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**THE IMPORTANCE OF FUN IN VIDEO
GAME TUTORIALS**
*A Case Study of *Uncharted 4**

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ABSTRACT

Markku Vesa: The Importance of Fun in Video Game Tutorials: A Case Study of *Uncharted 4*
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The purpose of this study is to clarify the role that fun and engagement have in the learning element of a video game tutorial. The hypothesis is that the more fun and engagement a player feels, the better they are able to learn from a video game tutorial.

In order to study this, I invited six participants of varying gaming backgrounds to take part in play sessions of the action-adventure video game *Uncharted 4* on the PlayStation 4 console. The participants took part in the sessions one at a time, with only myself present with them. The participants played a tutorial section from the beginning of the game, and the length of each session depended on the player. Each session lasted between 20 and 30 minutes. I took notes and sometimes asked questions during sessions, but mostly allowed the participants to explore and comment on their own. After each session I conducted a recorded interview, each of which somewhat deviated from the pre-written question pattern as I encouraged the participants to speak freely. I transcribed the interview recordings myself.

There is an ongoing discussion about the relationship between playability and usability, but whatever the hierarchy between the terms is, learnability is always a part of the discussion. Video game tutorials attempt to teach something to a player, and they are therefore a special case in terms of usability and playability because of the learnability aspect. Previous studies have shown that learning is tied to fun and engagement. Based on previous studies, I will consider playability as an umbrella term that covers usability, while fun and engagement fall under usability. Learnability or learning is generally agreed to be an element of usability.

One of the participants did not enjoy the game, while the rest did. The participants that were enjoying the game were also able to learn from the tutorial more efficiently. This was shown by how well they overcame initial difficulties within the game. Enjoyment was often caused by the story-driven setting of the video game. The rich writing simultaneously forwards the story and provides tutorial instructions through dialogue. However, story and setting were not at all important to one participant, but some other genre might have been more engaging for them. The results of this study support this hypothesis. They also show that while is highly important in a video game tutorial, the definition of fun will vary from player to player.

The results of this study can be applied to video game design. A tutorial designer should take into account the element of learning, and incorporate that element in a manner that is consistent with the style of the rest of the game. If a game attempts to tell a rich story, the story should be introduced in the tutorial. In the case of *Uncharted 4*, the tutorial instructions are very effectively delivered through character dialogue that simultaneously forwards the story. The results can also be applied to educational games and education in general. A rich story will encourage learning in a student that enjoys following such a story, but not everyone enjoys the same. The same elements can be taught in multiple ways, and for another student a puzzle game with no story at all might work much better than a story-driven approach.

Keywords: Playability, Usability, Learning, Fun, Engagement, Video Games, Tutorials

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Tämän tutkimuksen tarkoitus on selvittää hauskuuden merkitystä videopelitutoriaalini opittavuudelle. Hypoteesi on, että mitä hausempaa pelaajalla on, sitä paremmin tämä oppii tutoriaalista.

Tätä tutkiakseni kutsuin kuusi erilaisen pelaajatuostan omaavaa osallistujaa pelaamaan *Uncharted 4* -seikkailupeliä PlayStation 4 -pelikonsolilla. Osallistujat tulivat pelisessioihin yksi kerrallaan, ja heidän lisäksi olin ainoa henkilö paikalla. Osallistujat pelasivat pelin alun tutoriaaliosuutta, ja kunkin session kesto riippui pelaajasta. Sessioiden kesto vaihteli 20 ja 30 minuutin välillä. Tein muistiinpanoja ja kysyin kysymyksiä sessioiden aikana, mutta pääosin annoin osallistujien tutkia pelimaailmaa ja kommentoida omaan tahtiin. Kunkin session jälkeen suoritin nauhoitetun haastattelun. Haastattelut perustuivat ennalta valmisteltuun kysymyslistaan, mutta siitä poikettiin jonkin verran, sillä rohkaisin osallistujia puhumaan vapaasti. Litteroin haastattelut itse.

Pelattavuuden ja käytettävyyden suhde on ollut keskustelun aiheena jo pitkään, mutta olipa niiden välinen hierarkia mikä tahansa, opittavuus on aina mukana keskustelussa. Videopelitutoriaalini on tarkoitus opettaa pelaajalla jotakin, joten se on erityistapaus pelattavuuden ja käytettävyyden kentällä. Aikaisempi tutkimus osoittaa, että opittavuus on sidoksissa hauskuuteen. Tässä tutkimuksessa käsitän pelattavuuden sateenvarjoterminä, joka kattaa käytettävyyden. Käytettävyys puolestaan kattaa hauskuuden, ja yleinen käsitys on, että opittavuus on käytettävyyden osa-alue.

Yksi osallistuja ei pitänyt pelistä mutta muut pitivät. Ne, jotka pelistä pitivät, oppivat myös parhaiten. Tätä mittasin sillä, miten hyvin vastaan tulleista ongelmista selvittiin niiden ilmetessä uudestaan. Nautinto johtui usein pelin tarinavetoisuudesta ja miljööstä. Pelin rikas käsikirjoitus samanaikaisesti edistää tarinaa ja ohjeistaa pelaajaa vuoropuhelun avulla. Vaikka yksi osallistuja ei näistä tekijöistä välittänyt, jokin toinen pelityyppi olisi saattanut vedota häneen. Tulokset tukevat hypoteesia. Niistä myös nähdään, että vaikka hauskuus onkin tärkeä osa videopelitutoriaalia, hauskuuden määritelmä vaihtelee pelaajasta toiseen.

Tutkimuksen tuloksia voidaan hyödyntää pelisuunnittelussa. Tutoriaalini suunnittelijan täytyy muistaa opittavuuden ulottuvuus ja sisällyttää se tutoriaaliin tavalla, joka sopii yhteen pelin yleisen tyylin kanssa. Jos peli pyrkii kertomaan rikkaan tarinan, se tulisi esitellä jo tutoriaalivaiheessa. Esimerkiksi *Uncharted 4* tehokkaasti ohjeistaa pelaajaa ja edistää tarinaa hahmojen välisellä vuoropuhelulla. Tuloksia voidaan hyödyntää myös opetuksessa ja opetuspeleissä. Rikas tarina rohkaisee niitä oppilaita oppimaan, jotka pitävät tarinoiden seuraamisesta, mutta kaikki eivät pidä samoista asioista. Asioita voi opettaa monella tavalla, ja jollekin toiselle oppilaille esimerkiksi tarinaton pulmapeli saattaa toimia tehokkaampana opetusvälineenä kuin tarinavetoinen lähestymistapa.

Avainsanat: pelattavuus, käytettävyys, opittavuus, hauskuus, videopelit, tutoriaalit

Tämän julkaisun alkuperäisyys on tarkastettu Turnitin OriginalityCheck -ohjelmalla

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1 INTRODUCTION

The elusive relationship between usability and playability has been a topic of lively debate for a long time, and the element of learning plays an important part within the spectrum. A video game tutorial is not only an introduction to the game, but also a tool for learning. Often a tutorial is not clearly separated from the main game as its own section, but most games still do have a tutorial for teaching the main gameplay elements. Previous studies, such as Olsen et al. (2011) have found that enjoyment is important for learning purposes, and it can generally be agreed that learning is an important aspect of a video game tutorial. Therefore, it is justified to assume that a good video game tutorial is also *fun* and *engaging*. However, this has not been studied extensively. Many elements of video game tutorials, such as interface and usability, have been studied before, but the special relationship between fun and learning in a tutorial should be studied further.

The hypothesis was that players who had fun and were engaged also learned from the tutorial more efficiently, while the players who felt less fun and engagement had more difficulties with learning. The aim of this study is to understand the importance of fun in a video game tutorial. To study this, I have invited six participants to play a video game tutorial, after which they will be interviewed. The purpose is to find out any issues they come across during play, and how well they manage to overcome them. Then I will analyse the connection between learning and fun. I suspect that people who are having fun while playing a tutorial will also learn more efficiently. However, this is a case study of one video game, and based on the results, I will also suggest ideas for further study. The paper is structured to first introduce previous studies and methods, followed by the results and analysis, after which a brief conclusion of findings will be presented.

2 PREVIOUS STUDIES

2.1 Introduction

In this section, I will examine some previous research into video game tutorials, *playability*, and *usability*. There are plenty of different definitions for playability and usability, and the topic is further complicated when applied to video game tutorials, which I will introduce in section 2.2. Next, I will take a look at different aspects of usability in section 2.3, after which I will examine the complex relationship between usability and playability in section 2.4. Finally, I will attempt to analyse some of the special characteristics of video game tutorial sections in section 2.5. What should one keep in mind when studying the usability and playability of a video game tutorial?

2.2 Video game tutorials

*Merriam-Webster*¹ gives the following definition for ‘*tutorial*’: “a paper, book, film, or computer program that provides practical information about a specific subject”. To put simply, the purpose of a tutorial is to teach something to the user, with the game context being the specific subject in this case. Tutorials come in many different shapes, but usually a tutorial is a section at the beginning of a game that is limited in length and clearly separated from the rest of the game through on-screen instructions. According to Green et al. (2017, 75), video game tutorials help players understand the rules of a game and how to play with those rules. They introduce three of the most common types of tutorials: those that teach using instructions, those that teach using examples, and those that teach using experimentation (Green et al. 2017, 76). The common theme with all these types is teaching, and it is safe to say that the element of learning is an important aspect of video game tutorials.

Andersen et al. (2012, 1) suggest in their article that the more complex a video game is, the more impact the tutorial has, even stating that investing in a tutorial may not be necessary in more simple games. The authors discuss several aspects of video game tutorials, such as context-sensitivity, freedom, and on-demand help. Their study found that the complex games benefit from context-sensitive instructions for gameplay

¹ "tutorial" Merriam-Webster.com. 2019. <https://www.merriam-webster.com/dictionary/tutorial>. [Accessed Feb 19, 2021]

mechanics that appear on-screen just before the player needs to use them. They also found that restricting game functionalities in order to give the player a forgiving environment in which to experiment with new mechanics was not useful. They suggested that this may have been due to players disapproving of having their freedom limited, and that free experimentation is a powerful educational tool in tutorials. It was also discovered that providing on-demand help had a positive impact in some cases and a negative impact in others, stating that their study could not sufficiently tell why that was the case. However, they suggested that a negative impact could be caused by the player already being frustrated when having to rely on on-demand help (2012, 1–2). The higher the complexity of the game, the higher the necessity of a tutorial, and that in turn strengthens the emphasis on learning.

2.3 Usability

Whitney Quesenbery presents a model for general *usability* (2003). The five dimensions are *effectiveness*, *efficiency*, *engaging*, *error tolerant*, and *easy to learn*. Effectiveness refers to the “completeness and accuracy with which users achieve their goals” (Quesenbery 2003, 83). Efficiency refers to the “speed (with accuracy) with which users can complete their tasks” (Quesenbery 2003, 84). Engaging refers to the “degree to which the tone and style of the interface makes the product pleasant or satisfying to use” (Quesenbery 2003, 86). Error tolerant is related to “how well the design prevents errors, or helps with recovery from those that do occur” (Quesenbery 2003, 87). Finally, easy to learn describes “[how] well the product supports both initial orientation and deepening understanding of its capabilities” (Quesenbery 2003, 88). Very often the dimension of learning in usability literature is referred to as *learnability*, but researchers do not seem to agree on the definition of the word. However, it is generally agreed that learnability is an important aspect of usability (Grossman et al. 2009, 649).

Grossman et al. (2009, 656–657) introduce several key elements for interface learnability. They were not created with video games in mind, but some of the elements are certainly applicable. For example, awareness refers to the amount of information the user sees in a graphical interface, and with too much information the user will be unable to be aware of everything. Locating refers to contextual help that shows a functionality directly on the screen, such as a button prompt in a video game. Understanding refers to explaining complex operations to the user, and the guideline of Grossman et al. (2009, 656–657) is

to demonstrate the operation within the user's interface. These guidelines seem to be especially relevant in a video game tutorial, as the medium is heavily reliant on graphical elements.

Some dimensions of usability are more prominently elevated than others in the study of video game tutorials. Tanner Olsen et al. (2011) write about the usability of serious games. The term *serious game* refers to games that are used in “domains including education, therapy, and personnel training, with the goal of providing a method to supplement traditional means of learning” (Olsen et al. 2011, 625). Olsen et al. (2011, 625) state that “learning or training is the main objective of a serious game”, which makes the study of serious games an interesting field when studying video game tutorials. According to Olsen et al. (2011, 625), enjoyment is required in order to keep the user invested long enough for learning purposes. They quote the game designer Chris Crawford who states that in addition to being functionality and ease of use, fun is also an important part of a user interface. If these goals are not met, the player will cease to play the game (Olsen et al. 2011, 626). It seems that in tutorials Quesenberry's dimension of engagement is the most important one.

Indeed, according to Rosa Yanez-Gomez et al. (2018, 1), the usability of games covers areas such as “enjoyability and playability”. In an article about heuristic usability evaluation of games, they discuss the difficulty of specifying the meaning of the term *usability* within the domain of games, stating that games have qualities that differentiate them from productivity software. They warn against obstacles that discourage gamers and interrupt fun and enjoyment and argue that the ability to learn and understand a game is strongly connected to usability (Yanez-Gomez et al. 2018, 2).

They go on to describe various attitudes of other authors towards usability in games. For example, some would separate “entertainment, engagement, and storyline” from usability, considering them to have connections to both artistic and technical issues (Yanez-Gomez et al. 2018, 2). However, they also state that some authors agree that fun cannot be removed from usability, because fun can be seen as a prerequisite for usability (Yanez-Gomez et al. 2018, 2).

Furthermore, they quote the ISO standard definition of usability:

The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. (Yanez-Gomez et al. 2018, 2)

They state that while some believe the three dimensions are equally important, others think that the usability of a video game is mostly connected to satisfaction. Effectiveness and efficiency are less important for them, especially since games are voluntary purchases for entertainment purposes. (Yanez-Gomez et al. 2018, 2) Indeed, according to Quesenbery, the five dimensions of usability are usually not in balance, as the priorities of dimensions appear in unequal combinations in any given product (2003, 84). Quesenbery (2003, 84) also states that for games the “goal is to have fun”, and that a “successful game challenges the player at just the right level”.

2.4 Playability, usability, and fun

Playability is a rather elusive term to define, but it is strongly tied to usability and should be addressed when studying video games. The overall hierarchy between playability and usability is difficult to describe, and researchers have various views on the topic. Olsen et al. (2011, 626) describe usability as a term related to the independent functionalities within a system, while playability is concerned with the overall functionality of different parts that work together to give the player an enjoyable experience. They give an example of the elusiveness of playability, stating that while movement and world-interaction controls may be excellent separately, using those control mechanics at the same time may still be very difficult, rendering the game unplayable (Olsen et al. 2011, 626).

Sánchez (2012, 1033) suggests that playability means the overall experience with a game system, and states that a traditional view of usability is not adequate for studying games. The author includes the goals of the game within its playability, and states that immersion is also an important part of playability. Sánchez defines playability through a list of attributes, such as learnability, satisfaction, immersion, and motivation. For example, motivation is linked to self-improvement, curiosity, and encouragement, immersion to absorption and conscious awareness, learnability to skill and game knowledge, and satisfaction to fun and disappointment (Sánchez 2012, 1034–1042). Arguably, these are all important qualities for a game tutorial.

Janne Paavilainen (2017, 487) proposes “a game-centric definition of playability that is based on a game’s functionality, usability, and gameplay”. He states that the term

playability should not be used to describe external factors such as hardware, situations, and players (Paavilainen 2017, 487). Because game developers cannot “design player experiences or consider all play contexts”, the term *playability* “should focus on the game itself” (Paavilainen 2017, 491).

According to Paavilainen, there must be at least three components that define playability: functionality, usability, and gameplay. Functionality describes “the technical quality of the game, related to smooth operation”. Usability refers to “the game interface, making sure that the game is easy and intuitive to use”. Gameplay means “the rules of the game that create the mechanics and the dynamics”, not referring to the physical activity of gameplay (Paavilainen 2017, 491). However, Paavilainen also says that players can have fun even if the game does not have good playability. Since critically acclaimed games are not necessarily commercial successes, he suggests that playability and player experience do not automatically go hand in hand (Paavilainen 2017, 491–492). The model rejects “ambiguous concepts like fun, enjoyment, and satisfaction” (Paavilainen 2017, 492). It is essential in tutorials to consider the three components of playability as introduced by Paavilainen. The tutorial must perform well from a technical standpoint as it is one of the first things the player sees, the interface must clearly show what the player is expected to do, and the tutorial must establish the rules of the game. A tutorial establishes a foundation for the playability of the rest of the game and is therefore a special case. In order to enjoy a video game, a player does not need to reach its goals, such as completing a story. However, without successfully reaching the goals of a tutorial, the player may not fully understand the rules of the game or the user interface, therefore encountering unintended playability. I argue that for a tutorial it is important to include the ability to reach its goals into the discussion of playability and usability, perhaps in the form of the domains Quesenbery (2003) calls easy to learn, efficiency, and effectiveness.

The different arguments presented above show that there is no clear consensus on the relationship between usability and playability. Playability is related to usability in the domain of games, and an important question here is what part fun plays in that relationship. Paavilainen makes a strong argument for fun or engagement not being important in terms of playability, using Tic-tac-toe as an example:

Tic-tac-toe is a game with flawed gameplay, as it will always result in a draw if both players understand and comprehend the rules. Hence Tic-tac-toe suffers from poor playability. However, Tic-tac-toe is an interesting example of a game with poor playability that can still provide enjoyable experiences

in certain circumstances. The game has been played for thousands of years, which in itself is a statement of its popularity, and while adults might find the game boring and unsurprising, it can be very entertaining for children. (2017, 491).

However, as stated earlier in this paper, fun and engagement seem to be important prerequisites for learning purposes. I argue that since one of the main goals of a video game tutorial is to make the player learn the basics of the game, elements such as fun, engagement, or satisfaction are important aspects of the playability of video game tutorials. It seems that video game tutorials are a special case when it comes to good playability. Based on the definitions presented above, for this paper I will consider playability as an umbrella term that covers matters such as usability, functionality, gameplay, and goals. Fun and engagement fall under usability, as established in section 2.3.

2.5 What makes a good video game tutorial?

As stated above, the dimensions of usability are usually not in balance. Efficiency and effectiveness are important for usability, but in video game tutorials they are highly dependent on the dimension of engagement. It has been shown earlier in this paper that the purpose of a video game tutorial is to teach something. It has also been shown that in order to teach something effectively and efficiently, the tutorial must be fun to play. According to the study of Andersen et al. (2012), it is also safe to say that the freedom to experiment is important in a tutorial, which shows that the dimension of error-tolerance is not essential for a tutorial. Therefore, I argue that a good video game tutorial must be an example of good overall playability, answering specific problems of usability, with fun and engagement being the most important aspects, and reach the goal of its educational purposes.

In order to study this, I conducted play sessions with external participants to see whether they think a video game tutorial I asked them to play is a good example of a tutorial, and what was the role of fun in that decision.

3 METHODS

3.1 Introduction

In this section I will introduce the methods employed for this study. I invited participants to play the same video game tutorial while taking notes myself, after which I interviewed them to see how their feedback compared with my hypothesis.

In section 3.2 I introduce the interview protocol I employed for this study. Section 3.3 describes the tutorial that was examined, and section 3.4 I explain how the interview protocol was employed as well as the hypothesis. The test participants are introduced in section 3.5, and finally in section 3.6 I describe the structure of the interview and the play sessions.

3.2 The question-suggestion protocol

Grossman et al. (2009, 653) introduce a learnability evaluation method known as the question-suggestion protocol, in which the participant takes the usability test in the presence of an expert who is free to give advice to the participant. The method was developed through the study of popular learnability evaluation methods, such as the think-aloud protocol and the question-asking protocol. The think-aloud protocol is a common method in which the user takes part in a test in a usability lab and describes their actions out loud as they perform them. The question-asking protocol has an expert stay beside the test participant, allowing the participant to ask questions during the test. However, both methods have their limitations, as the think-aloud protocol takes place in an unnatural situation, while the question-asking protocol is limited to a phase of initial learning, in which the participant is stuck (Grossman et al. 2009, 652–653). The authors divide the scope of learnability into two categories: initial and extended learnability. Initial learnability refers to performance during a single instance of use, while extended learnability refers to the change in the capability to apply new skills during extended periods of time (Grossman et al. 2009, 651).

Video games often rely on teaching gameplay mechanics one at a time, expecting the player to gradually accumulate enough skill to be able to tackle more complex challenges. The player often needs to combine skills she has learned before in new ways, allowing for performances that require a level of learning above the initial learnability phase. The

study of Grossman et al. (2009, 657) found that their question-suggestion protocol is a good method for finding extended usability issues, as the expert can identify problems that a less experienced evaluator might not, and locating the expert next to the participant encourages dialogue (Grossman et al. 2009, 654). Therefore, the question-suggestion protocol seems to be a suitable method for studying learnability issues in a video game tutorial. However, in addition to the play session following the question-suggestion protocol, I decided to conduct separate, post-play interviews as well. I wanted the participants to be able to reflect on their performances, questions, and comments without having to focus on self-reflection during play. In addition, by following a set of questions asked from each participant, I had a pattern to make it easier to compare the results from each session. I will elaborate more on the justification of the interviews in section 3.4.

3.3 The video game chosen for the study

The video game tutorial I studied was the beginning of the 2016 game *Uncharted 4: A Thief's End* on PlayStation 4. The game was chosen for multiple reasons. First, I have already done some heuristic analysis work on the tutorial of *Uncharted 4* in my earlier studies. Familiarity with the game will help me fill the role of the expert during the interviews, as it will be easier to understand the issues the participants face and ask them question about the game. Second, the game is very popular, and it will be quite easy to find participants with different levels of familiarity with the game and the console. Third, the game is only available on PlayStation 4, and it will be easier to label the level of participant gaming experience. Finally, the tutorial section in *Uncharted 4* is clearly distinguishable as a tutorial section.

The tutorial begins with the playable character, Nathan Drake, driving a boat in a stormy setting with his brother. The game first introduces driving and camera controls, after which the protagonists are attacked by unnamed enemies from other boats. Here the tutorial introduces shooting and cover mechanics. After a chase sequence that has the player fall underwater and avoid hitting rocks once back on the boat, the boat crashes and the story enters a flashback to Nathan's childhood. He is in an orphanage and sees his brother message him with a flashlight in the middle of the night. He climbs out of a window and begins to make his way towards his brother through the rooftops, introducing several movement and climbing mechanics to the player. The boys eventually meet each other and make their way down to Nathan's brother's motorcycle on the street, after which

the story again shifts to a different time in Nathan's adulthood. This is where I had the players stop playing, as even though the game would have still introduced melee mechanics, the section is rather cutscene-heavy and would have prolonged the play session to a length the participants might have found uncomfortable. Some combat mechanics are introduced earlier in the tutorial, after all. The rooftop sequence introduces elements of initial and extended learnability, as the player already has to combine several newly acquired skills in order to make progress.

The user interface of the game is quite minimal in that UI elements, such as item interaction prompts or weapon and ammunition information, are mostly only shown when needed. Usually the player only sees the game world without UI elements. Sometimes a prompt appears teaching the player a new mechanic by telling which button to press, but mostly the game relies on other ways to help the player advance. The player is guided through mechanics that are familiar from many other games, such as lighting and camera angles that show the right direction, and conveniently placed objects that allow for climbing, for example. Sound is also important in the tutorial. Audio cues and voice-acted dialogue inform the player about immediate and long-term goals and give hints about ways to reach those goals. For example, Nathan's brother may simply tell which way to go, apparently addressing the character but also guiding the player. All in all, playing through the tutorial section takes about 30 minutes, depending on the player.

As stated in section 2.2, the complexity of a video game dictates whether a tutorial is necessary. *Uncharted 4* is arguably a very complex game that requires a level mastery of various gameplay mechanics in order to finish the game. The game is also very story-heavy in that it places great emphasis on storytelling and character arcs, and struggling with controls and gameplay mechanics makes it difficult to follow the story elements, especially when the story is mostly told through dialogue the player might easily miss if paying attention to something else. I feel that the presence of a tutorial is necessary in the game, and it has a great impact on the overall playability of the game.

3.4 Employing the question-suggestion protocol

The goal of this test was to find out how easily participants finished the tutorial and whether they enjoyed it. A good tutorial must have a high degree of overall learnability. In this study, a *learnability issue* is any problem that slows down the process of reaching the goal of the tutorial, and my presumption was that the level of overall learnability

would not be lowered by learnability issues if the players were having fun. If the players finished the tutorial efficiently, it would mean that the tutorial had a high degree of learnability, and vice versa. It was my expectation that fun and engagement would be strongly emphasized in the interviews.

Any problems encountered during the tutorial playthrough were examined in order to decide if they were serious learnability issues or not. The main interest here was not the type of learnability issue, such as whether the player understood the function of a tool or if they were aware of a functionality, but rather the impact of these learnability issues. For example, trial and error was not necessarily considered to be a serious learnability issue, as freedom to experiment was shown by Andersen et al. (2012) to be a good educational tool. These were analysed case by case. The question-suggestion protocol seemed suitable for a video game setting, as any learnability issues raised during the test play sessions could be analysed and graded together with the participant. Cases where the participant would get stuck for a longer while or need help from the moderator or from the game would be considered more serious learnability issues. I presumed that if the player was still having fun while encountering even serious issues, they would not lower the level of overall learnability of the tutorial.

The interviews were important for deciding the direction of causality between fun and learnability issues. When the players encountered learnability issues, it was possible to ask whether the player was still having fun or not, and what made the player feel that way. On one hand, enjoyable environments or an engaging story might let a player enjoy a tutorial with several learnability issues, but on the other hand, learnability issues might also make it impossible to enjoy enjoyable environments or an engaging story. However, it is also possible that a tutorial player is not having fun at all not because of learnability issues, but something completely different, such as controller issues. Therefore, it was important for this study to determine what made the participants feel fun or frustration. A separate interview after each play sessions was conducted in order to let the player freely engage with the game instead of having to pause to self-reflect. This study focuses on the effect of fun on learnability, so it was important to get a better understanding on whether the player had fun or not, and which elements of the game the player enjoyed. I felt that trying to find answers to these questions during play would have been too distracting for the players, and constantly asking if a player was having fun might have directed the player too much to think in certain ways instead of naturally reacting to the game.

To conclude, the hypothesis was that players who had fun and were engaged also learned from the tutorial more efficiently, while the players who felt less fun and engagement had more difficulties with learning. By efficient learning I mean the ability to overcome learnability issues, which include both intentional challenges set by the game itself and unintentional issues, such as trouble with the controller.

3.5 Participants

For this study I recruited six participants with different levels of gaming experience. They were all familiar to me beforehand, which made the play sessions more comfortable for the participants. I divided them into three groups. In the first group there were two participants with little or no experience at all with PlayStation 4 or action-adventure games. In the second group the participants had experience with PlayStation 4, but would not typically play action-adventure games such as *Uncharted 4*. In the third group the participants were familiar with PlayStation 4 and *Uncharted 4*, having experience with both. This way I could examine the ways in which previous experience affects the tutorial gameplay experience during the play session.

The focus on each group was on studying participant learning curves, as well as the impact of the level of engagement on overcoming learnability issues. The first group faced the challenges introduced by the PlayStation 4 controller and/or playing a genre they would usually not play, and extra attention was paid on limitations caused by inexperience with the hardware. The second group would be less affected by any hardware limitations, but were not familiar with the genre, so extra attention was paid on whether learnability issues were caused by genre conventions. Finally, with the third group the discussion would be closer to an expert-on-expert interview. The participants were familiar with video game tropes, genres, and the franchise, and were best able to communicate their attitudes and the reasons behind them. However, it had been some time since the last time they had played *Uncharted 4*, so the focus was on finding out whether they faced any learnability issues because of having forgotten gameplay mechanics and if so, how they felt about them.

The participants were all non-native speakers of English, but they were either experts in the English language or otherwise stated that they felt natural about playing in English in order to avoid any language barrier issues during play. Expertise was in most cases gained through university studies. The only background information I gathered were field of

study or profession as well as age. Age reveals something about the limits of gaming expertise, while profession was asked to determine the background as a user of the English language. The professions or fields of study were omitted from the following list in order to protect identities. Questions about gaming experience were asked during the interviews. The participants and their ages were as follows:

1. Group one:

- P1: 25
- P2: 21

2. Group two:

- P3: 33
- P4: 32

3. Group three:

- P5: 32
- P6: 25

All of the participants were either native Finns or immigrants since early childhood and represented various genders.

3.6 Play sessions and interviews

The interviews were conducted in Finnish a private home setting. The participants came one at a time, and they were not informed beforehand which game they would be playing, only that they would be playing a short tutorial section. I followed the question-suggestion protocol by staying beside the players and freely discussing as they were playing. I did not offer too much advice in order to prevent frustration, as I thought that the players might feel that they were patronised otherwise. I also tried to encourage the players to feel free to say anything they wanted by not talking out loud too much myself. However, I also wanted the situation to feel like a natural place for discussion instead of a controlled lab experiment.

First, I explained to the participants that the purpose of the test was to find out whether the tutorial section they played was a good one or not and asked them to keep this question in mind. I also asked the players to discuss their experiences during play as much or as little as they felt comfortable. I then told them that I would be sitting beside them making notes and asking questions. The participants filled out background information surveys

and forms stating that they allow the recording of the interviews and the use of their interviews for this paper. I then handed them the controller and let them decide the difficulty setting, and I described the difficulty settings to them to help them decide the appropriate one. The participants were informed that the tutorial might take something between 15 to 30 minutes, depending on the player. After that the tutorial section started and I made notes while watching them play. When the tutorial section was finished, I started and recorded the interviews.

The interview was semi-structured in that it followed a question pattern, but the participants were encouraged to say anything they thought might interest me, and I also asked questions related to specific events that occurred during individual playthroughs. According to Wilson (2014, 24–25), the semi-structured interview is best used in situations where the interviewer wants to gather facts, attitudes, and opinions, but also when certain topics have already been discussed, but the interviewer wishes to give the participant a chance to raise new issues. Wilson (2014, 26) states that the strengths of the semi-structured interview are, for example, in flexibility while also allowing comparison between interviews, and being able to address complex topics while being able to redirect conversations back into the topic. The semi-structured interview, then, was well-suited for the purpose of this study, as comparison between interviews was essential, but participant reflection on complex topics was also required. One of the most important goals of these interviews was probing for attitudes and opinions. According to Wilson (2014, 26–27), the weaknesses of the method mostly lie in situations where there are multiple interviewers, but in this case all the interviews were conducted by me.

The question pattern was as follows:

1. Freely describe yourself as a player. What is your background, do you play a lot?
What platforms do you use to play, if any? Which genres?
2. What did you think about the tutorial in *Uncharted 4* in general?
3. How did you feel about the length of the tutorial?
4. How did you feel about the on-screen instructions? Were they easy to understand?
5. How did you like the visuals of the tutorial?
6. How did you like the setting and the story during the tutorial?
7. How did you feel about the characters and the enemies?
8. How did you feel about the difficulty of the tutorial?

9. How did you feel about the controls and the controller? Did the character respond well to your commands?
10. Do you have any other comments?

The questions were freely translated into Finnish during the interview in an informal manner in order to make the participants feel comfortable about the interview situation. They were also informed beforehand that the interview recordings would be destroyed after transcribing, and actual identities of the participants would not be recorded anywhere.

4 ANALYSIS

4.1 Introduction

In this section I will introduce the results for each individual participant. I will focus on specific issues they faced, as well as how well they overcame them. I will also explain their attitudes and motivations to be able to compare them with the learnability results. In sections 4.2, 4.3, and 4.4 the different groups will be analysed in respective order. I will then examine these results in section 4.5 in light of everything I have established in the previous sections.

4.2 Group one results

In the first group, as stated before, the players had little to no experience with the gaming console or games in general. P1 experienced great difficulty with the controller and the controls, and stated almost complete lack of experience with video gaming. P1 did not seem to enjoy playing very much, and also stated that they would probably not play the game again, partly due to lack of interest in video games in general. However, P1 also expressed disinterest towards the characters and the story of the game, stating that they would have rather just played a game rather than follow a plot. It is possible that P1 would have learned much more efficiently in a game of some completely different genre, but at least in this case, the player had many issues and had great trouble overcoming them.

For example, P1 had trouble finding the right way to go, as they often failed to follow the example set by Nathan's brother. Sometimes P1 also stated that the on-screen instructions disappeared too quickly, and they failed to read the texts and button prompts. The biggest problem was that P1 had trouble using the PlayStation 4 controller, which may have made it much more difficult to follow directions given by Nathan's brother. P1 was following the events of the story and the conversations, but as stated before, was not interested in them. P1 managed to finish the tutorial, but I had to intervene at least once. To conclude, P1 had many issues along the way, and was suffering from the same problems at the end of the tutorial as at the beginning, so relatively little learning took place in the session. Even though P1 never stated any frustration and felt that the difficulty was fair, they were not having too much fun with the game due to both lack of experience and interest, so the interview supports the hypothesis.

P2 was a different case. They had some experience with car racing games on another console, but no experience with a PlayStation 4 or the genre. Still, P2 had much trouble with the game. They had a good command of the controller, but often did not know which way to go. There was plenty of trial and error, as P2 jumped to their death several times in a row attempting to cross a gap that was off limits, and this process happened at least twice. However, there was plenty of progress, as well. P2 learned a lot along the way and overcame any issues and hindrances.

Interestingly, even though in the interview P2 expressed some frustration with the story and instruction timing, they were also engaged with the story. During play, P2 often presented ideas and theories about what was going on with the characters and their lives, even suggesting a paranormal story, and stated that they were keenly following the conversations. Some of this immersive interaction with the game was the result of being freely able, to some extent, to look around in the environment and explore. Frustration with the dialogue stemmed not from the existence of the dialogue, but rather from judgment towards the characters' actions. This shows a level of immersion and engagement. Despite dying multiple times, P2 finished the tutorial section and learned plenty of *Uncharted 4* conventions that would come into play later on in the game. To conclude, P2 felt engagement and fun, overcame any issues, and learned from them, so the session also supports the hypothesis.

4.3 Group two results

The second group consisted of participants that had some gameplay experience, even with the PlayStation 4 console, but who also had little experience with the genre. In the case of P3, this lack of genre experience especially seemed to come into play. They had little trouble finding the right buttons, and felt comfortable with the controller, but had trouble finding the way, using ladders and other climbing mechanics, and getting the character to jump in the right direction, for example. These issues were time-consuming, which might have been rather frustrating for some players, but P3 had little complaints about the tutorial, and eventually figured out the gameplay mechanics and conventions.

P3 was also quite engaged with the story and the setting. They compared it with movies and other video games, stated that they would be interested to learn more about the characters, and analysed each scene and setting in detail. P3 said that the overall score for the tutorial would be “pretty good”, and that they would love to see more of the game

based on that. This shows us that even though they initially had plenty of trouble, they were both having fun and managed to learn during the tutorial, which supports the hypothesis.

P4 had gaming experience, but had even less experience with the genre than P3. However, they were very comfortable with the controller, and quickly learned how to control Nathan. However, P4 also had trouble finding the right way, and it often took quite some time to advance. P4 was also not very interested in the overall story of the game or the tutorial, and did not really care about who they were shooting. However, P4 liked the difficulty of the game, and had chosen “hard” difficulty for the tutorial. This kept them engaged throughout the tutorial, and P4 stated that there should have been even more challenge in it. They also stated that they enjoyed not being given too much directions, but rather wanted to figure out what to do alone. To conclude, P4 had some trouble with the game but learned rather quickly, and despite lack of interest in the story, they were quite engaged with the gameplay. Therefore, this case also supports the hypothesis.

4.4 Group three results

The final group consisted of players who were very familiar with the console, the genre, and even with *Uncharted 4*. It had been a rather long while since P5 had played *Uncharted 4*, which led to some minor problems. However, there were no serious issues, which was expected. The minor problems were mostly caused by having played other games recently and having trouble adjusting to this game. P5 was enjoying the tutorial, and only had very minor complaints about it. They did not like the scenes where control was taken away from the player as much as the rest, but also felt that they were rather well justified in this case. They easily found the right way from memory, and they also quickly mastered all the gameplay mechanics that were introduced in the tutorial. To conclude, there was some minor learning taking place, and P5 was enjoying the tutorial experience even after playing it before. The data here is not as strongly supportive of the hypothesis as in the previous groups, but it is also certainly not in conflict with it.

P6 also had few issues, but there were more of those than in the case of P5. P6 sometimes had trouble finding the way or finding the right buttons, but quite quickly overcame those issues. They were also very much enjoying the game and the tutorial. P6 was very much engaged with the story, the characters, and the setting. They were also frequently talking to the characters in the game, which suggests quite a deep level of immersion and

engagement. The only complaint P6 had about the game was that it should have been harder, but also suggested that they could have chosen a harder difficulty. P6 learned something from the tutorial, although some of it came from memory, and overcame any issues they faced. This case also supports the hypothesis.

4.5 Analysis summary

The interviews clearly showed that the players who had fun and were engaged also learned more efficiently from the game. It is to be noted that there was only one case in which the participant was not enjoying the experience, and with a bigger set of participants I might have found more cases such as that one. However, I found that even though the other participants had different reasons, they were all somewhat engaged with the game. For some, the reason was the setting, the characters, and the story. For others, it was the challenge. For some, it was the cinematic nature of the game, or the overall production quality. Whatever the reason, the engaged players were more closely following what was happening on the screen, and more efficiently absorbed hints and instructions.

The types of issues the players faced were often related to finding the right way or the right button combination. Notably, in *Uncharted 4* the right way is often shown through dialogue or Nathan's brother's in-game actions, and learning from them is closely related to engagement. Lack of interest towards the dialogue meant that some of the instructions were accidentally ignored. The controls are often presented with on-screen button prompts, but they may be easier to miss. Sometimes they may simply be overshadowed by a background the player happens to be looking at, or the player may be too engaged with other in-game elements that they only notice the prompts when it is too late. However, no participant searched the on-demand help for controls from the menu.

Freedom for trial and error was a warmly welcomed factor among the players who had more issues. One participant stated that they did not mind dying, as they would be able to continue from the same spot. In another case, freedom to explore strengthened immersion and engagement with the setting. In the action-adventure genre, immersion seems to be a driving force behind most of the learning. The *Uncharted 4* tutorial works in this genre, because it presents a powerful, story-driven introduction to the world, the characters, and the setting, and ties the in-game events with tutorial instructions often seamlessly through dialogue. The tutorial is not as clearly separate from the rest of the game as in some other

cases, but the interview results suggest that this was a very efficient design choice. The aim of this study was to understand the importance of fun in a video game tutorial, and the results suggest that it is indeed highly important, although the definition of fun will vary between players.

5 CONCLUSION

The aim of this study was to study the effect that fun and engagement have on learning in the specific context of video game tutorials. The hypothesis was that a player that is feeling fun and engagement also learns more efficiently from the tutorial. Previous studies have shown that fun is an important aspect of learning, and a video game tutorial is a special case of an educational situation within the field of usability and playability. Also based on previous studies, I understand playability as a combination of usability, functionality, gameplay, and goals, where fun and engagement fall under usability. The method of the study was to arrange play sessions of *Uncharted 4* with six participants from different gaming backgrounds and conduct interviews during and after the sessions. The results of each session and interview were then analyzed based on the established views of playability, usability, and learning.

The results of this study support the hypothesis and suggest that this is indeed the case. The players that were having fun were learning quickly, while the one that was not enjoying the game very much also had great trouble learning. This was measured by paying attention to issues the players had initially, and then seeing whether those issues would repeat during play or be resolved by learning. The interviews revealed that in this case, the story and setting were quite important for engagement, and the style of simultaneously giving tutorial instructions and telling the story worked very well in favor of the tutorial. Notably, *Uncharted 4* is a very story-driven game, and this style might not work as well in a different type of game.

The strengths of this study lie in the personal interview feedback from the participants in a comfortable situation, as well as in the different levels of expertise from the participants. The weaknesses lie in the limited scope, as this study is only focused on one game in one genre in a vast realm of research opportunities, and with a rather limited number of participants. For further study, I would suggest studying different genres and gaming systems to establish differences and special cases of learnability. Some genres do not need an engaging story, and in many cases it is not expected at all. Different demographic groups could also be separated in another study to see how they affect the results. Are there notable differences between how different genres respond to tutorial instructions? Are there generational characteristics to speak of? How to make tutorials more accessible for people with special needs? It would also be very interesting to study a serious game, such as one that helps cope with serious illness. One can hardly expect fun and

engagement from them, but if there are tutorial elements or learning in them, how are they made efficiently? What kind of tutorials are the best for each type of player or a genre?

The results of this study show us that from a game design point of view, learning is an important phenomenon to master, and that the educational nature of a tutorial should not be overlooked. The tutorial is something of a display window into the game itself, and getting the player engaged enough to overcome issues that appear during play may very well make the player decide whether to continue playing or not. Tutorials could be customizable for different types of players, for example, and should always suit the genre, the setting, and the storytelling conventions of the game. The implications of this study might also be applied to education. Educational games are in no means a new phenomenon, but they are difficult to master from a game design point of view. This study has shown that with an engaging setting and storytelling, learning can happen almost accidentally. However, what is fun and engaging for one person is not the same for everyone, and different types of players should be catered to in education, as well. While one student will enjoy a story-driven approach such as *Uncharted 4*, another one might learn far better from a puzzle game with little or no story at all.

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