

ROLE AND EXPERIENCES OF TUTORIAL IN LOCATION-BASED GAME

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ABSTRACT

Location-based games, such as Geocaching and Pokémon Go, have gained wide popularity during recent years. Since playing a location-based game requires time and willingness to go outside, convincing players to play these games can be more challenging than other types of mobile games. In this article, we research how different tutorials, a location-based (which requires moving around) and a sedentary (which is played without moving physically) could help to overcome this barrier. A location-based game called “Treasure hunt” was developed and used for collecting data from two test periods: first one with a location-based tutorial and second one with a sedentary tutorial. On one hand, the sedentary tutorial increased significantly the proportion of the players who completed the tutorial. On the other hand, it did not increase the proportion of the players who continued playing while moving. Thus, a sedentary tutorial can be considered as a good way to introduce the idea of the game, but does not appear to increase long-term engagement with the game.

INTRODUCTION

Location-based games (LPGs) have gained wide-scale developer interest upon the incorporation of positioning technologies in mobile devices. The success of games like Geocaching and Pokémon Go shows that GPS provides a means of developing fun location-based games that people are eager to play.

The nature of location-based games creates various design challenges. Hardware limitations, such as the inaccuracy of GPS signal (Benford et al 2003), data transfer (Jacob and Coelho 2011) and battery lifetime are things to be taken into consideration. The information availability about places of interest can be limited, creating challenges to the creation of a world-wide playable game (Jacob and Coelho 2011).

The experiences of the players reveal also non-technical design choices and challenges. The usage of the player’s actual physical environment brings the game as a part of the player’s everyday life: players experience a greater sense of immersion when the ordinary space and play are not distinct (Saker and Evans 2016; Papangelis et al. 2017). As a downside, this can create safety issues which need to be taken into account (Jacob and Coelho 2011).

Social interactions seem to be a crucial part in many popular location-based games. Even though a game may not have in-game communication, like in the case of Pokémon Go, going outdoors creates opportunities to encounter other players (Paasovaara et al. 2017). The positive effects on advancement in the game that sharing information provides as well as the usage of existing points of interests in real world to enable the encounters encourage social interaction (Paasovaara et al. 2017). According to Kari et al. (2017), playing Pokémon Go made the players more social, gave more meaning to their routines, made them express more positive emotions, and motivated them to explore their surroundings. In addition to the social activity, there is evidence on increase of physical activity with location-based games (Althoff 2016; Fountaine 2018).

Getting people to download the game is not enough, but in order to enjoy the game, they need to understand how to play the game. A tutorial can be used for this matter. In addition to giving understanding about the game mechanics, tutorials are the first tools for engaging users, especially if they create curiosity (Wavro 2015; Järvinen 2010).

In their research, Andersen et al. (2012) suggest that tutorials are to a lesser extent necessary in simpler games, in which players can easily get acquainted with the gaming mechanics through experimentation. However, in most complex games, tutorials would increase playing time as much as 29% and player progress as much as 75%. They also noticed that in the case of a complex game, playtime and progress were increased when instructions were given in close connection to when they were needed, instead of providing them up front at the beginning. However, in the simpler games of their experiment, Andersen et al. did not find context-sensitive instructions beneficial, or even found them resulting in a lower return rate of users.

In a research concerning MMORPGs, usability data did not show significant difference in the overall error rate between such players that had read a manual and such that had not done so (Cornett 2004). It could be thus argued that the benefit of separate manuals in games may be questionable. However, the results suggested that in-game tutorials and context-sensitive help would be the best way to provide players with the information they require to play the game.

When considering the importance of the tutorial, also the type of the player can have an effect. Morin et al. (2016) made a comparison between casual and hardcore players, and their perceptions of a game with or without a tutorial. In their

research, they noted that a tutorial can have positive consequences on purchase and continuous use intentions. This is especially valid with casual players and confirms that they need the tutorials.

In Pagulayan et al. (2003), player response to the first mission of a game was measured in a game in which the first missions were intended to act as a tutorial. A third of the players thought that the mission did not give proper challenge, and consequently satisfaction, and caused them to receive a poor initial impression of the game. Many players would complain that they were being taught everything. After changes were incorporated in the game, e.g. increasing the difficulty of the game and creating a separate optional set of tutorial missions, the proportion of players reporting that the game was not exciting reduced from approximately a third of the participants to 3%, without a reduction in the comfort rating associated with the tutorial of game controls. (Pagulayan et al. 2003). This suggests that it is preferable to grant players with a possibility to choose whether they like to carry out the tutorial or not.

According to game developers, the type of the game and its audience affect the creation of the tutorial, and precise advice is thus difficult to give (Wavro 2015). Crumlish and Malone (2009) provide advice on several onboarding techniques for web designers that can be directly used for (social) games (Järvinen 2010): limit the user focus, train the user for the game and take into account the existing user information. Even though tutorial levels can create frustration (Järvinen 2010, Smith 2017), good ones can be designed. A tutorial level should be part of the game, not necessarily easy to win, but easy to learn (Smith 2017). Also attention should be given to ensure that the player is not patronized, forced to complete the whole tutorial if starting the game again, or overwhelmed with too much information e.g. in textual form (Adams 2011; Wavro 2015).

With location-based games, getting people to understand the game mechanics usually requires moving outdoors with the game, which creates an additional barrier to adoption, compared with traditional mobile games. We define a *sedentary tutorial*, which is a tutorial that can be completed without actually going from one place to another physically. It can provide a solution to get past this barrier and get more people to try out a location-based game.

In this article, we will concentrate on experiences of utilizing a sedentary tutorial for a location-based game, and compare it with a *location-based tutorial*, i.e. a tutorial which requires moving physically in the real world from one place to another. We aim to find understanding on whether the sedentary tutorial will attract more players than a location-based tutorial.

RESEARCH METHOD

Our case study consisted of the development of a mobile location-based game and carrying out two test periods after the release of the game. In order to help the players to

acquaint themselves with the game, two different tutorial types were experimented during the subsequent test periods. In the first period a *location-based tutorial* was utilized, whereas in the second period it was changed to a *sedentary tutorial*. Our hypothesis was that in location-based games, a sedentary tutorial will engage players and get them to play the actual game more efficiently than a location-based tutorial.

The research questions are:

1. Does a sedentary tutorial get more people to try out the game?
2. Does a sedentary tutorial increase long-term engagement?

Game Description

A location-based game called *The Treasure Hunt* (Figure 1) was created with the Unity game engine to conduct the study. The idea of the game is to walk in the surrounding area and visit a set of virtual fortress islands to find a route to a pirate treasure. After finding enough treasures, the rank of the player increases. The highest rank is “Admiral”, which the player is granted after having found the treasures of all nine pirate captains in the game.



Figure 1: a) Basic View of the Game, b) Conquering a Fortress, c) Shop

The basic gameview has a the treasure map (upmost in Figure 1a) and a compass showing the approximate direction (east/west/north/south) of the next fortress to be found and the distance shown above the compass. When the player is close enough to the fortress island (i.e. within 50 meters), the player taps the island to conquering it by tapping the target rapidly (Figure 1b). In the battle, the player's field is damaged. In other islands than fortress islands, the player can find cargo boxes filled with food items to be sold in an in-game store (Figure 1c). A better cannon, a better telescope (increasing find radius to 100m), an accurate compass and fix of player's shield are sold in the store. As a reward from finding a treasure, the player gets money, and either a better telescope, an accurate compass or even more money.

Description of Tutorial Types

In the first test period, the *location-based tutorial* consisted of a treasure map, similar to other maps in the game. The fortress islands were created in the vicinity of the player so

that the player had to walk to find the islands. The only difference to the non-tutorial maps was the context-sensitive advice for the player. The tutorial guided the player throughout the game, starting from giving advice of the roles of the treasure map, the compass and the distance. When the player found the first fortress island advice on how to conquer the islands (i.e. tapping) was given and the role of the in-game store was explained. This way, the player played their first map similarly to later maps – the only difference was the context-sensitive advice.

In the second test period, a *sedentary tutorial* was used. New islands were created close to the player so that that the player could reach them without walking anywhere. Then the player was advised to find (and tap) the fortress island, conquer the fortress island (by tapping rapidly) and repeat this with the treasure island as well. This way, the player could get a grasp on the idea of the game without moving physically. Only after playing the sedentary tutorial, the player started to play the game by walking in the surrounding area.

Research Settings

The aim of the game development was to create a game, which would interest the players for a short period of about two weeks. The core of the game development was iterative and feedback was received from researchers, marketing professionals and from a consumer web forum.

There were two test periods, each of which lasted for about two weeks. The first one was at the end of June 2017 and the second one was at the beginning of September 2017. Potential players were contacted in several ways: 1) e-mail lists of both personnel and students of the university were utilized, 2) posters of the game were displayed in the vicinity of the university, 3) social media accounts of the university were utilized and 4) in total about 200 flyers were distributed in the streets nearby. In all contact channels, the possibility to win a gift certificate (50 euros) to Steam, Google Play or Spotify was advertised. At the end of each test period, one gift certificate was given to the best player of the test period and another gift certificate was given through a lottery among the top 60% of the players.

In the first test period, the game was installed 131 times, out of which 105 users also registered to the game. In the second test period, there were 65 installations and 65 registrations. When registering to the game, e-mail address was given and according to this information, only one player continued playing the game in the second round. In-game data, such as player names, and points for the high score list was collected to the server, and this information is used as the first data source in this research.

As another data source, a questionnaire about the game and the way it was experienced was sent to the players after each test period. In order to be able to win a gift certificate, an answer to the questionnaire was required. In the first round, 26 answers were received to the questionnaire and in the second round 29 answers.

RESULTS

The high score list of the game was maintained in the server. After each test period, the situation of the high score list was recorded. According to the game logic, the player would get about 20 points from playing each of the first two maps.

Based on this information, we were able to divide the players into four groups:

- players, who did not even complete the first map, i.e. the tutorial (<20 points),
- players, who completed about one map, i.e. the tutorial (20– 40 points),
- players, who completed about one map after the tutorial (40– 60 points), and
- players, who completed more than one map after the tutorial (over 60 points) and can be therefore considered as active players.

Figure 2 presents how many treasure maps people completed, as a percentage of the total amount of players who signed into the game in each round. As can be seen, the proportional amount of players who completed the tutorial, i.e. the first map, increased significantly between the two test periods: from one third, to two thirds. According to Chi-squared test ($p=0.000013<0.05$), the difference of the proportion of people completing the tutorial, is significant.

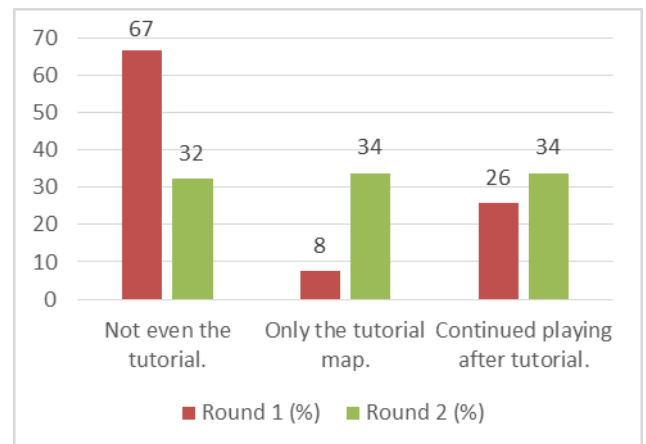


Figure 2: The Proportional Distribution of Number of Treasure Maps Played

To gain insight for our second research question on whether a sedentary tutorial encouraged the players to continue the gameplay also after the tutorial, we compare the players who completed location-based treasure maps. In Figure 3, the first two bars of each round represent the players, who did not complete even a single location-based treasure map. Two latter bars represent the players who completed one or more location-based treasure maps. The percentages of the players who did not complete even one location-based treasure map remained about the same in each round. When we compare the amount of people, who continued to play after the first location-based treasure map, i.e. the long term players, there is a slight, but not statistically significant (Chi-squared test $p=0.47>0.05$), increase from 26% to 31%.

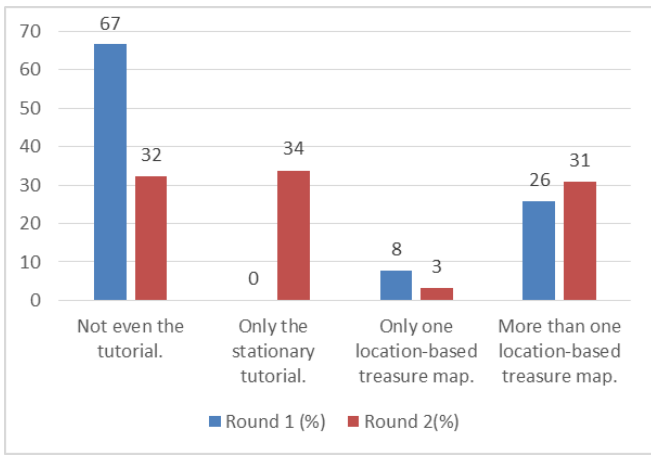


Figure 3: Proportion of Location-Based and Stationary Treasure Maps Played

In the questionnaire to the players, possible reasons for not playing at all or ending the gameplay were asked, as can be seen from Figure 4. The major reason was the time the game requires. Also some people found that the game was not versatile enough. Several technical issues were reported as well, and even though a tutorial was present, it did not give enough guidance to all the players.

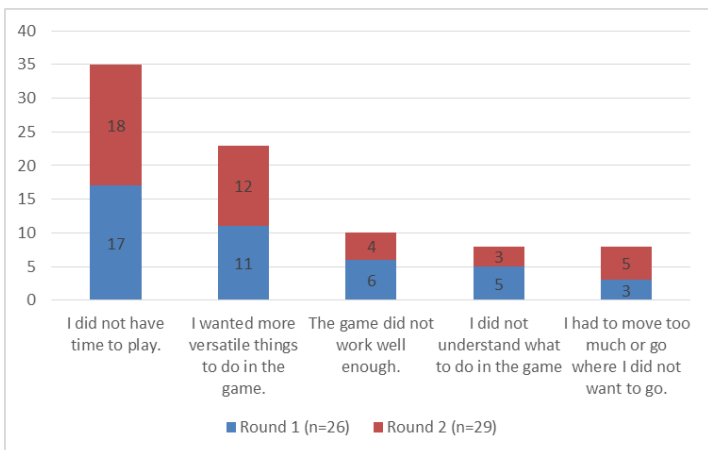


Figure 4. Reasons for not Playing at All or Ending Gameplay

DISCUSSION

In location-based games, there can be a) context-sensitive instructions that are both related to the physical surroundings and the in-app game environment, and b) context-sensitive help related merely to the in-app game environment. The sedentary tutorial relates to b), meaning that tutorial covers issues present in the game application, but cannot provide context-sensitivity related to the real world. In the location-based tutorial also context-sensitivity related to the real world was present in form of presenting the meanings of the compass and the distance.

The game logic consists of quests, i.e. treasure maps, to be completed by winning battles. In the battle, the only thing the player has to do to conquer a fortress is to tap the target rapidly. Thus, the game logic can be considered a quite simple one. If the shield is damaged, the player has to collect sellable items from islands by walking in the surroundings. Even though logically this is simple, it is time consuming to

collect enough sellable items and can lead to frustration. According to Andersen et al. (2012), tutorials for simpler games are not beneficial. We consider that the perseverance required, and especially the penalty if not understanding what to do in the game, makes location-based games more complicated, regardless of the game logic. Thus we thought that a context-sensitive tutorial was required for the game.

In the tutorial, the complexity required both by scientific research (Andersen et al 2012) and the game designers (Smith 2017) was taken into account: the location-based tutorial was designed to be a part of the game and the difficulty was close to the difficulty of the first real treasure map. The user got context-sensitive information about the essential functions little by little, as they were guided through the gameplay of the first map. The number of textual advice was kept as little as possible (Adams 2011), so that the player would feel like playing instead of going through a tutorial. In the sedentary tutorial, the tutorial was kept simple and small, in order to enable a quick playthrough. This was seen as a way to avoid frustration associated with obligatory tutorial levels (Järvinen 2010, Smith 2017).

Engaging people to play location-based games can be due to the perseverance required. Many people who download the game quit the game before testing its location-based features. This was proven in our research as well, where time was the major reason for not playing or quitting to play. According to our results, the difference of people who completed the tutorial rose from one third to two thirds with a sedentary tutorial compared with a location-based tutorial. Thus, we consider that a sedentary tutorial will help more people to gain an understanding about the game idea than in the case of a location-based tutorial.

Even though a larger proportion of players completed the sedentary tutorial than the location based tutorial, it did not significantly influence the proportion of those players who tested the game by walking in their surroundings. According to our questionnaire, a third thought that the game was not versatile enough. Reflecting on our sedentary tutorial, it might not have been challenging and satisfactory enough to encourage the players to continue the game. Thus our results are in-line with the research by Pagulayan et al. (2003).

As time was one of the major reasons for not playing, we can also consider time as one of the major reasons for a larger proportion of players completing the sedentary tutorial, compared with the location-based tutorial. This will also highlight our conclusion of sedentary tutorial being a good way to introduce the game logic.

CONCLUSIONS AND FUTURE WORK

The aim of this paper was to gain more insight on how different tutorials affect the amount of players playing a mobile location-based game. Our case study included a mobile game which was tested on real players in two distinct test periods: first test period with a location based tutorial and second test period with a sedentary tutorial.

According to our study, the proportion of players who completed the tutorial rose from 33% to 68% with a sedentary tutorial. A sedentary tutorial will significantly increase the amount of players who will complete the tutorial. This will get more players to get a grasp on the idea of the game, before actually diving into the real world to walk and play.

Another even more interesting question is whether a sedentary tutorial will engage the players in the longer term. According to our study, the proportion of people who actually played the game in the real world was around one-third in both test periods, even though a slight increase from 26% to 31% was noted.

Our results show that a sedentary tutorial will work best for presenting the idea of a location-based game to the players. However, using a sedentary tutorial includes a risk of making a too simple tutorial, which can drive the players away.

In the research setting, a possibility was given to win gift certificates in order to attract people to try out the game. These prizes may have had an effect on the way people played – perhaps they were not interested in the game itself, but played only to get the prize.

Also some popular location-based games, for example Pokémon GO, include a sedentary tutorial. It would be interesting to know whether the proportion of people who play only the sedentary tutorial is similar in them.

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