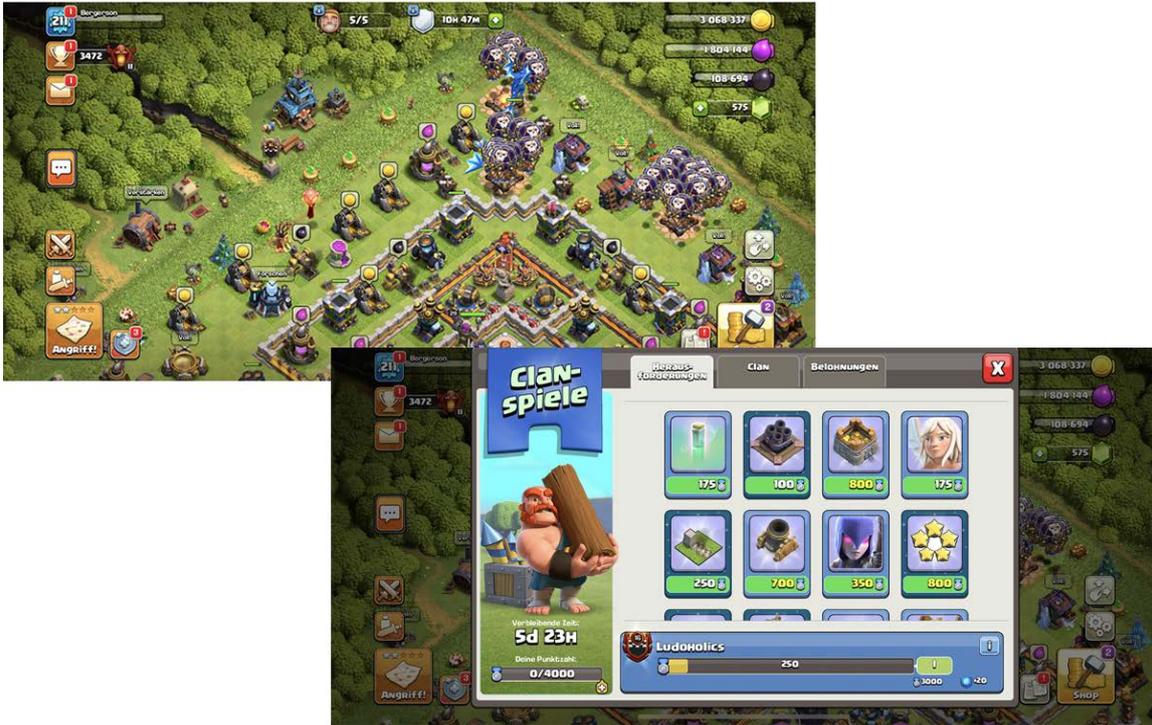


Figure 2. Screenshots from Clash of Clans – the Village; and the Clan Games

**League of Legends** is a multiplayer battle arena game and one of the most important e-sports games on the PC. The special feature is that there are only new seasons and no second part of the game. From the very beginning, the game has been considered a pioneer in terms of user guidance and the incorporation of in-game gamification and nudging elements. For the creation of educational software, special attention should be paid to the analysis screen, which appears after a game round is finished. Players receive sufficient feedback on their own performance, the team's performance and the opponent's performance at first glance. With one click, the detailed results of the various aspects can be listed. This unique feedback could be an extremely motivating feedback for users of learning apps and show where they are at the moment and which aspects need to be improved next.



Figure 3. Screenshots from League of Legends, Main Screen

**FIFA** is a football simulation that is released annually and has become an integral part of European e-sports, especially in Ultimate Team mode. In the Ultimate Team mode, you have to build your own team by collecting trading cards that represent the players of your team. The players are available via digital packs, similar to Panini collector's albums. These packs can be bought for real money or, and this is more popular among players, earned in the game. In addition, various digital playing cards can be played for directly. And this is where an extremely remarkable goal/quest system comes into play. There are recurring events, such as the opportunity to earn a new player with 3 wins, 10 goals and 15 assists in the Silver Lounge every Wednesday. Or themed quests in which you set up teams from different countries and pursue goals that can be understood as in-game gamification of the football theme. Because it's no longer just about scoring a goal. For example, a Dutchman must first pass to a Brazilian in order for the objective to count. The special feature that should be adapted for the creation of educational software is the way and when the goals are communicated to the players. There is a fixed cycle of events that are played weekly at a specific time and that players look forward to and can schedule. Then there are special event weeks with goals that are surprising for the players and you have to work out how to solve them. And then there are monthly collection quests of special items, which you can then exchange for a special reward. This goal screen has proven to be best practice in the analysis and should be considered by designers of educational software as a template for learning goal design.

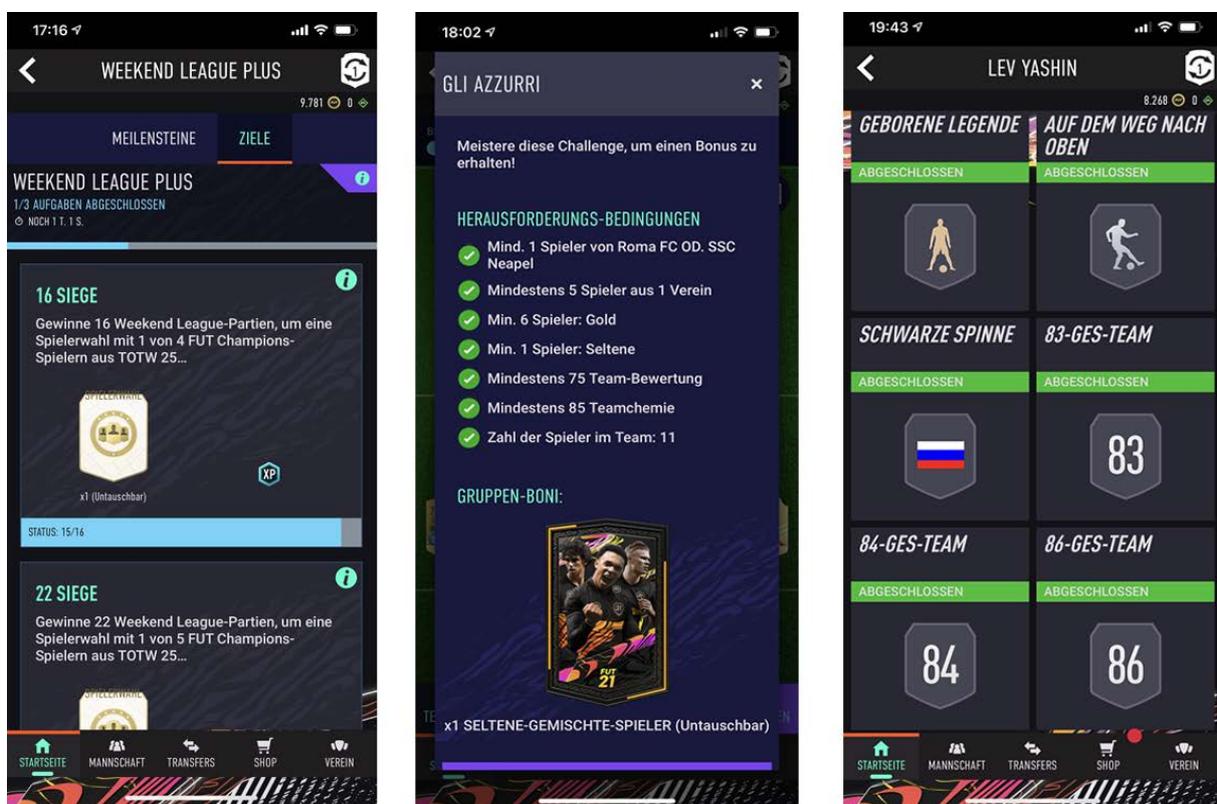


Figure 4. Screenshot from FIFA (App), Goals and Squad Building Challenge Screen

## 5 CONCLUSIONS

The designers of educational software should borrow from the world of successful games. This starts with a well-designed user interface, where all functions and analytics screens can be accessed with just a few clicks and in a self-explanatory way. Another important aspect is the possibility to see the options provided first in a general overview, but then to find more details if desired. Artificial intelligence can certainly help here in the future in order to better process the learning results of e-learning. It is also important to present the goals clearly, building on one another. Here, too, AI could help to adapt the learning objectives to the learner's skills and to always challenge the learner positively without overburdening him or her. From the creation of the digital avatars as storytellers and the narrative around the goals, digital mentors could be created to encourage the learner to stay on task. And mechanics like team challenges, where everyone of a class can choose a task to complete, which has a positive effect for everyone is a mechanic which should be further explored in the educational context. All this could

lead to a massive increase in the user's learning experience and motivation. In the next step, the authors would like to use click dummies to create prototypes that potential learners can assess in order to develop concrete implementation proposals for educational software.

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