Master Degree Project

EFFECTS OF INTERACTIVITY ON NARRATIVE-DRIVEN GAMES:
A Heuristic Approach For Narrative-Driven Games

Sara Nil Acarsoy

Abstract

In narrative-driven games, the story is an essential part of the gameplay, and understanding the story is of great importance. Given that what separates this genre from other storytelling media is interactivity, this thesis focuses on the elements in narrative-driven video games that effects the players' perception of narrative through interactivity. Using players' likes and dislikes from their previous experiences in narrative-driven games, this thesis aims to develop a heuristic approach for interactive narrative elements that offer the narrative through players' input to the game's system and create an effective gameplay experience that delivers the story to the players.

Keywords: Video game narrative, storytelling, interactivity, narrative-driven games, storygames

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1. Introduction

Storytelling happens in many different ways within different media types, such as orally, visually, and written. The most popular media used in today's world for storytelling are books, movies, and TV series. Along with these, video games are starting to reach a higher number of audiences. According to Newzoo, a website for game analytics, there were 2.69 billion gamers worldwide by the end of 2020. By 2021, it is expected to be 2.81 billion (Wijman, 2020).

The most significant difference between the traditional storytelling media and games is the interactivity element and interactive narrative; in video games, the audience interacts with the media differently and, in some cases, decides how the story will take place. Taking these into account, lately, video games are becoming a dominant storytelling medium as they are starting to influence the other mediums (Aarseth, 2102). Further on, interactive narrative is how the player affects and influences the provided story by either playing a character in the game's virtual world or directly interfering with the world (Riedl and Bulitko, 2012). In which the player's decisions can have a direct impact on the storyline and structure. It can also add more depth to a story and helps with experiencing the story to a different degree.

It can be argued that video games can immerse the player into virtual space by combining all the narrative techniques books and movies use and even adds more to those by using interactive narrative. Furthermore, they can offer a better opportunity for storytelling and narrative as the players take part as the main character. To explain the comparison between traditional storytelling mediums and games clearly, it can be said that the audience has a 3rd person view on written literature; in stage arts such as cinema and theater, the audience has a 2nd person view on the subject and observes what is given to them, but in games being the character itself, the audience affects the subject directly (Lee, 2013). On the other hand, while games offer such unique experiences, they also require additional notions, in particular providing an immersive environment, challenges, and entertainment (Desurvire and Chen, 2004).

The increasing number of gamers suggests that the game development industry has become very competitive and creates a challenging environment for game developers to step forward within the industry (Rajanen and Rajanen, 2018). In order to create successful games, game designers should have guidelines and methods that are approved by the players, as players decide on a game's success within the industry. Having such guidelines or game design patterns can help game designers with making design choices during a game's design or use them as inspiration (Holopainen, 2011).

Although it is argued that video games do not require a story but mere gameplay and mechanics, there are different opinions about this subject; in Interactive Storytelling for Video Games, the authors argue that:

> "Man's natural desire to make sense of his world is so strong that if game designers abdicate all authorial responsibility and try to create a game without a story, players will impose a story upon the game anyway, regardless of whether the designers had one in mind." (Lebowitz and Klug, 2011, p.9)

On the other hand, the written or spoken narrative is not the only way to deliver the story to the players. Graphics and audios are also supportive elements in telling a story. These elements are essential in terms of setting the atmosphere and preparing the player for the upcoming adventures. The visual and auditory elements help shed light on the game's story and tell some parts without the written narrative.

The narrative and story of a game gives sense to the gameplay and the graphics (Arsenault, Côté, and Larochelle, 2015). Gameplay, story, and art shapes and directs each other. The story's setting has a significant impact on the art used in a video game, such as the time the story takes place directly affects the graphics, environment, symbolism, and art style. If these mentioned elements are used suited to the narrative and story, the game experience will be more realistic regardless of the art style (Hölttä, 2018). Such a rule also applies to the music in video games. In some cases, narrative music is used to tell a story in video games. It can be a side story that tells a different part of the game's storyline, or it can intensify the story that is already being told with the gameplay. Using these effects, video game music can help enhance the gameplay and add more to the narrative and tell a part of the story.

Games carry great potential for being an effective storytelling medium; however, there are still aspects video games fail. As video games are required to be interactive by nature, they are no different from movies or digital novels without interactivity. Considering this, some stories are not adequately adjustable to video games (Lebowitz, 2009).

Based on the quote above by Lebowitz and Klug, it can be argued that every video game harbors a level of story within them. However, some games are not developed to give a story to the players. These kinds of games are not the games that are discussed in this thesis. Further on, narrative and storytelling are an essential part of games, and the research in this thesis is conducted by focusing on the games that aim to deliver a story to the players through interactivity. Current literature has many different terms for these interactive stories, mainly narrative-driven games, story-driven games, and storygames (Reed, 2017). In this thesis, such games are referred to as "narrative-driven games" and can be defined as; systems that offer a fun gameplay

experience and give importance to the narrative and story by allowing interaction and shaping the system with the primary purpose of telling a story.

Narrative-driven games are a massive part of the industry, with the main aim of telling stories. Some narrative-driven games receive higher ratings than others, showing that players have particular preferences to enjoy a game. Moreover, the aim is to identify the player preferences on elements that affect their perception of narrative. Specific usage of these elements might not be favored by the players in narrative-driven games. Based on these, this thesis aims to find which usage of these elements gives the best story experience for the players.

This thesis discusses various narrative methods and gameplay elements in narrative-driven video games that help with telling the story. The methods that are being overviewed have been handpicked through the literature for having exciting ways to handle the storytelling. The selection of these elements has been made based on both interactivity and narrative delivered to the players.

To summarize, this thesis focuses on the troubles and advantages of certain storytelling elements and usage of these elements in video games that aim to contribute to the perception of the narrative of the players. The interest of this thesis is as follows;

1. Using interactive elements of video games to create an enjoyable narrative experience for the players in narrative-driven games

2. Creating a narrative heuristics based on players' preferences to follow before or during a game's production

Throughout this thesis, the term "narrative element" will refer to any feature in a narrative-driven video game that affects the player's perception of narrative and delivers a part of the story. Further on, the narrative elements that deliver the narrative through the player's input will be referred to as "interactive narrative elements."

1.1 Purpose

There are different methods to implement interactive narrative elements in a game. Similarly, some games does not feature some of them, such as customization, cutscenes, or achievements. In some cases, such as environmental storytelling, players might not be aware of the narrative given to them or might not want to receive the narrative delivered to them; other examples might be not reading the written dialogues or skipping the cutscenes.

There are many different ways to design a game, and some of them will inevitably give a better narrative experience to the players than others. While literature suggests established methods for these elements, it is essential to know players' stand on these elements. Furthermore, it is essential to understand further the best ways to implement these elements in a game to deliver a better narrative. It is crucial to see if these elements give the intended experience to the players or players are not agreeing with some usage of these elements. The presence of lower-rated games suggests that some games are not meeting the players' wishes. This thesis argues that such cases in narrative-driven games can be caused by poor delivery of the narrative through the interactive narrative elements, as the story is the most crucial aspect of a narrative-driven video game. Therefore, some narrative-driven games might be using interactive narrative elements or their implementations that the players do not enjoy. Furthermore, during the design process and making the decisions on telling the story, in order to deliver the story better, designers should take what players like into account. In other words, it is crucial to learn more about players' preferences to give them better gaming and narrative experiences.

As mentioned in the Introduction chapter, the game development industry has become a challenging and competitive industry for game designers to stand out. In order to reach this goal, the literature suggests using heuristics to evaluate the usability of games (Rajanen and Rajanen, 2018). Further on, Rajanen and Rajanen argue that current heuristics are "too general to suit the specificity of different game genres (Rajanen and Rajanen, 2018, p. 159). This thesis focuses on the narrative and narrative-driven games where the story is in the foreground. Therefore, creating heuristics for this genre requires focusing on narrative and their delivery through the system with players' input and interactivity.

It is unavoidable that each game will use the interactive narrative elements differently. However, game heuristics suggest that there can be guidelines for game designers to follow to give a better experience for the players. Research done by Desurvire and Chen (2004) made players rate High and Low rated games on 116 potential guidelines for game design. It is noted that forty-eight of the guidelines differed significantly relative to the game rankings. It is discussed that these guidelines can help game designers improve the quality of their games. This research suggests that starting from the initial game design, throughout the development process, and during the game's release, following guidelines and heuristics on game design can help game designers create a better gameplay experience for the players (Desurvire and Chen, 2004). Therefore, creating such guidelines on interactive narrative elements can also help designers create better and higher-quality narrative-driven games.

In essence, the presence of lower-rated narrative-driven games suggests that there are design issues and features that players do not like. Having guidelines that aim for a better narrative experience concerning the elements used to deliver the narrative can minimize these issues. As the players decide which games are "good" or "bad," it is essential to get feedback from players. As discussed, the most crucial aspect of games for the story is interactivity; it is essential to focus on the usage of narrative elements that makes games interactive. Using sets of principles that focus on players' interaction with the games, video games can create exceedingly enjoyable, immersive, and challenging experiences for the players (Desurvire and Chen, 2004). In light of these, creating a solid ground and set of principles that do not limit the designers is essential.

There have been various approaches to setting guidelines, namely heuristics. Heuristics are guidelines used to evaluate the usability and playability of a game (Desurvire, Caplan, and Toth, 2004). The heuristics approach has been discussed in detail in the following chapter, and this thesis aims to create heuristics to set guidelines on the discussed elements from the previous chapter.

To explain shortly, the fact that some narrative-driven games receive higher ratings than others suggests that players do not like some elements or the way they are used in narrative-driven games. As narrative is delivered through interactivity in this genre, it is important to look into the elements that deliver the narrative and understand what and how they offer the narrative. Further on, it is important to understand if the players enjoy these. Based on players' likes and dislikes, creating guidelines and applying them in a narrative-driven game can help with creating a better narrative experience for the players in narrative-driven games.

1.1.1 Previous Research

The following focus on the previous research made on usability and playability of the games based on measuring the user experience. Heuristics can be explained as "rules of thumb that describe the affordances of the users to a particular system" (Hochleitner, et al., 2010, p.5) and main reason for using game heuristics is for setting the methods for estimating the "state of flow that a game offers to the player" (Hochleitner, et al., 2010, p.10). Researchers have defined heuristics as "effective for analyzing the player experience" (Aker, Rızvanoğlu and İnal, 2020, p. 128). Thomas Malone was the first to introduce heuristics usage for the evaluation of games (Hochleitner, et al., 2010). Malone used heuristics mainly for educational games (Malone, 1980). Malone also created a framework "to serve as a checklist of heuristics for designing enjoyable user interfaces" (Malone, 1982, p.3).

Through a literature review, it can be seen that current heuristics are aged and might not be on par with the advances in technology and game industry. Although, these heuristics are still widely mentioned and accepted in the recent literature (Aker, Rızvanoğlu and İnal, 2020), new research with the improved gameplay technology is necessary. Moreover, there is a lack of heuristics that focus on the elements used in video games. Thus, this research aims to fill the such void and create heuristics on the usage of interactive narrative elements for creating a better story delivery for games based on the feedbacks from players.

There have been several heuristics approach on video games have been proposed, while some discussed similar areas each had diverse details (Hochleitner, et al., 2010). Such as, some discuss user interfaces, game usability, and heuristics that evaluate game mechanics and interfaces (Malone, 1982; Jerome, Howey and Billings, 2007; Pinelle, Wong and Stach, 2008; Federoff, 2002; Hochleitner, et al., 2010; Desurvire, Caplan and Toth, 2004; Desurvire and Wiberg, 2009). Moreover Rajanen and Rajanen made a research on views and practices of game companies in relation to heuristics and application of them in their games. In this research, majority of the participants stated that heuristics should be specific to the game genres or each new game (Rajanen and Rajanen, 2018).

Researchers used different methodologies to create heuristics approaches. First game development heuristics has been proposed by Malone in 1982 on instructional games (Malone, 1982,). Federoff studied members of a game development team for 5 days and interviewed the members for usability principles (Federoff, 2002). Therefore, the research was not made considering the feedbacks from players. Furthermore, it is argued that these heuristics are "slightly superficial and sometimes do not cover the entire extent of facets offered by video games, especially when considering the capabilities of state of the art video games" (Hochleitner, et al., 2010, p.6) and not applicable to the all game genres.

Desurvire, Caplan and Toth used a new game that is at the beginning of its development process in order to evaluate their heuristics (HEP) empirically which is based on Federoff's research in 2002 (Desurvire, Caplan and Toth, 2004). They concluded that their research is helpful in early game design and suited to finding already existing problems, this heuristic approach (HEP) can be seen in figure 1 as an example of the current heuristics in the literature. HEP heuristics has been found "useful but only in limited circumstances" (Desurvire and Wiberg, 2009, p. 558). Further on, this limitation has been explained to caused by vastness of games caused by game genres, game delivery and more. In 2009, Desurvire and Wiberg improved the HEP heuristics with more detailed and refined guidelines, Game Playability Principles (PLAY). PLAY heuristics are developed for three different game genres: Real-Time Strategy (RTS), Action Adventure and First-Person Shooters (FPS). They

evaluated the usability of these principles by using three sets of questionnaires that share some common and some genre-specific questions. They conducted the research through a sample groups' experience on specific games (Desurvire and Wiberg, 2009).

Pinelle et al., created a set of Heuristics through game reviews on GameSpy and GameSpot which are two popular gaming websites. They conducted a research where ten participants evaluated their heuristics by playing a PC game. These heuristics have been exclusively developed to address multiplayer feature of network games and provides an extensive coverage for major game genres (Pinelle et al., 2009).

As mentioned previously, Federoff compiled the mentioned list of heuristics based on a research made in a game development company with minimal input from the players, furthermore widely mentioned HEP heuristics followed these heuristics set by Federoff (Desurvire, Caplan and Toth, 2004) and PLAY heuristics followed HEP (Desurvire and Wiberg, 2009). This shows that during the process of creation of these heuristics, players' preferences was not the first consideration to make. However, this research aims to create the heuristics by taking the players into account and taking their previous experiences into consideration. Further on, on the contrary of the previous research where the experiments are conducted to evaluate the usability of heuristic through a sample groups' experience on a specific game or a specific genre, this thesis does not conduct a research to evaluate the heuristics as they are gathered through players' comments and feedback. The heuristics gathered in this research also focuses on a specific genre based on the remarks made in previous research that heuristics should be broader and should be genre specific (Desurvire and Wiberg, 2009; Rajanen and Rajanen, 2018).

		Heuristic and Description
Game Play		
	1	Player's fatigue is minimized by varying activities and pacing during game play.
	2	Provide consistency between the game elements and the overarching setting and story to suspend disbelief.
	3	Provide clear goals, present overriding goal early as well as short-term goals throughout play.
	4	There is an interesting and absorbing tutorial that mimics game play.
	5	The game is enjoyable to replay.
	6	Game play should be balanced with multiple ways to win.
	7	Player is taught skills early that you expect the players to use later, or right before the new skill is needed.
	8	Players discover the story as part of game play.
	9	Even if the game cannot be modeless, it should be perceived as modeless.
	10	The game is fun for the Player first, the designer second and the computer third. That is, if the non-expert player's experience isn't put first, excellent game mechanics and graphics programming triumphs are meaningless.
	11	Player should not experience being penalized repetitively for the same failure.
	12	Player's should perceive a sense of control and impact onto the game world. The game world reacts to the player and remembers their passage through it. Changes the player makes in the game world are persistent and noticeable if they back-track to where they've been before.
	13	The first player action is painfully obvious and should result in immediate positive feedback.
	14	The game should give rewards that immerse the player more deeply in the game by increasing their capabilities (power-up), and expanding their ability to customize.
	15	Pace the game to apply pressure but not frustrate the player. Vary the difficulty level so that the player has greater challenge as they develop mastery. Easy to learn, hard to master.
	16	Challenges are positive game experiences, rather than a negative experience (results in their wanting to play more, rather than quitting).
Game Story		
	1	Player understands the story line as a single consistent vision.
	2	Player is interested in the story line. The story experience relates to their real life and grabs their interest.
	3	The Player spends time thinking about possible story outcomes.
	4	The Player feels as though the world is going on whether their character is there or not.
	5	The Player has a sense of control over their character and is able to use tactics and strategies.
	6	Player experiences fairness of outcomes.
	7	The game transports the player into a level of personal involvement emotionally (e.g., scare, threat, thrill, reward, punishment) and viscerally (e.g., sounds of environment).
	8	Player is interested in the characters because (1) they are like me; (2) they are interesting to me, (3) the characters develop as action occurs.
Mechanics	1	Game should react in a consistent, challenging, and exciting way to the player's actions (e.g., appropriate music with the action).
	2	Make effects of the Artificial Intelligence (AI) clearly visible to the player by ensuring they are consistent with the player's reasonable expectations of the AI actor.
	3	A player should always be able to identify their score/status and goal in the game.
	4	Mechanics/controller actions have consistently mapped and learnable responses.
	5	Shorten the learning curve by following the trends set by the gaming industry to meet user's expectations.
	6	Controls should be intuitive, and mapped in a natural way; they should be customizable and default to industry standard settings.
	7	Player should be given controls that are basic enough to learn quickly yet expandable for advanced options.
Usability	1	Provide immediate feedback for user actions.
	2	The Player can easily turn the game off and on, and be able to save games in different states.
	3	The Player experiences the user interface as consistent (in control, color, typography, and dialog design) but the game play is varied.
	4	The Player should experience the menu as a part of the game.
	5	Upon initially turning the game on the Player has enough information to get started to play.
	6	Players should be given context sensitive help while playing so that they do not get stuck or have to rely on a manual.
	7	Sounds from the game provide meaningful feedback or stir a particular emotion.
	8	Players do not need to use a manual to play game.
	9	The interface should be as non-intrusive to the Player as possible.
	10	Make the menu layers well-organized and minimalist to the extent the menu options are intuitive.
	11	Get the player involved quickly and easily with tutorials and/or progressive or adjustable difficulty levels.
	12	Art should be recognizable to player, and speak to its function.

Figure 1. Example heuristic approach called HEP suggested by Desurvire et al. (Desurvire, Caplan and Toth, 2004)

1.2 Overview and Structure

Today's video game industry uses elements that give narrative experience repetitively in similar forms and methods during game design. The main goal of this thesis is to understand how these elements affect the story experience given to players, how effective they are at delivering the story to the players, and what are players' opinions on the usage of these elements. To this end, the research aims to understand the players' preferences on narrative styles in video games and what they think is a better way to use narrative elements. These preferences are aimed to reflect on effective storytelling in video games.

In narrative-driven games, the narrative is delivered through interactions of the player with the game system. Many elements provide an interactive environment for the players. The following chapter, Theoretical Background, looks into different narrative elements from video games, mainly focusing on interactive elements and methods used in narrative-driven games. Under subheadings of narrative styles, different interactive elements of video games are discussed theoretically. These discussed elements are those which provide an interactive environment for the player while also have a job of delivering or affecting the narrative. These subheadings aim to understand how do these interactive narrative elements affect players' perception of narrative.

After the theoretical background has been presented to the reader, Chapter 3 discusses the problem within the mentioned elements and explains the research this thesis conducts to overcome these problems. The Method chapter explains the methodology in-depth, and the Survey chapter explains which questions have been asked to the participants and why those questions have been selected to be asked. Further on, Chapter 4 analyses the results of the survey and delivers heuristics based on this. Finally, Chapter 5, Conclusion, reminds the reader of the main aim of this research, how this is achieved, and discusses the thesis' strong and weak points while giving suggestions for future research.

The thesis is structured first to explain why video games can act as a suitable storytelling medium, which elements are supporting this idea, and explores these elements thoroughly from different perspectives. Later on, a study has been conducted to discuss these elements with players, which kind of narrative elements are help with the selection of games to play and players' favoritism among the usage of video game elements.

2. Theoretical Background

Explanation of the word "narrative" differs for each source in the literature. The usage of narrative in this thesis is defined as "how the story is told by using elements offered by the game's structure, gameplay, audio, and visuals". Therefore, narrative is the method used in video games to tell the story while giving a gameplay experience. The storytelling can happen in different ways by differing levels of interactivity offered to the players. From the most traditional to the most interactive, the spectrum of interactivity in storytelling is as follows: Fully Traditional Stories, Interactive Traditional Stories, Multiple Ending Stories, Branching Path Stories, Open Ended Stories, Fully Player Driven Stories (Lebowitz, 2009; Solarski, 2017). In comparison to books and movies, where most of the storytelling is on the traditional side, video games are able to use different levels of interactivity except fully traditional since by nature, video games require a level of interaction (Lebowitz, 2009).

Current literature on interactive narrative, mainly focuses the research on the mentioned storytelling methods and differences between them (Lebowitz, 2009). However, this thesis and research focus on the individual elements that deliver the narrative by giving players opportunities to interact with the game system, and how these elements affect the player experience, and what are the players' opinion on usage of them. The elements that give any kind of narrative experience, or deliver the parts of the story are referred as narrative elements in this thesis. Further on, within these elements some deliver the narrative by making the players interact with the game, such as dialogues, are referred as interactive narrative elements. The latter group, interactive narrative elements,

Current video game industry harbors games that focus on and aims different goals. Narrative-driven games are "a playable system with units of narrative where the understanding of the interconnectedness between story and system is crucial" (Reed, 2017, p. xiii). Therefore, this kind of games aims to have a rich narrative that is presented to the story and delivering the story is a crucial key point to practice.

As mentioned in the background, this thesis aims to keep narrative-driven games at a focus and identify their problems and strong points. Moreover, in light of these, the thesis aims to develop heuristics to consider while designing games that have a rich narrative. As the study focus on narrative-driven games, therefore the players mentioned in this research are people who allocate some time to gaming and who play games with rich narratives.

Video games are unique from other storytelling mediums as a result of their interactive nature. This interactivity allows the player to shape the narrative as they

like and contributes to the game with a different narrative approach than traditional storytelling tools. Games are able to tell a story with different narrative elements but also along with those used in traditional media. There are many elements that can be used as such, for example, the most widely used elements are; customization of the player's characters, interaction with other characters or directly with the storyline, and achievements to fulfill the goal to ensure that player will continue. Thinking about these only as positive elements are of course not correct, there can also be negative effects of on a game. Where the player has direct input and effect on the storyline can cause missing some narrative elements. The negative effects that might be caused by certain narrative elements are discussed more under relevant headings.

It is important to take into account that game narrative is not only about the story but also how it is presented to the player with different components. Contrary to the traditional media, a game promises interactivity and activity for the player. This is provided by plot, sounds, graphics, and gameplay. These elements make the player part of the game and story. The following sections are looking into important narrative elements, mainly with a focus on interactive narrative, and continues with effects of narrative music and narrative art.

Research made by Josiah Lebowitz compares storytelling methods between media. The research aims to find the positive and negative aspects and potentials of different storytelling mediums. The thesis compares print, film, and video games and examines the usage of narrative methods. A study in the shape of a survey has been conducted to see participants' preferences in different mediums with the main focus on video games as they are "by far the best suited for player-driven storytelling" (Lebowitz, 2009, p.2). It is also argued that games, thanks to interactivity, will become the "norm" or overshadow the traditional media. Lebowitz does not focus on narrative elements separately as it is aimed in this thesis; however, it reviews player preferences in video games through a survey and points out the critical aspects for the players, which is also the aimed method for creating guidelines in this thesis. Lebowitz has conducted an extensive survey to research the preferences of players. The survey questions focus on players' actions during gameplay, such as if players are paying attention during dialogues and cutscenes or skipping them; if the players prefer games that have a story and how does the story continue; if the story has one ending, more than one, two or more endings that the players can choose from or players prefers games that can create their own stories. Other questions include opinions on interactive fiction such as *Choose Your Own Adventure series*, *The Cave of Time* (Packard, 1979), and interactive movies or series such as *Black Mirror: Bandersnatch* (Netflix, 2018).

In the research mentioned above, with a total of 180 respondents, 70% responded that they pay close attention to the dialogue and the cutscenes, less than 10%

responded that they pay little to no attention to those. Based on this percentage, the aforementioned argument of "story is not important for games" can be argued in the cases of games with stories. 70% of the participant saying that they are giving importance to the dialogue and story, requires the narrative to be effective and satisfactory for the players. It is also noted that based on the answers, good stories are equally engaging to every gender and every age group (Lebowitz, 2009).

The result of the mentioned research suggests that if a story is present, with a huge margin, players tend to follow it. Interesting stories and engaging gameplay create a good experience for the players, which they tend to explore further. The below graphic, figure 2, shows the participants' preferences based on their favorite games. Interactive traditional story is the most preferred genre among the participants. This suggests that players are giving importance to the interactivity games offer and interactivity is an important feature of video games that needs to be evaluated further.
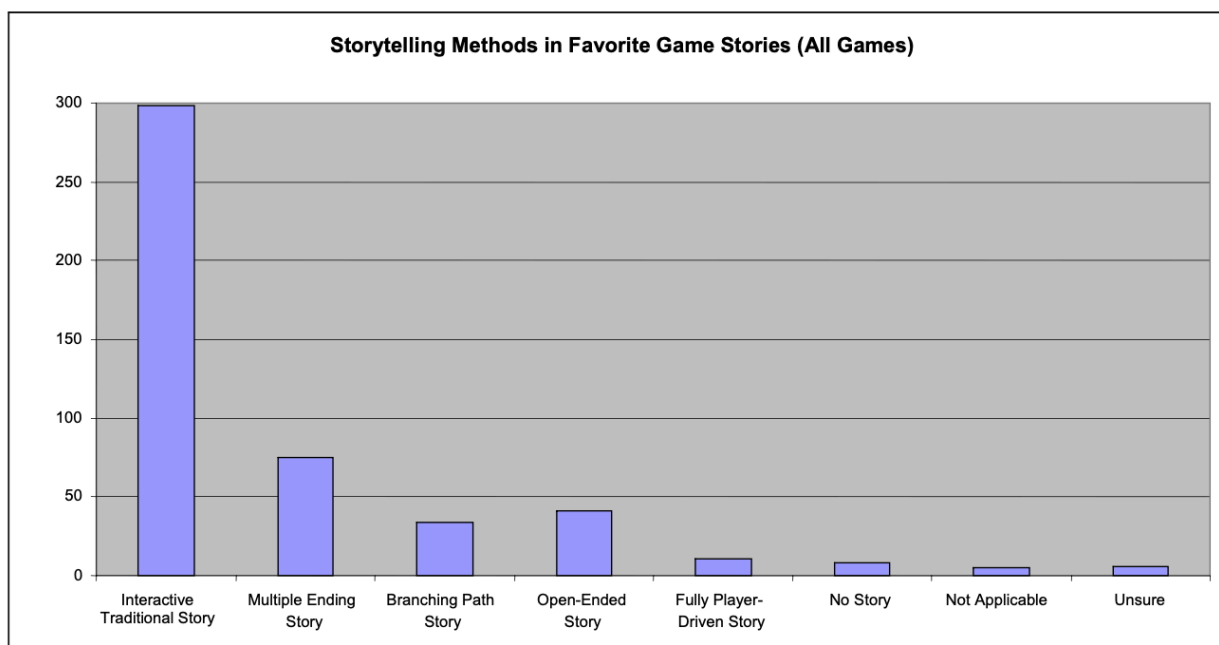

Figure 2. Results from Lebowitz's research; the players have answered their favorite games, and above graphic shows the breakdown of the favorite games to their storytelling methods (Lebowitz, 2009).

2.1 Narrative in Video Games

Video games have various forms, while some of them focus on the gameplay other focus on delivering a narrative and use the game as a storytelling medium. The latter, narrative-driven games are a unique example of storytelling mediums. Along with delivering a story, these types of video games puts the audience to the main character

perspective and allows them to affect the story through the inputs. The continuous and immediate inputs creates a captivating involvement for the player (Galyean, 1995). This suggests that interactivity can create immersion for the platform it is applied. As in Lebowitz's research in figure 2, players have reported higher interest in video games that offer more interactivity along with the narrative (Lebowitz, 2009).

The games that are designed for telling a story, in other words narrative-driven or story-driven games are, in essence, an assembly of various of traditional artistic disciplines that are assembled to serve as a game (Solarski, 2017). These disciplines such as visual arts, animation and music, are used as narrative techniques within the games to support the narrative. It is important to notice that video game narrative is not only told through the written or spoken narrative, but there are many elements that help to deliver the story.

In narrative-driven games, the actual storytelling happens during the gameplay such as in levels and quests. Therefore, in order to ensure that the story is delivered to the players, continuation of the story is important. These levels in narrative-driven games can be considered as chapters of the story and if these levels do not complete each other, the narrative can be disorganized. Evan Skolnick suggests that, for not experiencing such problem, narrative experts and level designers should work closely for the levels to move the story and characters further (Skolnick, 2014).

To summarize, video games have a great potential for storytelling with their substantial amount of features. These features and methods are prevalent in many narrative-driven games and unveil the parts of the story by affecting players' perception of the story. Therefore, it is vital to use them effectively to captivating the player and helping through the process of telling the story. For understanding what is affecting players positively in terms of narrative, it is crucial to discuss players' opinions on these and adopt a user-centric design. A better comprehension of the player experience is essential for identifying the players' interaction tendencies and allowing the game designers to produce games that match the players' expectations and demands (Aker, Rızvanoğlu and İnal, 2020).

2.2 Interactive Narrative

In comparison to traditional storytelling media, games are a unique storytelling medium, making the narrative interactive adds the stories a level of depthless and richness to storytelling (Galyean, 1995). An interactive environment offers players to decide the outcome of a story. Even though there are interactive books and movies, such as *Black Mirror: Bandersnatch* (Netflix, 2018), games are able to offer these interactivity in a more immersive environments. The development, writing and

production processes differ between video games and other interactive media. The interactive nature of games differ game writing from a writer in a traditional media (Engström, 2020). Since interactivity is what drives the story of a game, therefore a game writer has a different role than a movie writer or an author, the writer does not lead the story but should follow the rest of the design team (Engstörm, 2019). It is important for game designer to take into consideration of composition of story structure and gameplay. All parts of a game development team should have a common understanding for the rules of the game and continue their production within those borders.

Being a unique form of media, video game writing has unique issues and problems that are not present when writing a traditional story. These issues regarding game design are mainly a result of interactivity. Although the interactivity creates these challenges for the game writer and design team, the outcome for the player is on the positive side; the interactivity element increases the player's engagement and allows the player to shape the story (Lebowitz and Klug, 2011).

Each video game offers different levels of interactivity. Interactive storytelling mediums such as video games have different classifications based on the level of interactivity they offer. As explained in the previous chapter, this spectrum of interactivity follows from less interactive to most interactive as fully traditional stories, interactive traditional stories, multiple ending stories, branching path stories, open-ended stories, and fully player driven stories (Lebowitz and Klug, 2011). Fully traditional story mediums such as books do not offer interactivity to the audience but a linear story where the audience cannot affect the story. Moreover, because of the interactive nature of games, while this kind of storytelling method is not eligible for video games, the rest of this spectrum can be used in video games. Although some offer more interactivity than others, each narrative style offers players interactive elements on different levels. When these elements are present in a game, each has an opportunity to give the player a level of engagement and a driving force to complete the game's story. This thesis follows the experiences offered to the players by the elements that offer both a narrative experience and interactivity to the players and how they can affect the story with their interactive nature. This chapter examines these elements of games in a theoretical way through current literature. Based on this literature review, this thesis aims to discuss the usage of these elements through the players' experiences.

The advances in technology helped with new and innovative gameplay techniques within the industry, however game narrative and the stories that can be presented in the video games also evolved. Furthermore, interactivity and the potential to shape and interact with the story, has given game designers opportunities to create uniques stories that cannot be applied to traditional media (Lebowitz and Klug, 2011).

Research shows that agency and sense of control is higher in interactive narrative games compared to non-interactive narrative (Arrambide, 2019). Agency, which is receiving immediate feedbacks on actions and influencing the environment is facilitated by interactivity is enjoyed by the players (Klimmt, Hartman and Frey, 2007). Therefore, it is important to provide players with interactivity within video games. Interactive narrative also requires coherent narrative and user agency (Riedl and Stern, 2006). Offering players opportunities to lead the story is important in the case of given interactivity, but a consistent story should also not be neglected.

Primary objective of stories is helping the audience experience differences places and lives and the creator of the stories are aiming to make the audience feel specific emotions at specific times (Lebowitz and Klug, 2011; Skolnick, 2014). To reach such aim, it is crucial to make players feel sympathy towards the characters in the game. More sympathy players develop towards the characters they play, more emotions players elicit towards the character (Skolnick, 2014). In narrative-driven games, forming complex emotional attachments are especially important. To ensure the success of the narrative in a video game, the game should give importance to emotional complexity and depth (Solarski, 2017). Further on, although narrative-driven games are designed to create an emotional bond between the players and the game, players still have limited actions set by the rules, mechanics and borders of the game (Bostan, Yönet and Sevdimaliyev, 2020). Therefore, this research also focus on emotional constraints these narrative elements put on players and level of emotions they offer to the players.

The following subheadings contain most used interactive elements that help through the story or creates immersion for the player to be involved with the story. These elements are a part of the interactive narrative and supports the story. Common ground for the following elements is that, they all require an input from the player, which is the best tool to make the player a part of the game and immerse them with the story. It is also important that these individual elements to work together and communicates with the player through the setting. Such as in a movie everything works towards a theme, acting, colors, music, same ruled should also be apply to the following elements in games to not lose the message the designer is trying to send to the audience and contradict the story (Lee, 2013).

2.2.1 Linear and Nonlinear Narrative

Linear narrative refers to stories with one start point and one end point, the narrative events in these games are not changeable through player actions and fixed for each player (Carstensdottir, Kleinman and El-Nasr, 2019). On the contrary, nonlinear narrative offers players different paths where they are able to choose from different opportunities they are given and interfere with the story structure itself.

Although these are not interactive narrative elements that take place in the video games, they are methods that set the level of interactivity of the player with the story.

Richard Rouse argues that "Non-linearity gives interactivity meaning, and without non-linearity, game developers might as well be working on movies instead" (Rouse, 2005, p. 119). The linear narrative in games does not allow the player to interact with the story and change the outcome based on their actions. The player follows the game designers' rules, and their actions do not affect the course of the story, and each player gets the same experience from the game, with exceptions on the strategy players have. The players experience the order of the events as purposely designed by the game designer. Nevertheless, games with linear narrative do not always give the players a routine experience as they are being challenged by the gameplay and some branching options on a predefined narrative structure (Solarski, 2017). However, in nonlinear narrative games, players' choices and actions shape the story; they evolve based on the players' decisions. While the linear narrative can be imagined as a straight line from beginning to end, the nonlinear narrative consists of branches emerging from beginning to end. In some cases, the branches might meet at the same ending, while in some games, all branches came up with a different ending.

An example of these storytelling methods can be given from *The Legend of Zelda* (Nintendo, 1986) series. Although in the previous titles, *The Legend of Zelda* series follows a linear storyline, in *The Legend of Zelda: Breath of the Wild* (Nintendo, 2017), the map is open for the players to explore, and the players are not required to follow a single quest-chain but can go on their adventures as they wish (Bradford, 2020). Moreover, fully player-driven stories that give the player total control over the story, within the game's boundaries and rules, also use nonlinear narrative. Some examples can be given as sandbox games, The Sims (Maxis, 2000), and Minecraft (Mojang, 2011). In such games, game developer creates the setting of the narrative, but the main narrative is directed by the players. While these games are not considered as narrative-driven games, they create unique narrative experiences for each player. These games also negatively affect the game designer's ability to predict the players' next moves. Sandbox settings of such games give players opportunities to set their own goals and challenges and make up their own stories (Solarski, 2017). Therefore, these games are not considered as a part of the narrative-driven games in this thesis.

On the other hand, the more non-linearity a game has, it is more time consuming and difficult to develop (Rouse, 2005). Due to the amount of time and effort that need to be put into the different storylines and activities, the more nonlinear the game becomes, the less complicated and more straightforward the main story becomes, and it also becomes harder to create a game with complexity, emotional

impact, and depth (Lebowitz and Klug, 2011). Considering these difficulties and costs within production, most games tend to follow a linear narrative (Solarski, 2017).

2.2.2 Character customization

Character customization helps players to design their characters and look however they like in the virtual worlds. Players can change the character they are going to play to identify with the character, and this experience increases the enjoyment the players get from a game (Gamage and Ennis, 2018). By creating and customizing their own characters, players become more emotionally connected to their characters, and customization also act as a mini-game at the beginning of a video game (Solarski, 2017).

A study examined the effects of character customization on players' engagement and experience by observing the participants' presence and memory of the game's environment. This study is conducted by observing one group of players playing the game with a customizable character and the other group playing with a generic character. The study concludes that making a creative investment in the gameplay has positive outcomes in gameplay as increased engagement and feelings of presence. It is noted that custom characters give players opportunities to project themselves into the game and make a game more engaging (Ng and Lindgren, 2013).

Research suggests that customization does affect emotional bonds to the character. In the same research, while players prefer creating similar characters to themselves in non-competitive games, in competitive games, players prefer to create characters that do not resemble themselves. Another point of views is that, if the character closely resembles the player, this negatively affects the experience (Hackman, 2016).

Customization is an essential aspect of games to immerse the player with the story and create new areas to experience it. Using customization players can create the narrative of their characters themselves. Game designers should identify to what extent the players can affect the narrative through customization. To explain further, it is important to establish which elements should be customizable for the players these can involve: customizing the character's personality, affiliation and backstory (Sloan, 2015). Giving players customization options can open the door for different narrative options based on the decision they make through their interaction with the game. Therefore, the input taken from the player can affect the narrative experience they are going to get. While the mere appearance customization might not deliver narrative to the player, giving options for customizing the backstory, affiliation can give leads to the player for narrative. By taking this into account, customization is considered as an interactive narrative element in this thesis.

In highly player-driven games where the players are given a crucial role in the progress and outcome (Lebowitz and Klug, 2011), designers tend to give place to generic but customizable characters. These characters lack a designated image but also a solid backstory and personality. This lack thereof backstory and personality makes it difficult for players to emphasize the character they play (Lebowitz and Klug, 2011). In some cases, it is safe to say that it is better to go for strong personal traits and backstory than to give generic customization opportunities. It is crucial to create a solid character than giving endless customization options for more immersive gameplay. Skolnick also suggests "some amount of choice and customization of player character" (Skolnick, 2014, p. 155) for a balanced game and player story.

Other than character's appearance customization, some games allow character's skill customization, such as *Tomb Raider* (Square Enix, 2013). This allows unique story experiences for each player within a single character (Skolnick, 2014). Using customization as a nonverbal dialogue, games offer players expressive opportunities and communication grounds by designing their characters as well as their abilities (Solarski, 2017).

Being able to customize a character before starting the gameplay, gives an introduction of the world the player is going to play in. Selectable races, classes or factions, gives a glimpse of what the players are going to come across during the game. For instance, in World of Warcraft (Blizzard, 2004), before the players learn about the game's story, players see that there are two factions presented to them to choose from. Players can choose to play as a race from the Alliance or their enemy the Horde. This choice affects the players they are going to play with and against. Further on, players also choose their races within these factions, such as they can choose to play as a human, a night elf or any of the other races present in the game. Along with their races, players are required to choose their classes, in which they are required to choose a style to play as. A player can choose to play as a healer and heal others, play as a damager to kill the enemies or play as a tank and protects the other party members. Aforementioned character customization screen of World of Warcraft can be seen in figure 3.

The options offered within the character customization are not usually limited to the players but also prominent with the story of the game. The stories are build upon the characters that are one of these classes and races. Considering these, while character customization provides interactivity to the players, it also provides parts of the narrative. Based on the classes, races and alignments the players choose, along with the different gameplay experience they get, these also offer different parts of the story. Players are able to see from different views of the narrative or discover new content, such as stories or zones which are related to the choices they made.

Figure 3. Character customization screen of World of Warcraft. Left and right side of the screen shows different factions and their races, bottom part of the screen shows the classes players can choose from (Buuloki, 2020).

2.2.3 Interaction with the NPCs and Environment

Player character of a video game is the character that is controlled by the player. On the other hand, NPCs or "Non-Player characters are everyone else in the story" (Reed, 2017, p. 17). NPCs offer interactive narrative opportunities to the players through dialogues. In non-linear games the choices of the players during dialogues can meaningfully affect the outcome of the story. Conversely, in some games, such as open world games, dialogues might not be a crucial element to complete the story. For example, in *The Elder Scrolls V: Skyrim* (Bethesda, 2011), players can choose to complete the side stories which are given to the players by interacting with the NPCs, or can skip these side stories or continue through the main story. Similarly, in World of Warcraft (Blizzard, 2004) players can interact with the NPCs to decide which part or timeline of the story they want to play. While interacting with the NPCs can be the continuation of the narrative, it can also create new narrative opportunities to experience for the players.

NPCs are AI-controlled non-player characters that players cannot control. These characters are usually secondary and can be interacted with to create dialogues and getting quests (Lebowitz, 2009). However, to not make character interactions directly leading to gameplay, the dialogues should be realistic and require narrative design expertise. It is also necessary that NPCs act according to the story and capable of helping with bringing a specific narrative (Riedl and Stern, 2006). Nevertheless,

NPCs are essential for delivering the game plot to the players to make the environment more vivid and to make a game more immersive (Klüwer et al., 2010). If the NPCs are poorly implemented, they can bore the players or mislead them. Therefore they can either enhance the gameplay experience or prevent the players from a good gameplay experience (Aljammaz, Whitehead, and Mateas, 2020).

Games should offer believable agents that appear as "intelligent, motivated, emotional, and consequently believable" (Riedl and Stern, 2006, p. 4). Mooney and Allbeck proposes an approach for making more believable NPCs, where the reputation within the story effects the interaction of the players with the agents in the virtual world. The agents in this approach are able to remember and share the actions of the players and predict their behaviors and act according to their opinion (Mooney and Allbeck, 2014). Another approach for enhancing NPCs is presented by Aljammaz, Whitehead and Meats. The suggested approach aims to enhance the player's engagement and interest with agents by offering more in-depth and varied interactions in the form of a chat-bot (Aljammaz, Whitehead and Mateas, 2020).

Video games are using dialogues immensely to tell the story. In scripted narrative games, the player must go through structured dialogues, if the player does not act according to the scripted narrative, the mission is failed, advancement through the story is delayed (Solarski, 2017). To make the dialogues more interactive, designers can use multiple choice narrative which gives multiple choice dialogue options to players. An example to this can be given as *The Wolf Among Us* (Telltale Games, 2013) in which the player can interact with the NPCs as dialogue trees. The game evolves based on the choices the player makes, and game garners multiple endings that concludes based on the players' decisions.

It is also possible to tell the story through environment. Environmental storytelling is "conveying narrative backstory and exposition by embedding it in the environment itself" (Skolnick, 2014, p. 196). Environmental storytelling expects the player to understand the story through the objects or setting of the environment (Stewart, 2015). In *Bloodborne* (FromSoftware, 2015) players are encouraged to discover the story of the city through environment (Solarski, 2017). Further on, another example of environmental storytelling is through collectable items which are placed throughout the environment and expected to be discovered by the players. Not only collectable items can count towards the score of the game, but it can also deliver players hidden narratives. Such as in *Tomb Raider* (Square Enix, 2013) there are hidden items called Lara's Journals, upon collecting all the hidden items players are presented with a complete document that is written by the Lara Croft which explains the inner world of the main character.

It can be seen in Figure 4 that, this storytelling method can also apply for small side stories, such as in *Fallout 4* (Bethesda Game Studios, 2015) carefully and purposely

replaced skeletons around the world are a way of narrative by the designers to show players subtle stories within the game that is not further explained during the gameplay.

On the other hand, adding such narrative or interactive elements to an open-world game can also result in players going off track from the story; such as, players can stop following the main story but go exploring the environment in *The Elder Scrolls V: Skyrim* (Bethesda, 2011) or focus on taming animals in *Far Cry Primal* (Ubisoft Montreal, 2016) (Suovuo et al., 2020).

Figure 4. Some of the skeletons scattered through *Fallout 4* (Bethesda Game Studios, 2015) to create a setting for the player, an example of environmental storytelling (Hurley, 2017).

2.2.4 Gameplay

Gameplay is how a game is designed and all of the specific ways and rules that allows and limits players to interact with the game. Gameplay is "the structures of player interaction with the game system and with the other players in the game" (Holopainen, 2011, p.5). To put it simply, gameplay creates the communication between the player and the game through the input of the player and the output of the game.

Every video game have a different design, while some depend on simple and plain gameplay, some use gameplay as a part of the narrative (Solarski, 2017). In every storytelling media, the writer sets the goal and obstacles that keeps the main character from the goal. In video games, the character that goes through these

obstacles is the players themselves who should "succeed through a mix of creative strategy, luck, and endurance" (Solarski, 2017, p. xxiii) which makes the gameplay. Gameplay sets the goal for what the players can and cannot do and how the game responds to the action of the player (Fabricatore, 2007).

Each video game makes different design choices on gameplay, but every choice affects the narrative or every design choice is based on the narrative. Such as, some games prefer a more linear approach towards the gameplay, the inputs from the player produces one outcome within the game. Alternatively, some games prefer to give more than one outcome based on the player's input (Fabricatore, 2007). For instance, action-adventure games gives player chances to carry out the missions by using stealth, but players can also choose to do these missions without avoiding or hiding from the enemies. These two options and player's action towards them can give different outcomes about the story.

Gameplay and narrative are usually imbalanced with each other but can also have moments of balance, as one can have more dramatic tension than the other (Silva, Cardoso and Oliveira, 2019). Thus, as stated before a game writer needs to act accordingly to the gameplay, understand its rules and create the story complementing to the gameplay. While these two aspects can rarely match, not matching completely can still have a positive effect "as a way of playing with the player's expectations, as a way of creating parody, and finally as a way of foregrounding the game as a real-world activity" (Juul, 2005).

The gameplay itself can also be used as mere narrative, as it defines what the main character can do and can not do. Gameplay offers games an amazing opportunity for "show, don't tell", a technique that focuses on not explaining the setting directly but making the audience understand from their experience, this technique is used for scene and character descriptions (Noble, 1993). Using the gameplay as a storytelling method, in games this rule can apply as "do, don't show, don't tell". Instead of explaining a setting or a characteristics the player experiencing this first hand is more effective in terms of narrative. If the designer can explain the story with active gameplay that is better than communicating with dialogues or any written narrative, therefore the first choice of telling a story should be directing the player to perform the action and make them understand the story, if that is not doable in the context then show and finally tell it (Skolnick, 2014).

An example to this can be given from action-adventure game *Uncharted 4* (Naughty Dog, 2017), Nathan Drake, a treasure hunter, goes on an exploration with his brother find a hidden treasure of a pirate. Through the gameplay, players are required to jump from high rocks, climb through dangerous areas and move along the ledges of heights. The designers does not explain Nathan as a brave and adventurous character in a written text as "Nathan Drake is a brave person", but makes the player go

through these difficulties and make the players come to their own conclusions that the main character as a brave person. On the other hand, in games requiring puzzle solving, the players solving these puzzle does not think of the character as intelligent, but themselves as intelligent, but to show that the characters are intelligent cutscenes and interactive dialogues consisting of witty comments and informative discussions are also used.

To summarize above paragraphs in regards to gameplay, using these kind of techniques, gameplay is an opportunity for game designers to make the players draw their own conclusions about the story using interactive nature of games.

2.2.5 Achievements

For video games there are two fundamental elements, objectives and obstacles. There is a protagonist who is trying to achieve an objective and have obstacles in front of them preventing them from what they want (Bernstein, 2014). Thus, achievements are a way to make players pursue the gameplay and story, and overcome these obstacles to reach some intended goals set by the game designers.

Moreover, achievements are significant motivators for the players to continue with the narrative (Volkmar et al., 2019); while the achievements themselves are not a direct narrative element, they can act as one. Players going through the achievements set by the designers can come across hidden narratives within the game. Some goals set by the designers can offer different stories to the players. Such as in Hades (Supergiant Games, 2018), the main character Zagreus receives a journal, Codex, that reveals more information about the environment, characters, or enemies through his interactions with the said objects. Therefore, Codex offers a narrative that requires some achievements to be done to reach the hidden narrative. Below, figure 5 shows an in-game image of Codex. Moreover, as achievements motivate players to continue with the narrative, they can also encourage players to discover side stories. Achievements can lead the players to side stories by making the players curious.

Nowadays almost every game is connected to a client such as *Steam, Epic Store and Blizzard.* These clients are awarding the players with achievements to display or keep them playing. These achievements are appearing during gameplay as notification on the game's interface. While these achievements are fulfilling for the player, it can also affect the gameplay on some cases. When the achievements developed accurately, they are able to keep players engaged (Irwin, 2009). But, some of the aforementioned clients expect games to have achievements which can create pressure on the game designers and result in poorly set goals and achievements (Hamari and Eranti, 2011). Although some goals set by the designers might help

diving deeper into the game, this achievements can also take the players away from the story and change the game to speed runs or achievement hunting and alter the gameplay.

Another negative effect of achievement notifications by clients might be blocking the vision and missing an important mark or target or such interruptions can disrupt important narrative moments and interrupt the story (Solarski, 2017).

On the other hand, achievements can also direct the players towards features which they might not otherwise experience or come across. Such as, can be used to lead the players to hidden areas, easter eggs or any hidden parts of the story. It is also important to make them achievable, and not making them unsatisfactory and keeping them interesting (Irwin, 2009).
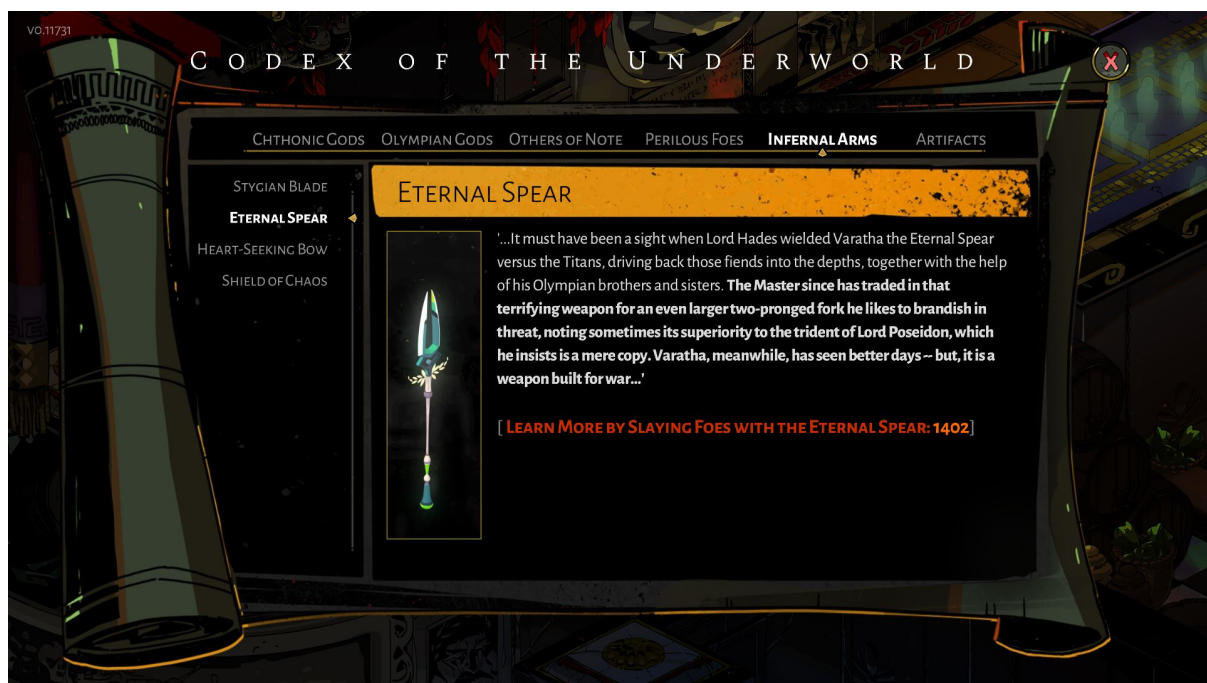
Figure 5. Codex from Hades (Supergiant Games, 2018) players are able to learn more about the above equipment through achieving a certain number of kills (Shaver, 2018).

2.3 Narrative Through Audio

Players can come across narrative music in video games in the shape of ambiance noises, musical scores, and sound effects. These elements can be used for readying the player for the upcoming scenes or support the narrative with their ability to establish certain emotions on the listener. Also, sounds can support a video game technically, aesthetically, and emotionally; it can help thematic unity and enhance immersion (Zehnder and Lipscomb, 2006).

In video games, the narrative develops based on the player's actions; music and sounds in video games should keep up with this dynamism and be reactive and non-repetitive to shape according to the player's inputs (Scirea et al., 2014).

Music in movies and games is used to prepare the audience for an upcoming scene and increase expectations. Taking the interactivity and lack of predictability of the games into consideration, video game music composing should be handled differently from movies (Whalen, 2007). Furthermore, reshaping the music can change the player's input to the game (Wharton and Collins, 2001). As an example, many games developed by Supergiant Games use narrative music to narrate the story or hide some easter eggs related to the current structure throughout the games. Such as in Transistor (Supergiant Games, 2014), the main character, Red, is a singer whose voice has been stolen. During the gameplay, the character can hum the lyrics but not sing them, although the voice-over versions of the mentioned songs are available.

Another example is in Hades (Supergiant Games, 2018), there are two singer characters from Greek mythology, Orpheus and Eurydice. While in the original myth, Orpheus goes into the underworld for his late love, in the game, the players can hear their story from two different songs while the characters are present in the scene. The most significant aspect of Supergiant Games' work is that the music can complete and complement the story and gameplay by keeping the music relevant to the current scene. This music usage helps the player get more from the story and integrates the story with the music.

2.3.1 Interactive Audio

Usage of sounds with the purpose of interacting with them differs from sounds for ambience and listening. Being able to interact with sounds adds a level of involvement and alters the way the sounds are experienced (Collins, Kapralos and Tessler, 2014). In rhythm games such as *Osu!* (Herbert, 2007) players can interact with certain sound elements directly, but such games are not discussed in this thesis, as main focus is relation of the element with the storytelling. Other than rhythm games, all video games offer a level of intractability with the sounds. Interactive audio is defined as "any sound event resulting from action taken by the audience" (Fay, Selfon and Fay, 2004, p.3). In games, it is usual to come across objects that creates sounds. Such as collectables, radios and animals. Players' movements towards these objects will make them hear the sound. Thus, players' action in a world where sounds originate from objects and locations, actually players are creating the sound by their actions (Bosch, 2018).

Another example of interactive audio is where player gets feedback from the game. In some conditions where player is not able to look at the health bar, such as when there is an action scene or focused on a different point during gameplay, players sometimes are not aware that their health is going low. Games offer visual and auditory cues to solve this issues, below a certain health of the avatar, vision might start to get blurry, but also the avatar and/or the game gives feedback with negative sounds such as grunting, or painful noises. While games offer negative feedback with sounds, it is also possible to get positive feedbacks. When the player gets leveled up, or gets a boost the avatar or the game gives positive sounds as feedback. This feedback useful to the player as the game lets them know that they are invincible, stronger while the song plays which also also prevents listener fatigue as it can create diverse sounds (Lomeland, 2014). On the other hand, interactive audio might bring negative effects on players. As exemplary in survival horror games, silence is also required during gameplay as well as sounds and other game genres should pick up this idea (Bridgett, 2008). Breaks from music is also required to give the player a chance to "breathe" but it is important to not make the breaks long as it might take the effect of it on the player (Lomeland, 2014).

It is important to have memorable audio fragments to show players that they are failing or succeeding while designing video game sound (Bosch, 2018). Power up sound from mushrooms, or coin collection sounds in *Super Mario* (Nintendo, 1985) is familiar to most players around the world. Mario's power up is presented to the player by Mario getting bigger but also accompanied by a melody. Composing music nonlinearly and making it react to player input, game designers offer a new level interactivity and immersion (Bernstein, 1997).

2.4 Narrative Through Visuals

Narrative through visuals is visual cues that tell stories to the players about the story they are taking part in, which can be defined as visual components such as art style and graphics of a video game that tells or supports the narrative.

Each video game comes with its own unique art style and graphics. While it affects the gameplay, it also affects players' choice of games. Graphics and art style of a video game is an important part of marketing it, as players tend to play games that are graphically appealing (Keo, 2017). Visuals also affect how players interact with the system and rules of the game (Arsenault, Côté and Larochelle, 2015). In essence, the art is not only what player sees but what makes the world the game takes part in, what creates the ambience and setting for the story and what presents the gameplay to the players (Gee and Dolah, 2016).

Hölttä states that a research survey on effect of art style on narratives states that, majority of the participants believed that visual arts can affect how the player sees the narrative, art style can help setting the atmosphere and emphasizes on certain emotions that are present in the video game (Hölttä, 2018). Hölttä also suggests that an artwork having a story can enhance the artwork's experience on the audience. Taking these into consideration, choosing the art style of a video game supportive to the story can help with giving a more realistic feeling and enhance the player experience by appealing to emotions. To further explain this statement, horror games or games with eerie settings can be given as example. Such as, *The Darkest Dungeon* (Red Hook Studios, 2016) is a dungeon crawling game with thrilling gameplay elements and equally dark and eerie atmosphere. Aesthetics of the game and an in game image can be seen at figure 6. In each dungeon, your supplies run out with time and you start to lose sight as your torch starts to fade. This ominous setting of the game compliments to its race against the time mechanic in each dungeon, induces the player with anxiety and creates the tension that the story requires. If the mentioned game had brighter colors, lively and vivacious setting the experience players get would not be the same.

A practice that supports the narrative through the visuals is environmental storytelling. As mentioned in Interaction with the NPCs and Environment chapter, when such practice is present player understand through visual cues. For instance, in *Assassin's Creed II* (Ubisoft, 2009), the story occurs during Renaissance in Italy and players are able to understand this through the visual elements they come across. If the game designers did not implement a story to the game that is told by the NPCs, cutscenes, or other cues, the player still would be able to understand that the story takes place in Renaissance-era Italy from the buildings, art, and daily life they come across during gameplay. Therefore, art style and the visuals supporting the story is important to deliver the story consistent to the players. It is crucial for the game designers to choose an art style and visual setting that supports the gameplay and narrative (Keo, 2017). Similarly another practice of delivering narrative through visuals can be by hiding symbols, or hidden visual easter eggs. An example to this can be given from *Portal* (Valve, 2007) with the game's famous catchphrase "The cake is a lie.". The game itself does not bring an explanation to this sentence which is written in different parts of the map, but the players only able to receive it through visual observations and understand the meaning of it in the story.

Figure 6. Gameplay of the dungeon crawling game *The Darkest Dungeon* (Red Hook Studios, 2016) in which the player needs to clear the dungeons and kill the enemies (Van Allen, 2020).

2.4.1 Cutscenes

Cutscenes are non-interactive sequences within video games that do not create interactivity to do players but explains the narrative through visuals. With these characteristics, they are more similar to movies than games as they are non-interactive. Although cutscenes are used heavily in narrative-driven games and are a vast narrative source, they are criticized within the gaming community for lowering the player's interactivity and disrupting the gameplay. They also lower the potential for player-driven and interactive gameplay by putting the player in a passive status (Silva, Cardoso, and Oliveira, 2019). However, they can also help with highlighting hidden elements and events that might be missed during gameplay (Solarski, 2017).

Without any interactivity, cutscenes condemn games to a linear narrative during the cinematic. Although being linear narrative does not necessarily mean that story is missing some elements, it is more convenient and pragmatic for the designers (Klevjer, 2002). In some cases, especially in action games, when a player is concentrated on the gameplay, and a cutscene start, the build-up of the moment and interactivity leaves the gameplay experience. The game starts acting as a movie, and the player's inputs and actions cannot change what is on the screen. While these scenes tend to add emotional depth to the story and characters, there are many opportunities in games for expressing emotions where the player is in control (Solarski, 2017).

On the other hand, Klevjer argues in In Defense in Cutscenes that cutscenes do not interrupt the gameplay and creates short breaks from intense action during

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gameplay (Klevjer, 2002). Also, Klevjer suggests that they can be used as good surveillance tools before a fight starts and gives players chances to review their options during the fight by examining the area that the fight will take place during a cutscene.

Quick time events are preset order of events used which requires players to press right order of keys. The game progresses if the correct keys are pressed during quick time events (Rogers, 2010). Quick time events gives a limited amount of control over the characters during or outside of cutscenes. Not performing these actions correctly can result in taking damage, dying, or other progression drawbacks in the game.

While cutscenes are interrupting gameplay and interactivity, quick time events during cutscenes can preserve it to a degree. Nevertheless, they reduce the importance and emotional aspects of the scene by limiting it to one button. Such degrading of emotions was surfaced with the release of Call of Duty: Advanced Warfare (Activision, 2014). In the mentioned game, the player attends a funeral where a quick time event shows on screen as "Hold X to Pay Respects" which can be seen in figure 7. The scene has been criticized as the game tells players to feel emotions by a single button within a cutscene (Dornbush, 2014). It is safe to say that quick time events affect preserving the build-up of the moment positively when just finished action-packed gameplay, but degrading the emotional features to a single button within cutscenes to add interactivity is not accepted within the gaming community. It is also suggested not to use quick time events for something a players can do themselves and use them for important and dramatic scenes (Rogers, 2010).

Figure 7. Funeral scene from *Call of Duty: Advanced Warfare (Activision, 2014)* where the quick time event interaction gives an opportunity to player to pay respects during the cutscene (Dornbush, 2014).

Chris Solarski makes a prediction in *Interactive Stories and Video Game Art* (2017) that the future of storytelling in video games will increase and players will demand more complex and diverse tools that the games will not resort to cutscenes and gameplay will continue without interruptions. Further on, Solarski also suggests that "ideal is that cutscenes should be fluid and continuous with the in-game narrative" (Solarski, 2017, p. 135). It is also suggested that ideal cutscenes should be continuous with the narrative and restricted to short duration as players prefer to continue with the gameplay (Solarski, 2017). Although cutscenes disarrays the gameplay it does not mean that games without cutscenes giving a better gameplay experience or games should be interactive constantly.

Taking these into consideration, as cutscenes are heavily used in narrative-driven games and have an important part in delivering the narrative. They also have various methods for implementing to the game. Mainly, as discussed interactive or non-interactive. Hence, it is important to research if cutscenes are in favor or against the gameplay and narrative experience of the players.

3. Problem

Video games are a form of communication between game designers and players. Players' input space creates excellent opportunities for discovery and has the potential for creating communication between players and game designers (Reed, 2017). Game designers deliver a story through the usage of narrative elements to the players. The most important of these elements are the interactive types. The interactivity games offer through the interactive narrative elements can impact enjoyment because it helps promote agency and gives control to the player, but it can be hard to keep engagement and motivation (Arrambide, 2019). Game designers need methods to identify these problems in the early design and after prototyping (Pinelle, Wong, and Stach, 2008). Therefore, it is crucial that game designers need to have guidance and techniques that they should follow to make the players understand the story easily and enjoy the gameplay without losing motivation and engagement by interactive narrative elements.

Compared to traditional storytelling mediums, video games can tell a story more immensely and effectively to the audience by using their interactive nature. There are unique problems in video game narrative design that are not present in traditional storytelling mediums as well as opportunities. Video games are not bounded by any space or time, giving game designers many different options to choose from for their narrative elements. Solving the problems exclusive to the video games problems might open the door for a new storytelling method that offers a unique experience that cannot be found in books or movies.

As discussed in the Theoretical Background chapter, there are many different and conflicting arguments and usage of narrative elements. These conflicting views can also be found in gaming communities within players who support the different ideas on cutscenes and other narrative elements. A different issue mentioned by Lebowitz and Klug in Interactive Storytelling for Games (2011) is what kind of stories are best told by a game. Which in effect comes the question of linear and nonlinear storytelling. The nonlinear storytelling method is not used in traditional media and allows the player to continue the storyline as they like. Therefore, using nonlinear storytelling, the writer should be aware of how players can disrupt the plot or the hardship of the nonlinear narrative put on the design team. These kinds of design problems and questions should be discussed through the view of players.

Players' experiences are an essential factor in video games. Moreover, different features of video games can be analyzed through heuristics (Hochleitner et al., 2010). For the issues that can be solved by player feedback using heuristics is an excellent opportunity. As heuristics help create guidelines, solve design problems, and create guidance, this approach is aimed to be developed in this thesis. Moreover, as player

experience is a valuable aspect, it is crucial to collaborate with the players to create heuristics.

The Theoretical Background chapter shows that different methods are used in the design of a game. However, current literature does not discuss the experience players are getting from these game design elements. Although there are game heuristics that discuss the usability and playability of games, these heuristics are created through the views of the researchers and then tested, not created through the players' views. Therefore, players had input during the last step of the heuristics to evaluate the developed heuristics. Although this analysis sounds like a stable analysis to test the reliability of the heuristics, it is more important that the guidelines are shaped by the players and again tested by the players. In light of this, this research aims to get input from the player by discussing interactive narrative elements and their potential to carry the narrative.

This thesis focuses on *"How should game designers use the interactive narrative elements to deliver the story effectively to the players?"* To answer this question, the primary goal of this research is to provide instructions or heuristics for game designers on the usage of interactive narrative elements to deliver the story most effectively, giving players an enjoyable gameplay experience while getting the most of the story. To that end, the background chapter focuses on the interactive narrative elements in a theoretical way from the views of researchers. This chapter has gathered information on these elements and their important aspects and roles in a video game. Arguments in favor of them or against their usage or how they should be used are also analyzed in this chapter.

To answer the aforementioned question, the other side of the mentioned communication should also be taken into account by getting feedback from players on interactive narrative elements. Based on the discussed techniques, methods, and gathered information in the background chapter, research is conducted to understand if players agree with the views of the researchers. In other words, the analyzed problem in this thesis is the recognized and established methods on interactive narrative elements in video games and which of these methods give the players a good gameplay experience while giving the story to the players in the most efficient way.

To fulfill the essential factor of player feedback, a survey is conducted on the Likert scale to see players' agreements with the current and proposed usage of interactive narrative elements from the literature. The output of the research is to propose heuristics and principles to follow for game design based on the results of the survey where players stated their likes and dislikes in narrative-driven games.

Below, figure 8 shows the thought process of this thesis and research. The flowchart and the thought process of this thesis have been explained in more detail in this and the following paragraphs. Some video games receive higher ratings than others (Desurvire and Chen, 2004); one can find this problem in every game genre. This rating reflects on the experience offered to the players. In narrative-driven games, a lower rating can suggest design issues caused by the delivery of the narrative, as it is one of the most critical components in the genre.

Further on, in this genre, the narrative is delivered through the player's input to the system, in other words, the player's interaction with the game. Design issues caused by narrative and interactivity should be solved to create better games. Such design issues can be caused by interactive elements that contribute to the players' perception of narrative. Since narrative-driven games use different methods to implement storytelling, it is essential that players are also enjoying these methods and open to receiving narrative through interactive narrative elements. To solve the problems caused by interactive narrative elements, players' preferences should be considered.

Furthermore, to get the preferences and opinions of players, surveys can be used to gather such information and data. Answer patterns from a survey can reflect the gaming community's preferred ways of gameplay and interaction in narrative-driven games. This suggests that designing games based on answers from a survey can give players a better gaming experience in narrative-driven games. Survey answers can be presented as guidelines to create more accessible grounds for game designers. Therefore, developing a heuristic approach based on the player feedback gathered through the survey can help create a better gaming experience for the players.

This thesis conducts the research through the experience on narrative-driven games and players' preferences on specific elements that are widely used in these games and what they would like to come across in their future experiences. However, heuristics will not directly solve the previously mentioned research question, but they can inspire or give game designers suggestions for implementing the interactive narrative elements. The heuristics suggested in this thesis are not requirements to follow but approved methods and agreed upon by the players.
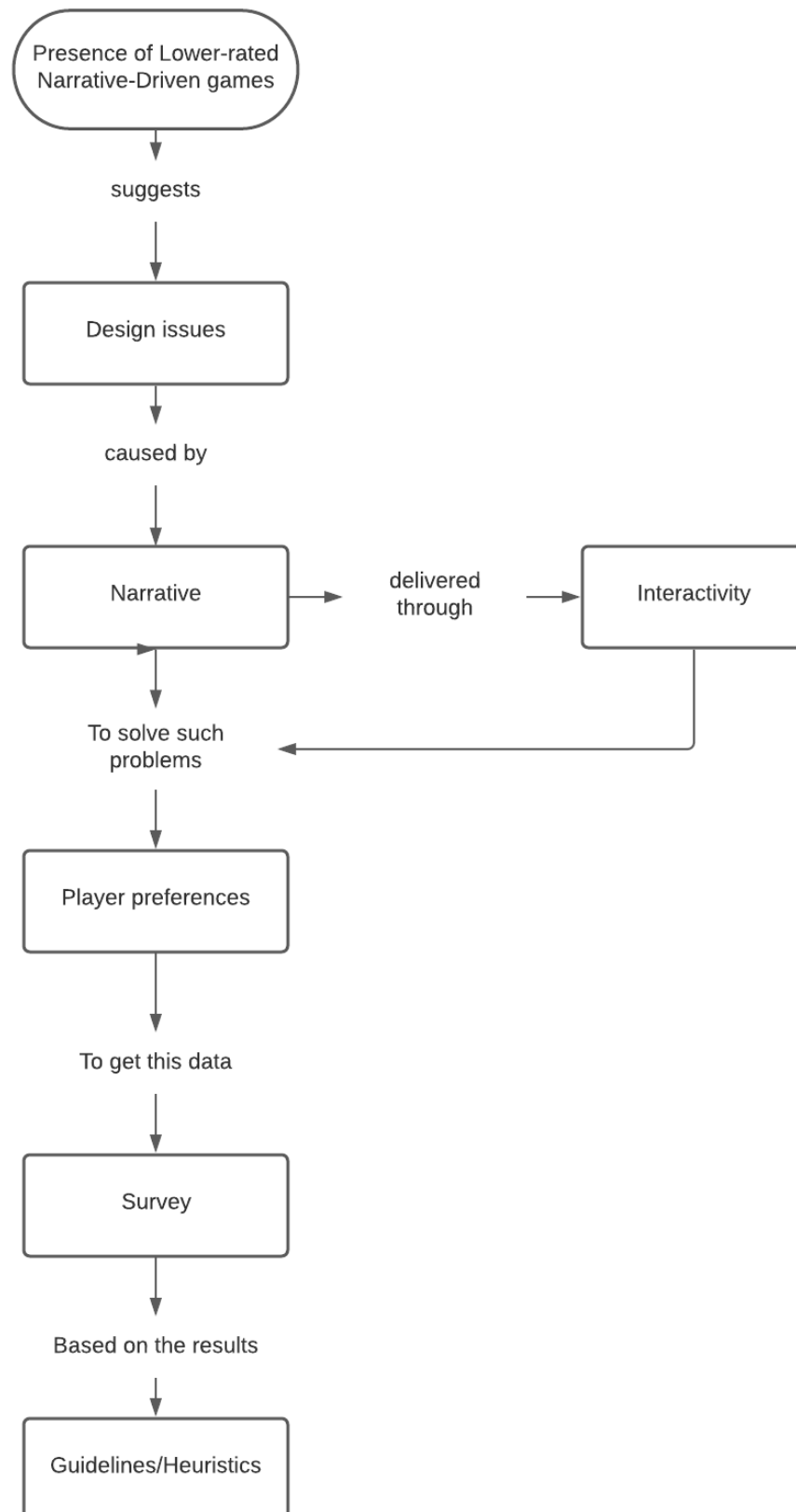
Figure 8. The thought process of the thesis and research

3.1. Method

The discussed problem in this thesis is the presence of lower-rated games and mistakes made during the development of a video game that causes this rating, and the suggested solution to this problem is developing guidelines or heuristics. The above flowchart in figure 8 shows the starting point of this thesis and the developed ideas until reaching the proposed solution.

As mentioned previously, two critical features of narrative-driven games are interactivity and narrative. Hence, it is important to see the recurrent mistakes in narrative-driven games caused by the delivery of the narrative through interactivity. While these mistakes can be caused by different elements present in video games, this research focuses on these two essential features of narrative-driven games by focusing on interactive narrative elements. In this genre, narrative affects the enjoyment of a player significantly. Therefore, it is essential to take precautions by learning from players' previous experiences to give players a better gameplay experience.

In video games, players prefer games where their actions have meaning for the story (Desurvire and Chen, 2004). Players create these actions through interacting with the game. Therefore, any element that gives the player an opportunity to input in video games should also complement the story. It is crucial to understand how to carefully deliver the story through the usage of these elements and to understand this problem, it is important to get feedback from players. In narrative-driven games, it is important to balance the narrative and gameplay by delivering a great story and innovative gameplay. Based upon these, this thesis aims to see what players prefer to find in games when they want to get the most out of the story. To this end, the author of this thesis believed that the most effective way to research narrative design problems is through the preferences and experience of players who played narrative-driven games before as user experience is an essential matter (Hochleitner, et al., 2010).

The player's positive experience is related to how much they enjoyed the game and it is important to learn about what effects this enjoyment positively and negatively. As mentioned previously, the emphasis on these preferences in this research is on the interactive elements and how they effect their gaming experience. The thesis aims to create a good example and a heuristic method for narrative techniques in games that aims to tell a story based on player feedbacks and preferences.

Literature suggest that, "Surveys can capture players' opinions and self-reported gaming habits" (Brühlmann and Mekler, 2018, p. 141). Further on, surveys are able to help with collecting data for evaluating the interaction of the player with the game and using the results to improve the player experience (Brühlmann and Mekler,

2018) which is the aimed result in this research. Moreover, as this research aims to create a set of guidelines that aims to improve the players' experience, using a survey is a fitting method to understand player attitudes and experiences. Therefore, to understand such preferences, participants have been reached out to fill a survey if they have played narrative-drive games.

The survey focuses on what aspects did they like or disliked from the video games they played previously by focusing on the elements mentioned in the background chapter. It aims to look for patterns in players' preferences on usage of the discussed elements and the enjoyment, entertainment and immersion they offer while telling the story.

This research uses the survey to reach out to the gamers and see their preferences. To understand these preferences, questionnaire has statements which players can show their level of agreement to the given statement. These statements have been gathered through the background chapter through the conflicted ideas and different usage of each mentioned narrative element or method. Players can show their opinions on these through a 5-point Likert scale.

Likert scale analyzes data collected from questionnaires where there is a statement provided by the researcher and the participant answer with their level of agreement to the given statement (Bertram, 2016). Although Likert scales can be used with a different number of response categories both even or odd (Pimentel, 2019), five response categories have been used in this research for the interest in neutral responses. The answers have been analyzed to see if the majority of the participants have an agreement or disagreement towards the given statement. It is expected to see patterns in these answers to take views of the majority of the players into account while designing a game. Seeing patterns in the answers is also a criteria to ensure the validity of the research and guidelines.

The response categories and their corresponding meanings are as follows:

1.Strongly Disagree

2.Disagree

3.Neutral

4.Agree

5.Strongly Agree

Participants have been informed about the responses' corresponding meanings and asked to choose the most suitable option with the given statements. These statements used in the main study can be found in Appendix B. Based on the results

and participants' agreement and disagreement stands on these statements, a heuristic approach is designed for game designers to follow for using interactive nature of games as efficient as possible in terms of narrative.

Before the primary research, a pilot study has been conducted for seven participants to see the usefulness of the questions concerning the subject and detecting any design issues. For the first pilot study, 23 questions have been asked on the Likert Scale. The questions are separated into ten separate groups to analyze. Similar questions have been asked twice and worded differently for not receiving arbitrary answers. Further on, these questions were mixed so that two similar will not be following each other. Therefore, participants did not receive the questions in separated groups.

Through the results and analysis, the pilot study showed some design issues that need to be solved before the main study. Some of the statements' usefulness has been a center of attention concerning the relation to the subject discussed in this thesis. However, most of the statements showed that they are relevant to the subject and can help understand which usage of narrative elements players positively or negatively agree towards. On the other hand, some statements did not give clear patterns for preferences, or participants showed a neutral stand. Especially statements concerning the usage of interactive cutscenes have received neutral feedback from the participants. Such statements are eliminated or changed to suit more to the main study. Likewise, more statements are added to cover the deficiency in some statement groups. Moreover, the non-negligible amount of neutral answers suggested that it is important reach higher number of participants in order to see agreement between players. Therefore, the pilot study showed that research in this subject requires a more significant number of participants to settle the disagreements or neutral stands in statements.

Statements used in the first pilot study can be found in table 10 in Appendix A. The statements that are changed or removed from the main study are marked with an asterisk next to the statement number. After the analysis of the pilot study, these statements are concluded to be:

> 1. Not elaborative enough that the results showed equal or close numbers of positive and negative stands,

> 2. The results could not be interpreted related to the subjects discussed in the thesis, therefore concluded to be insignificant to the thesis.

3.1.1 Ethics

Conducting a survey requires two ethical issues to be addressed, confidentiality and consent (Kelley, Clark, Brown and Sitzia, 2003). At the start of the survey, participants have been informed that the survey does not collect any data other than the participants' email or name. Moreover, as the mentioned data is not collected from the participants, the research did not receive any identifiable information about the participants. Participants are also informed that they can stop the survey at any time without completing and sending the data. This information is given in order to secure the consent of the participants in the survey. Participants have also been informed about the intent and purpose of the study and asked to fill the questions based on their previous experiences with narrative-driven games.

3.1.2 Limitations

Research conducted through surveys, gather data from a sample of the population that is being studied and the results are generalized to a larger population (Brühlman and Mekler, 2018). In such a research, heterogenous samples that represent the entire gaming community should be used. Thus, the survey has been sent through various distinct platforms to reach a higher audience and cover the community as much as possible. Social media has been widely used for spreading the survey as heterogeneously as possible.

Some players prefer to play games with and effective story where they can be a part of it. Although narrative-driven games are designed to tell a story, some players still play it for the mechanics they have. To understanding how well the story reaches to the players, it is important to understand the audience. For such a story, the participants should be selected from players who are willing to take the narrative the game has to offer. Through out the survey, the main focus of the research being narrative-driven games has been reminded to the participants within the questions and in the structure.

Using the players also comes with its limitations. This research looks into the player preferences, and it is inevitable to get different views on subjects. In online forums, it can be seen that there are many discussion topics in favor and against certain elements. Such as, while some players expect lesser dialogue and more action, some players expect conversely. Reed also discusses this problem in narrative-driven games as, "one players experiences can vary significantly from a different player's based on their interactions, or the same player can have different experiences in two different play sessions" (Reed, 2017, p.16). This limitation is aimed to be solved by looking for patterns or common problems.

Another limitation for the research comes from the distribution of the survey. The survey has been distributed through various online platforms and social media, such as, Discord channels and Reddit subreddits that are relevant to the subject. The survey did not gather any personal information other than the age of the participants to keep the survey anonymous. Therefore, the population of the survey cannot be generalized to a group of people. Usage of World Wide Web has created a strength by receiving many answers but it has also created a weakness for the study as the population is not well-defined or not specific to a group of people. Nevertheless, games are developed for the whole population of the world, not for a specific population. Therefore, this research was not limited to a group of people in order to make these guidelines suitable for a bigger population of gamers.

3.2. Survey

This study focuses on narrative-driven games; therefore, participants have been explicitly asked to fill the questions based on their experiences with the mentioned genre. This information has been repeated in each section to remind the participants and not to endanger the results of the study. Participants not knowing what narrative-driven games refer to are also kept in mind, and an explanation of the term has been made along with the examples.

The main study has been sent through various online platforms such as Discord channels, Reddit SampleSize subreddit, LinkedIn, and social media. The first pilot study showed that a higher number of participants is required to conclude player preferences; therefore, the mentioned platforms have been a viable option to keep confidentiality and consent. The participants are not pressured or persuaded to fill the survey. In order to not pressure the participants to fill out open-ended questions, other than multiple answer questions, none of the questions have been made into required to fill questions.

Likert Scale statements have been selected to get player preferences about each subject discussed in the background section. Each statement has been categorized to suit one of the discussed topics, such as customization, dialogues, and music in video games. Besides Likert scale questions, the games that participants consider to offer a good narrative experience have been asked. The answer to this question has been analyzed to see which storytelling method is most preferred within gamers, as from Josiah Lebowitz's research in figure 2 (Lebowitz, 2009). Other than Likert scale questions, a demographic question, the participant's age has been asked to see if there are any patterns of the participants who completed the survey.

In Appendix A, Table 10 shows the statements used in the first pilot study; the results showed patterns in 16 of the statements, while six statements had neutral and

differentiating answers. These six statements have been presented in more detail in the main study to see if they were more vague and non-specific statements and hard to agree or disagree with. Moreover, more statements that focus on explaining the relation of these elements and narrative are added in the main study.

The statements used are selected by reviewing the literature and the opinions of the researchers and players on the usage of certain elements. Also, the previous research on heuristics and the current set of guidelines in the literature has been considered while creating the guidelines. As mentioned in the problem chapter, current heuristics are aged but still widely used. However, with the advances in technology and new methods used in video games, they might be outdated.

After the first pilot study, 63 new statements have been created to get more information from the participants. A second and a small scale pilot study has been conducted for two participants to discuss the clarity of the questions and get feedback on the survey. The second pilot study participants received the questions in random order with multiple questions having the same meaning. Further on, these participants stated that the survey is long and might cause the participants to drop out.

Table 11 in Appendix A shows the statements used in the second pilot study. The survey consists of 63 statements aiming to help identify the priorities and preferences during a narrative-driven video game experience. The statements are grouped according to the interactive narrative element or method that they are correlated. For instance, statements 1-9 are grouped under Story and Interactivity category; these statements are aimed to see the importance players give the story and their opinions on the story in narrative-driven games. The first and second study participants did not receive the survey questions in the grouped order, but the main study has separated the statements into sections based on their category.

Based on the participants' feedback in the second survey, the number of statements was lowered to 50 statements by selecting the most relevant statements to the study and lowering the number of same meaning statements. The main survey has also been split into sections to lower the chance of survey fatigue; therefore, the main study participants did not receive the statements in random order.

In the main study, after each section, players received a blank space if they have any answer to explain further. This section has not been kept as a requirement to finish the survey for not putting pressure on the participants. Participants also received a blank space after being surveyed to state if they have felt if the survey missed anything to address. This section was also not kept as a requirement to submit to survey but to see if the research missed any important details to address. Table 12 in

Appendix B shows the Likert scale statements used in the main study. An example of the survey's structure can been seen at figure 9 in Appendix C.

The data for the research is collected by conducting a questionnaire utilizing both Likert scale and open-ended questions to retrieve qualitative data. For the analysis of the results, each statement has first analyzed separately. Further on, each statement is also put together with the other statements in the relevant group, and a cumulative discussion concerning the answers to the questions in the group has been made. The results are also presented graphically.

Throughout the survey, one open-ended question has been kept as a requirement to fill. As mentioned previously, a question asking which games participants consider to offer a good narrative experience has been asked. Furthermore, this question did not limit the participants with how many games they can state, and each participant stated a different number of game names. This data has been analyzed through a Python script to find the number of occurrences that games have been mentioned the most. Therefore, the result showed which game is most referred to by the participants to offer a good narrative experience. In order to ensure reliability, this Python script can be found in Appendix D, and the same analysis can be reproduced in further research.

4 . Results and Analysis

The purpose of the current study was to determine "How should game designers use the interactive narrative elements to deliver the story effectively to the players?". In order to understand this "how," a questionnaire has been designed to understand players' preferences on the usage of interactive narrative elements.

This chapter focuses on the result of the survey and the analysis of the answers. The answers show players' preferences in narrative-driven games through their positive and negative agreement on statements using a 5-point Likert scale. Moreover, since the research aims to develop heuristics based on the survey answers, previous research on heuristics has been taken into account during the analysis of the answers. The answers have been analyzed and turned into heuristics with the same range of explanations as previous research. To explain further, for not giving meaning to the answers more than they point out, previous heuristics have been examined to see how much limitation and clarity, or restriction they give to the designers, and the meaning of the heuristics been left open to interpretation.

4.1 Participants and Structure of the Survey

As mentioned in the previous chapter, the survey has been sent through various social media platforms. The questionnaire was uploaded to Reddit's SampleSize subreddit twice, sent through numerous gaming-related Discord channels, such as the channels of Women Game Developers and World of Warcraft guild The Kobold Conspiracy, as well as LinkedIn. During the survey distribution, participants have been asked to fill the survey based on their gaming experiences in narrative-driven games. Subsequently, the survey reached 118 participants.

The study was anonymous, and any reference to email addresses, names, or personal information was not received through the survey. To understand the demographic of the survey, participants' ages have been asked as a first question. This data have been used in questions that have received mixed answers where participants disagreed on the statement positively or negatively, but rather the answers showed mixed agreement.

After the demographic question, players were asked to give examples to the games that offer good narrative experiences. Based on these answers, out of 118 participants, two participants' answers have been removed from the survey as the answers did not reflect on narrative-driven games and considered their answers might spoil the consistency of the data and research as the research is conducted on narrative-driven games. Therefore, survey answers have been analyzed based on the

answers from 116 participants. The complete survey statements on the Likert Scale can be found in Appendix B.

Participants have received the survey in 11 sections; the first section has informed the participants on the study and ethical issues discussed in the Ethics chapter. The rest of the sections gave place to the questions mentioned in the previous parts of this chapter and statements in Appendix B. The first question section asked the demographic question, and a good narrative-driven game example question, nine of the remaining ten sections gave place to the statements as the way they are grouped in 9 different categories. Further on, after each section, participants have been given a blank space if they want to make explanations based on their answers. To make this process easier, each question has been given a number, and participants referred to their answers by the number of the question. The last section asked participants if the survey has missed discussing any element they believe is essential in narrative-driven games.

4.2 Analysis of the Answers

This chapter focuses on the analysis of the survey answers based on the question order in the survey. This chapter is divided into subheadings based on the sections in the survey. Firstly, each question has been analyzed separately based on the answers received. Secondly, each section of the survey has been analyzed together to understand the cumulative preference on the subject of the section. For instance, each statement under the Cutscene subject has been analyzed separately, then each statement under the Cutscene has been analyzed together to understand the general view on cutscenes. Finally, based on the answers, a heuristics approach has been developed at the end of this chapter.

The quantitative analysis in this research focuses on player's answers in order of the questions in the survey to find patterns that can be identified to understand what players prefer in narrative-driven video games. These patterns are discussed through the majority's positive, negative, or neutral stand on the statement. These patterns suggest that certain elements and implementations in video games are preferred by the majority of the players over other implementations that affect the players' perception of the story.

4.2.1 Section 1: Demographic and Game Preferences

Demographic question that related to the age of the participants showed the following spread between age groups.

From the 116 participants that took the survey;

- 50.9% stated to be between 20-25

- 30.2% stated to be between 26-35

- 11.2% stated to be under 20

- 4.3% stated to be between 36-45

- 2.6% stated to be between 46-55

- 0.9% stated to be above 55

Next question in this section asked participants about which games do they think offer a good narrative. Each participant stated different amount of games, named the games differently, such as the full name or by the abbreviation and separated by different punctuation marks. As this data is hard to analyze through a data sheet, a Python script to separate the mentioned games and count the number of each games' occurrences have been written which can be found in Appendix D.

Based on this analysis following games have been mentioned most as giving a good narrative experience:

- *The Witcher Series* (2007, CD Projekt Red) and *The Witcher 3: Wild Hunt* (2015, CD Projekt Red) has mentioned 21 times

- *Last of Us Series* (2013, Naughty Dog) has mentioned 16 times

- *Elder Scrolls Series* (1994, Bethesda) and *Elder Scrolls V: Skyrim* (2011, Bethesda) has mentioned 12 times

- *Detroit: Become Human* (2018, Quantic Dream) has been mentioned 8 times

The Witcher (2007, CD Projekt Red) series and especially The Witcher 3: Wild Hunt (2015, CD Projekt Red) have been widely mentioned throughout the survey. This game has caught the attention of the players positively concerning the narrative. Thus, the players approve the design of this game in terms of interactive narrative elements.

Further on, all of the games mentioned the most offer players a nonlinear narrative experience. In The Witcher 3: Wild Hunt (2015, CD Projekt Red), Last of Us Series (2013, Naughty Dog), and Detroit: Become Human (2018, Quantic Dream), players' decisions and interactions change the outcome of the game based on the possible game endings. On the other hand, although Elder Scrolls V: Skyrim (2011, Bethesda) does not offer multiple endings, being an open-world game gives players opportunities to follow different narratives through side stories as well as the main story. Before analyzing the linear and nonlinear related statements' results, these

answers show that players enjoy nonlinear stories with multiple endings more in narrative-driven games.

4.2.2 Section 2: Story and Interactivity

In Section 2, 7 statements have been presented on the Likert Scale, and 1 question has been given as a blank space to encourage the participants to explain further their answers based on the given question numbers. As this blank space was not required to fill, did not receive many answers, and the answers are analyzed along with the relevant questions in this chapter.

Statements presented on the Likert Scale in this section aimed to understand preferences on story delivery and the level of interactivity participants enjoy in narrative-driven video games. The answers are analyzed based on their order in the survey; as stated, each question has been given a question number, and the analysis of the questions will also state the question number.

1. During gameplay I pay close attention to the story:

This question has been asked to understand the survey participants' play style. As mentioned previously, some players are more focused on the gameplay that they do not pay attention to the story. Especially in narrative-driven games, close attention to the story is an essential part of the gameplay. Therefore, getting a negative answer from participants would show that the participants were not giving importance to do story but playing merely for the gameplay and mechanics.

As can be seen from the graph, in total 90,5% of the players had a positive stand combining strong agreement and agreement answers and 4.3% had a negative stand while rest of the participants showed a neutral stand for the above mentioned statement. This shows that, participants of the survey pays attention, therefore gives importance to the story. This result also shows that as players pay close attention to the story, the story should be implemented carefully and clear, and should be consistent through out the game.

1. During gameplay, I pay close attention to the story
116 responses
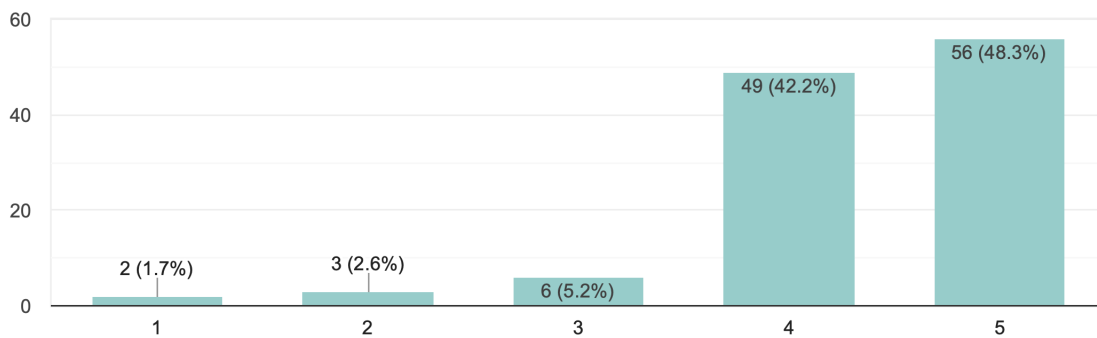
Graph 1. Participants' answers to the Statement 1

2. The story motivates me to continue playing:

This question has been asked to understand if story is a driving force for players to continue playing. In narrative-driven games, story is an important asset for supporting the gameplay and essential for the continuation of the game.

Overall, 88% of the players stated positive agreement towards this statement which shows that story is a motivating object. In relation to the previous statement, these two statements shows that majority of the participants are players who give importance to the story and open to take what the story has to offer. Furthermore, based on the amount of positive agreements to this statement, players find story as a motivating element in video games, this supports the idea of a consistent story, moreover the story should also present the players with new features in order to not lose the motivation.

Introduction chapter stated that there are arguments against video games having stories. Statement 1 and 2 shows that players give important to the story and it is a crucial element to feature in narrative-driven video games in order to provide continuance to the gameplay.

2. The story motivates me to continue playing
116 responses
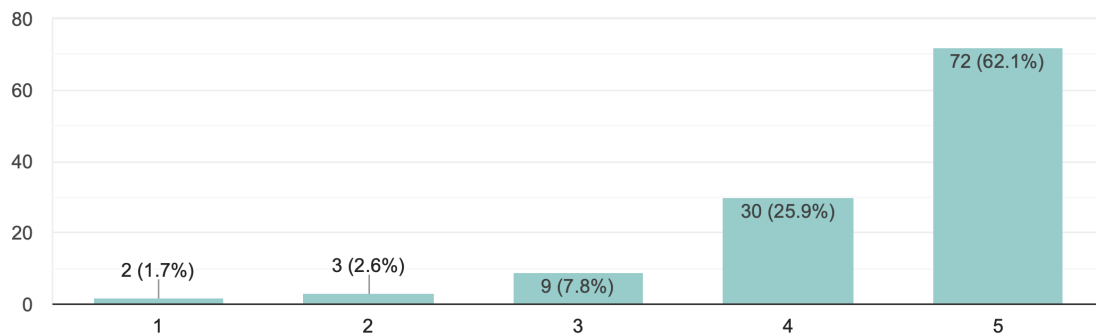
Graph 2. Participants' answers to the Statement 2

3. If I am stuck in game, story motivates me to pass it:

Occasionally, gameplay is a challenging issue for the players and will cause players to stop playing the game without finishing it. Therefore, without finalizing the narrative. This question has been asked in order to understand, in such cases if the story is motivating for the players to pass the obstacle in front of them.

In comparison to the previous statement, 65.5% of the participants showed a positive agreement towards this statement, combining strong agreement and agreement answers. Considering this difference of 22.5%, in narrative-driven games, less players are motivated by the story to pass the challenges. Participants showed a neutral stand of 17.2% to this statement while the previous statement received 7.8% neutral answers. One can understand that story is an essential and motivating object for the players but it is less motivating if the player is stuck at an obstacle in a game.

3. If I am stuck in game story motivates me to pass it
116 responses

47
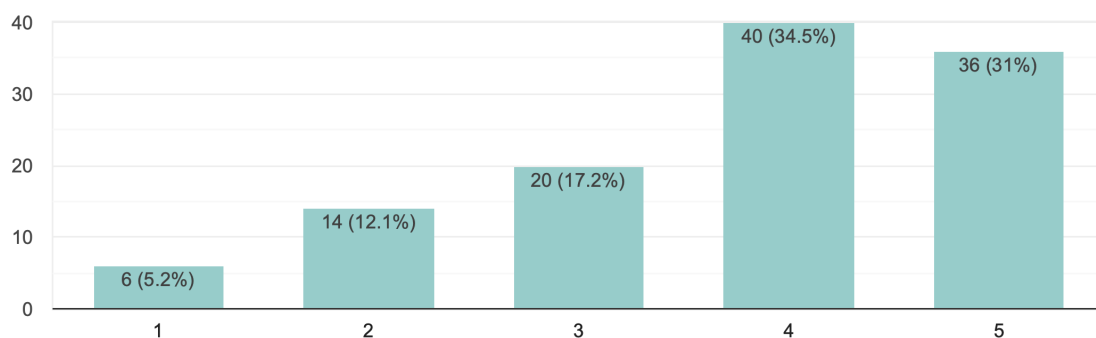
Graph 3. Participants' answers to the Statement 3

4. I enjoy a game more when I get emotionally affected by the story:

Interactive Narrative chapter of this thesis argues that in narrative-driven games creating emotional attachments to the story is important. Chris Solarski suggests that the game should give importance to the emotional depth and complexity to the story (Solarski, 2017). While 65.5% of the participants answered with strong agreement, 21,6% of the participants stated agreement, 9.5% stated neutral and strongly disagree and disagree received equal amount of answers with 1.7%. In view of the 87.1% positive agreement, the argument in the Interactive Narrative chapter can be perceived as valid.

One participant commented on this question as:

> If I can connect with the main character emotionally, it makes me part of the game more quickly and adapt to the game much more faster.

Therefore, the argument of emotional elements can create immersion is proven through this comment.

4. I enjoy a game more when I get emotionally affected by the story
116 responses
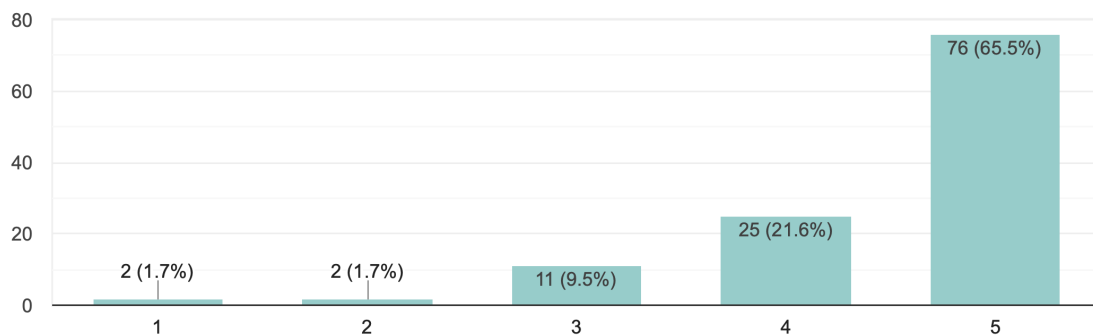
Graph 4. Participants' answers to the Statement 4

5. Story of a game is an important element for me for deciding if I am going to play the game:

This question was asked in order to understand if the marketing of the game depends on the story in narrative-driven games. While it is not related to an interactive narrative element, it has been asked if story is a deciding factor for playing a game.

While the majority of the participants stated positive agreement with 74.1%, rest of the participants showed neutral or negative agreement. In light of these results, story

is not important when deciding to play a game for 1 out of 4 players. Still, it shows that story is an essential asset for the majority of the players and therefore should be prioritized during the marketing of the game.

5. Story of a game is an important element for me for deciding if I am going to play the game
116 responses
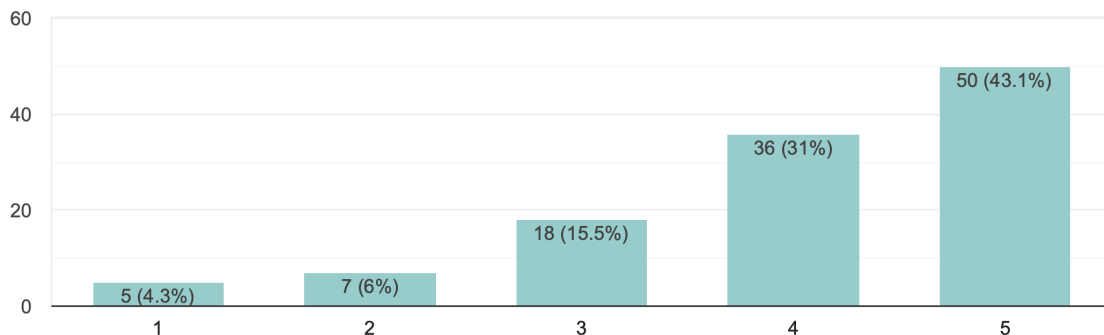
Graph 5. Participants' answers to the Statement 5

6. I enjoy side stories and take time to complete them:

Side stories are optional stories that are presented to the players mainly in open-world games such as in *Legend of Zelda: Breathe of the Wild* (Nintendo, 2017). These side stories add non-linearity and more interactivity to a game. However, as they are optional some players choose not to complete them.

In this survey, 71.5% of the participants stated that they enjoy side stories and take time to complete them. While no participant stated strong disagreement, 10.3% stated disagreement. Furthermore, considering the number of positive agreements in favor of side stories, shows that game designers can choose to implement additional narrative through side stories.

As mentioned previously, after each section participants have been given an optional space to further explain their reasoning on questions in the section. Some participants stated their views on side stories. One participants stated that:

> Side quests don't interest me as much as main stories unless they are done well with good explanation of why I'm doing something rather than the usual just "go kill x bad guy or grab x item".

This comment states that side stories should also have meaningful narratives.

Another participant stated that:

If the side stories are informative about the characters and if they're connected with the main one, I do spend time to complete all of them; sometimes to learn everything about the game and sometimes for the achievements.

This comment also supports the idea of meaningful and consistent side stories. Another participant also stated importance of consistency and meaningfulness in side stories:

I take time to explore them only if it is correctly integrated with the main plot, and doesn't mess with the pacing. If I feel like the main plot is urgent, I won't take the time to explore them.

These comments and answers show that optional side stories are utilized by most of the players, however it is important to implement them consistent and meaningful with the main story by giving the explanation behind the side story.

6. I enjoy side stories and take time to complete them

116 responses
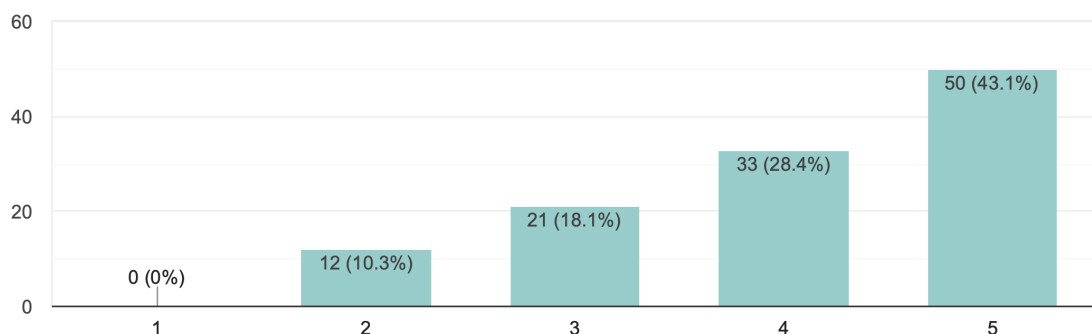
Graph 6. Participants' answers to the Statement 6

7. I prefer games that I get to be more involved and be interacted with the story:

Theoretical Background chapter discusses interactivity spectrum that goes from the less interactive storytelling method, fully traditional stories , to the most interactive storytelling, fully player driven stories (Lebowitz, 2009; Solarski, 2017). Considering each game offers different levels of interactivity, based on this interactivity spectrum, this question was aimed to understand if games that offer more interactivity to the players are preferred over more traditional methods. More than half of the participants, 60.3%, stated strong agreement to this statement. Similarly, 24.1% of

the participants stated agreement. Therefore, players are enjoying higher levels of interactivity and involvement with the story.

A participant who stated disagreement with the statement, commented on this question as the following:

> I do not so much dislike interaction as I do find that games which prioritise it tend to do so by sacrificing other aspects of the narrative. If more games had the time and budget to create interactive paths in depth I would view the question more favourably.

This comment suggests that, there are problems with the implementation of interactivity that might cause damage to the narrative itself. Participant suggests that they would prefer interactivity to be not implemented just to give more interactivity but should be in depth and should not be prioritized over the narrative.

7. I prefer games that I get to be more involved and be interacted with the story
116 responses
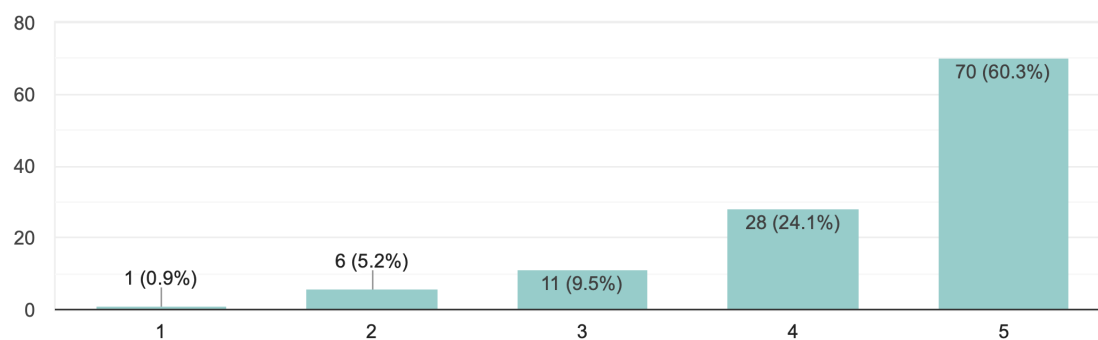
Graph 7. Final participant answers in section 2

4.2.3 Section 3: Customization

In Section 3, players received 7 questions on the Likert Scale and similar as above section, received a question to further explain their reasoning or comment on their answers. These statements in this chapter are aimed to understand players' preferences on customization of games and their effects on perception of narrative.

8. I like being able to customize the appearance of my characters:

Customization in video games can be found in different forms, such as appearance customization, skill customization even general gameplay customization through

difficulty options. This question has been asked to understand, within these different customization options, do players enjoy being able to change the appearance of their characters. 50% of the participants stated strong agreement, and 22.4% of the participants stated agreement. That said, 19% neutral statements are also important to consider. Nonetheless, 72.4% of positive answers still show that players enjoy appearance customization when provided.

This question received a comment from a participant as:

> I never really go into super detail making my character, but I like being able to change certain features as hair and face/body type etc. That makes the character feel more mine, and I get more invested. Being able to put cloths/ gear on Npc followers also makes me like them more and I get more invested in their well being

This comment suggests that appearance customization is a tool that can be used for immersion and creating empathy in players. As also suggested by Ng and Lindgren in the Character Customization chapter of this thesis, character customization gives players opportunities to reflect themselves to the game and make it more engaging (Ng and Lindgren, 2013).

8. I like being able to customize the appearance of my characters
116 responses
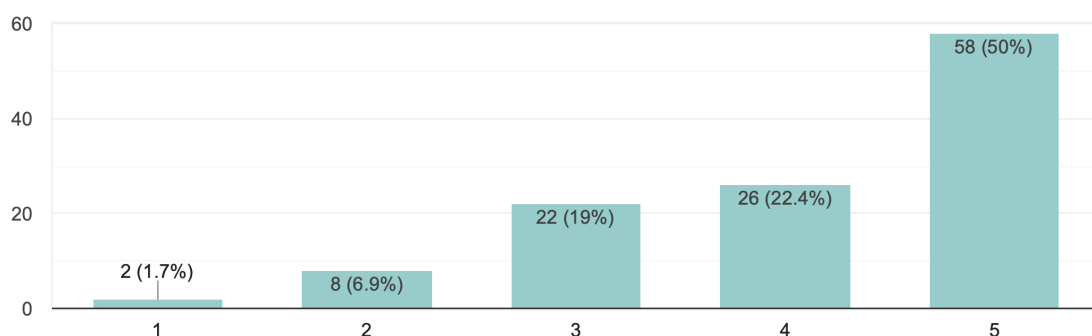
Graph 8. Participants' answers to the Statement 8

9. I feel empathy towards the character that I created and customized, 10. I feel empathy towards the NPCs that are not customized by me:

These two questions are analyzed together as the aim was to understand the effect of customization on empathy. Solarski states that players become more emotionally connected to their characters through customization (Solarski, 2017). Therefore, the effect of customization on emotional connection and empathy was aimed to understand through these questions. 63.8% of the participants stated that they feel

empathy towards the character they have created and customized. On the other hand, 49.2% of the participants stated that they feel empathy towards the NPCs. There is an apparent and non-negligible difference between the positive answers in these two statements.

In light of this data, it can be understood that players have more empathy towards the characters that they have customized rather than non-customizable NPCs. Therefore, if empathy is aimed to be achieved in a game, character customization is an element to consider giving place.

9. I feel empathy towards the character that I created and customized
116 responses
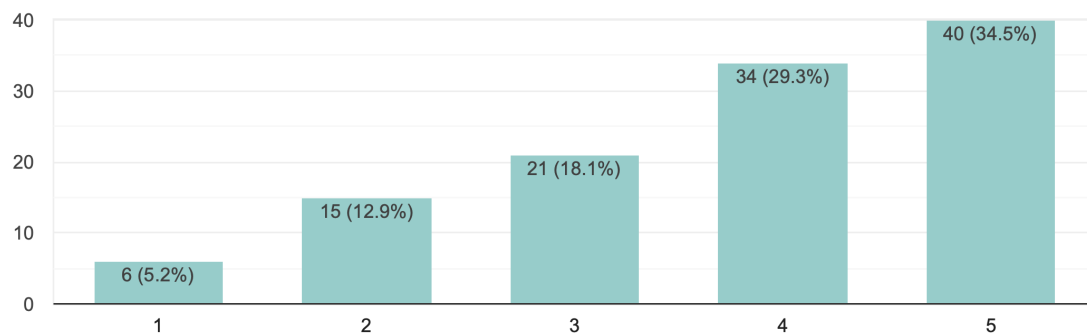
Graph 9. Participants' answers to the Statement 9

10. I feel empathy towards the NPCs that are not customized by me
116 responses
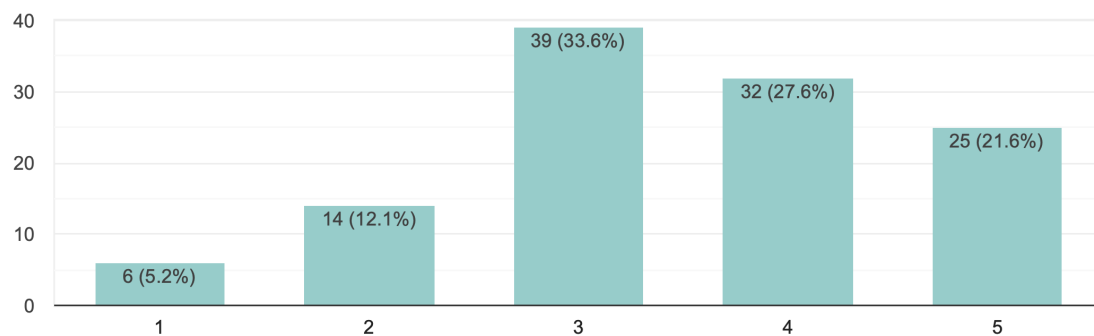
Graph 10. Participants' answers to the Statement 10

11. I like being able to change the skills of my character:

Similar as appearance customization, skill customization is also offered to the players in some narrative-driven video games. This customization type allows players to change their style of play. Overall 88.7% of the participants stated strong agreement and agreement to the above statement. While 9.5% of the participants stated neutrality, only 1 participant stated strong disagreement with the statement.

Based on the skill choices, players can receive different narratives. Skill and expertise customization gives players opportunities to classify their characters while ruling out others and provides unique story experiences (Skolnick, 2014). Further on, survey shows that skill customization is enjoyed by the players, therefore, game designers are encouraged to implement skill and/or expertise customization in order to give players unique story experiences.

11. I like being able to change the skills of my character
116 responses
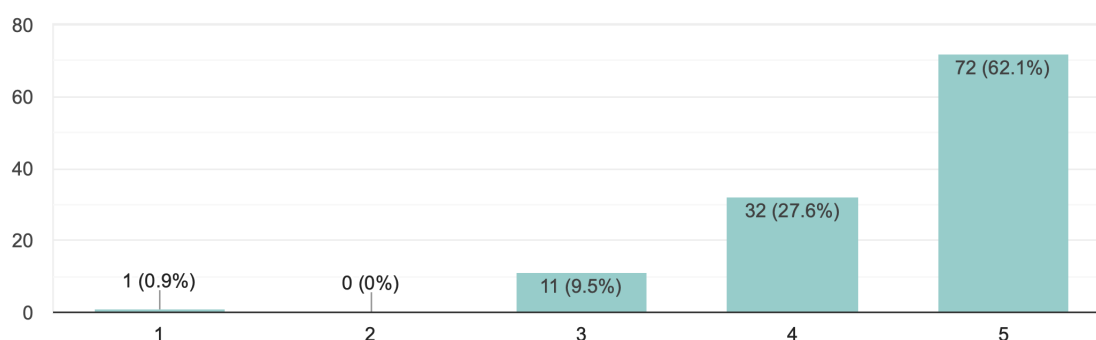
Graph 11. Participants' answers to the Statement 11

12. I like having lots of customization options:

Having lots of customization choices in appearance and skills customization might affect the players' enjoyment with the game by spending more than intended time on it. In total, 72.4% of the participants stated agreement to this statement. On the other hand, only 10.4% of the participants stated disagreement with the statement. Two participants who have disagreed with the statement further explained their reasoning as:

Having too many customization options can frustrate people;

I'd rather have a set of skills I cannot modify rather than have too many and feel overwhelmed.

Even though a lot of customization options favored by the players based on the agreement with the statement, too many customization options can also be overwhelming and frustrating for the players. These comments support Skolnick's suggestion that is mentioned in the Customization chapter: "some amount of choice and customization of player character" (Skolnick, 2014, p. 155).

12. I like having lots of customization options
116 responses
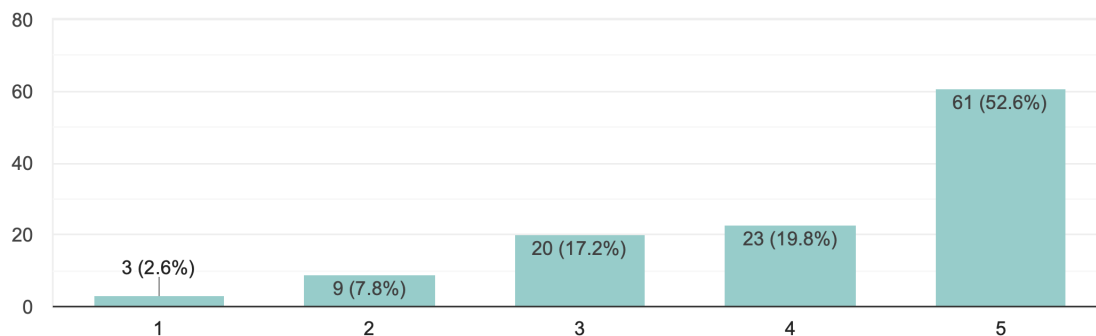
Graph 12. Participants' answers to the Statement 12

13. I care about the choices I make during customization:

Players can choose to customize their characters randomly or give importance to do the choices they make during customization. Customization chapter of this thesis discusses the perception of narrative presented to the players through customization. Customization options for alignments, races or skills creates narrative opportunities for the players. These customization options when given to the players at the beginning of the game, tells parts of the narrative before the player starts playing the game as well as directing the players to different storylines and narratives during gameplay. Therefore, players caring about the choices they make during customization suggest that they are open to receive the narrative presented in customization.

81.9% of the participants stated that they strongly agree and agree with the statement. This data suggests that majority of the players give importance to the choices, therefore their choices are meaningful actions towards the story. This suggests that players are open to receiving the narrative that is presented to them in the form of customization.
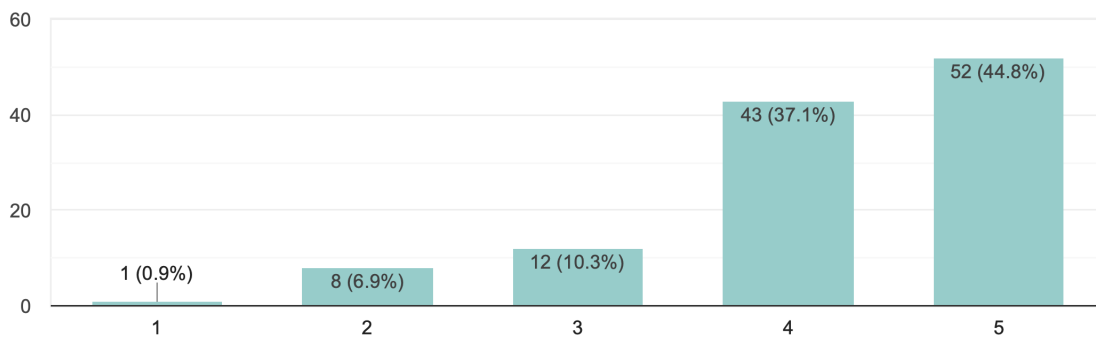
Graph 13. Participants' answers to the Statement 13

14. Having different difficulty options is important:

During gameplay, players might get stuck at obstacles and might not be able to move forward with the story. This challenges in narrative-driven games can cause players to lose focus on the story and miss parts of the narrative. In question 3, majority of the players stated that story is a motivating element to overcome the obstacles but these obstacles can also cause players to get distracted from the story.

Difficulty options are important in narrative-driven games for players who want to focus on story. As can be seen from the Graph 14, majority of the participants stated strong agreement with 72.4%. This suggests that majority of the players are in favor of having difficulty options in narrative-driven games.

This question received further comments from the participants:

Most games already do this, but all difficulties should be unlocked when you first start the game. If the easiest mode is locked and you need to finish the game at least once to unlock it it is completely useless;

Having a difficulty slider or setting can be a hell of a work and also can be so cheap at the same time. For example, *Skyrim* is a great game but difficulty slider just buffs enemy health and damage so it is a lazy design but they felt obligated to put a slider after all it was an RPG but they were wrong in my opinion. A good example would have harder to kill basic AI, harder to dodge skill shots and bullets, harder pathways to the objective or missions;

I think difficulty selections are important, as it simply improves everyones chance to enjoy a game at their own pace;

> ...Different difficulty options are important since in some chapters, narrative factor is more important than game challenges and If I don't want to spend too much time on one level/chapter, I like passing those parts quicker.

In light of these comments and the answers, players would like to have difficulty options in games but it also should not be implemented as just buffing the enemies' health and damage. Further on, dynamic difficulty where the game adjusts itself based on the player's abilities is a good method to provide every player with a difficulty level that is on par with their skills and to keep players interested.

14. Having different difficulty options is important
116 responses
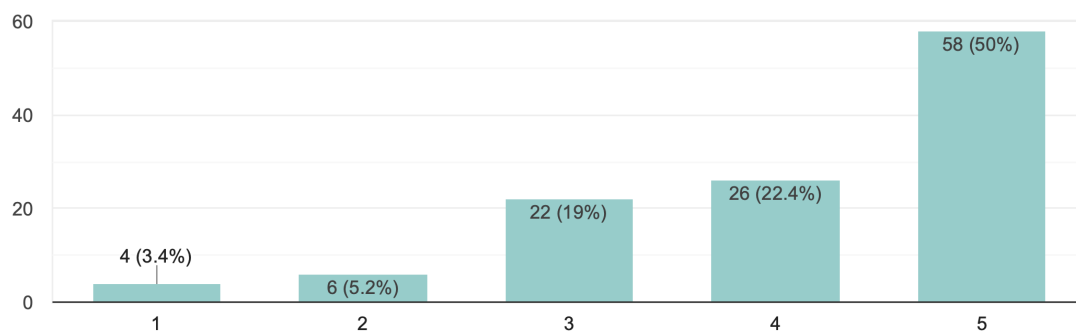
Graph 14. Final participant answers in customization section

4.2.4 Section 4: Interaction with the NPCs and Environment

Interactions of the players with the NPCs or the environment is one of the major sources of interactivity and narrative. Players receive narrative through their interactions with the NPCs in the forms of audio and visuals. Similarly, interaction with the environment offers various narrative experiences through environmental storytelling or through collectable objects within the environment.

In this section, participants received 8 questions on Likert scale along with a question to further explain their reasoning for their answers.

15. I like exploring through the map during gameplay :

Through the exploration of the map, players can come across environmental storytelling. Environmental storytelling expects the players to understand the narrative through objects and setting of the game (Stewart, 2015). This creates new opportunities for game designers to add hidden narrative in the map itself. Although this is a widely use method to give more narrative experience to the players, the players should also be open to receiving such information by exploring the map.

Further on, participants showed a positive stand against this statement by 86.2%. Majority of the players being open to exploration of the map makes environmental storytelling a viable option to deliver new narratives to the players.

In regard of this question, two participants shared similar comments regarding map exploration in Assassin's Creed (Ubisoft, 2007):

> It depends on the game that you play. If you're playing something like *Assassin's Creed*, it's very boring because full of similar places and events. But if you're playing something like *The Witcher 3* or *Skyrim*, it's very enjoyable to see different places, NPCs and events;

> I explore the map and do side quests in most games but if it is worth it. What I mean by that is in games like *Assassin's Creed* where you have 3 type of side quest and 33x each of them in the map i will of course be disinterested in them.

Therefore, it is more encouraging for players to explore the map when the map does not repeat itself through places and events. During the design process of a game which aims to implement environmental storytelling, should take into account to not make the environment repetitive.

15. I like exploring through the map during gameplay
116 responses
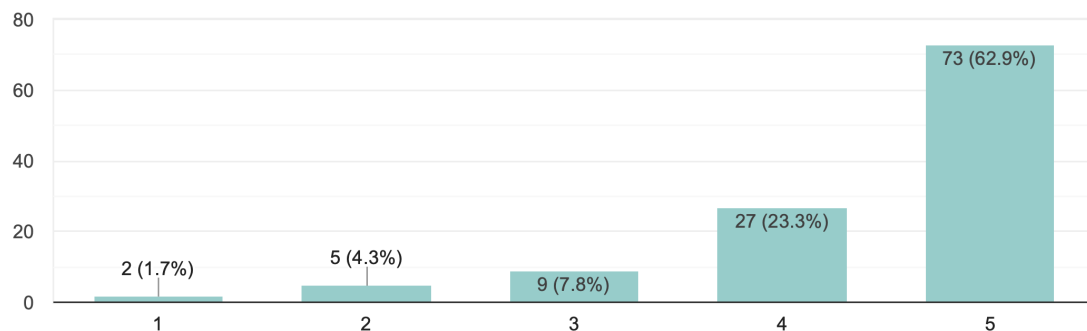
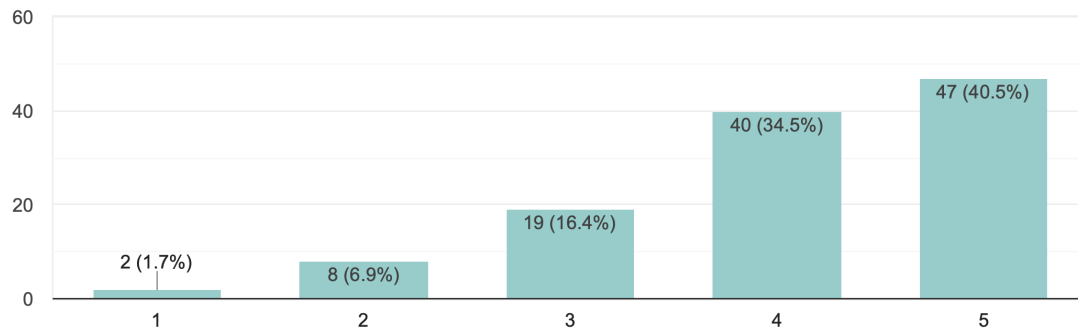Graph 15. Participants' answers to the Statement 15

16. During gameplay, I pay close attention to dialogues:

Dialogues are an essential element in narrative-driven video games and source of the narrative. Dialogues are generally delivered to the players through their interactions with the NPCs. Despite this importance, players can choose to skip the dialogues without reading in order to continue with the gameplay which is a state where

players are more active. Hence, similar to environmental storytelling, players should be open to receiving the narrative through dialogues and pay attention to them.

In the survey, 75% of the participants stated positive agreement to the statement. Therefore, 3 out of 4 participant stated that they pay attention to the story.

16. During gameplay, I pay close attention to dialogues
116 responses
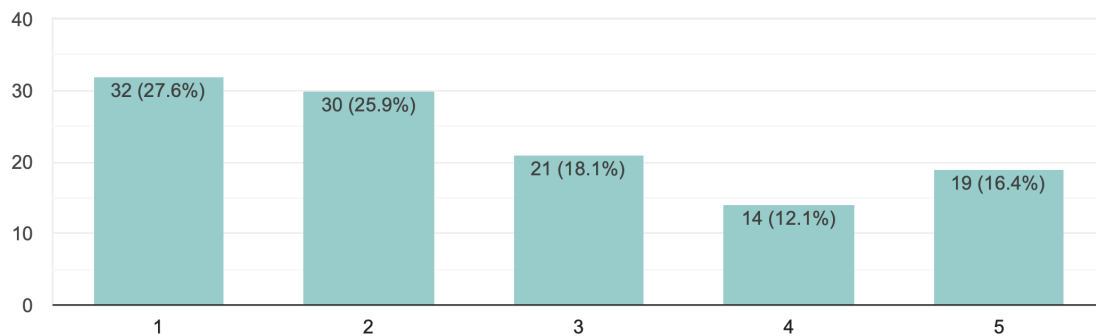

Graph 16. Participants' answers to the Statement 16

17. If not interactive, I skip dialogues:

Interactive dialogues or multiple choices dialogues gives players opportunities to shape the story. In such cases players are able to choose from given dialogue options during their interactions with the NPCs. However, in some games interactive dialogue is not changing the course of the game by adding nonlinearity but increases the interactivity amount without players' choices actually making an impact on the game.

This statement has received mixed answers from the players. 53.5% of the participants stated negative agreement which means that they do not skip the dialogues if the dialogues are not interactive. Even though majority of the participants stated that they do not skip the dialogues, there is also considerable amount of participants who skip the dialogues if they are not interactive. Taking these into account, interactive dialogues are preferred by almost half of the participants.

17. If not interactive, I skip dialogues

116 responses

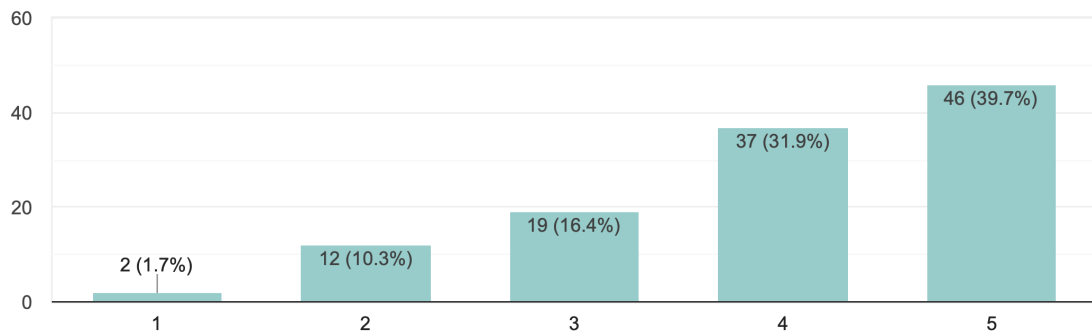Graph 17. Participants' answers to the Statement 17

18. I give a break to main story during gameplay and explore the map:

Players can choose to give a break to the main story in order to explore the map. In question 15, 86.2% of the participants stated that they like exploring the map. Exploring the map is possible during continuing with the main story, such as going to the intended places and exploring the relevant areas to the current state of the story, or especially in open-world games, players can choose to travel areas that are not relevant with the current state of the story. As mentioned in Interaction with the NPCs and Environment chapter, this can cause players to off track from the main story. Since majority of the players like exploration, if this happens by giving a break to the main story players might get distracting from the main story. Hence, the narrative players receive through the map should be consistent and relevant with the main story in order the prevent distraction from the main story.

86.2% of the participants stated they like exploring the map in question 15, 71.6% of the participants stated that they give a break to the main story to explore the map in question 18. Therefore, 14.6% of the participants prefer not to give a break to the main story in order to explore the map.

116 responses

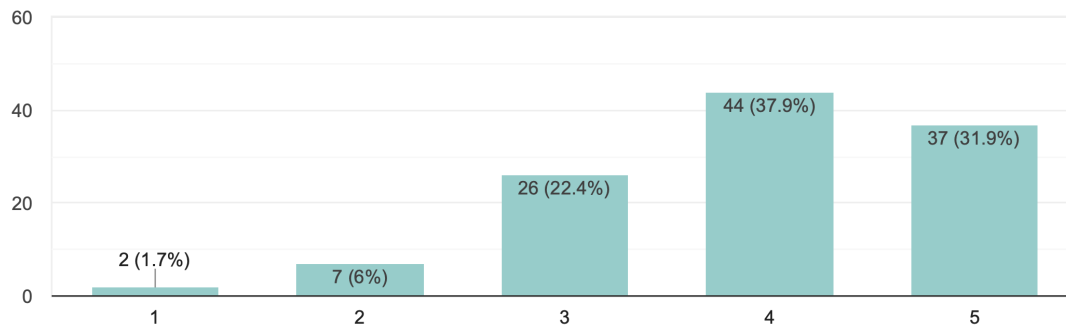Graph 18. Participants' answers to the Statement 18

19. I enjoy interacting with NPCs:

Interacting with NPCs are essential for a narrative-driven video game to receive written and spoken narrative as previously mention in question 16. Interaction with the NPCs and Environment chapter discusses that NPCs should be believable agents (Riedl and Stern, 2006) and should not be implemented badly as they can bore and mislead the players (Aljammaz, Whitehead and Mateas, 2020). Therefore, it is important that players enjoy interacting with the players in order to sustain the narrative delivered through NPCs.

This questions has received 31.9% strong agreement and 37.9% agreement. While the majority enjoys interacting with the NPCs, there is considerable amount of participants that do not enjoy or neutral against the NPCs with 30.2% percent. It is important that NPC interactions are implement enjoyable for the players in order to make the players willing to receive the narrative.

## 19. I enjoy interacting with NPCs
116 responses

Graph 19. Participants' answers to the Statement 19

20. I like games where I am given more than one dialogue options to interact with NPCs:

Giving more than one dialogue options to players in an interaction with the NPC creates non-linearity in a game. Therefore, players get the chance to change the outcome or the course of the game. 75% of the participants stated that they enjoy the games where they are given more than one dialogue options to interact with the NPCs. Although 1 out of 4 participant stated neutral or negative stand against the statement, majority of participants stated they enjoy multiple choice dialogues. This shows that players like the chat-bot style suggested by Aljammaz, Whitehead and Mateas which aims enhance the players engagement and interest (Aljammaz, Whitehead and Mateas, 2020) which also supports the interactive dialogue method.

20. I like games where I am given more than one dialogue options to interact with NPCs
116 responses
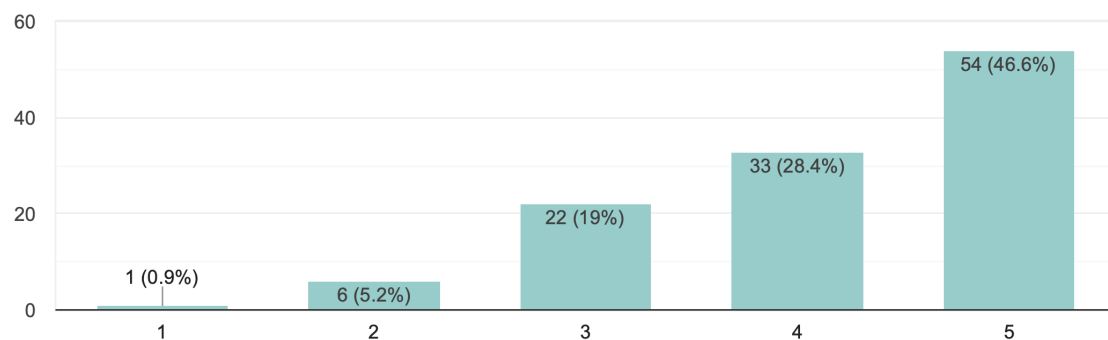
Graph 20. Participants' answers to the Statement 20

21. When given dialogue options, I spent time thinking about the outcomes:

This question has been asked in order to understand if the players are making their choices in dialogues therefore guiding the game purposefully. Majority of the participants agreed positively to the statement with 77.6%. Since players spent time thinking about their choices, it is also important to present the choices as clear and understandable as possible. Further on, the choices should also be meaningful for the story.

A participant who stated neutral to the statement commented:

> Almost no game makes it truly important so I don't try hard to see the outcomes.

Players does not enjoy when the choices given to them does not change the outcome and dialogues become less important for them. Therefore, it is important for players that their actions matter towards outcome of the story.

21. When given dialogue options, I spent time thinking about the outcomes
116 responses
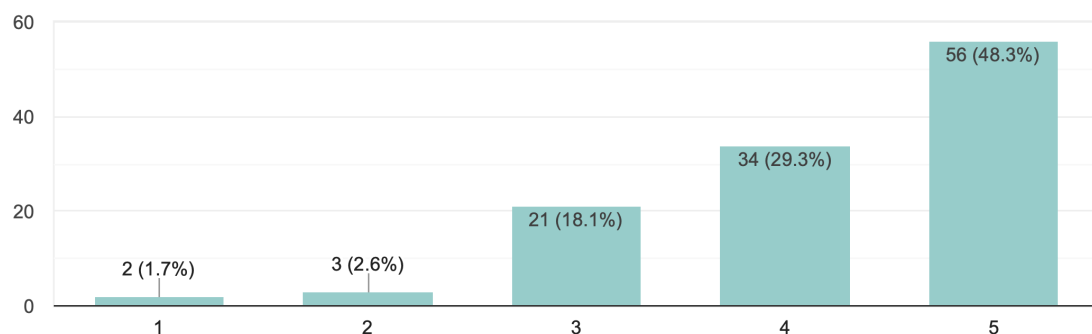
Graph 21. Participants' answers to the Statement 21

22. I enjoy it more when the collectable items are related to the story:

Collectable items are hidden items through the map that is expected to be collected by the players in order to score higher or sometimes unlock hidden narratives. While this method of storytelling is widely used it is also important that players enjoy this.

50% of the participants stated strong agreement to the statement while 25.9% stated agreement. Therefore, 75.9% of the participants stated that they enjoy the collectables more when they are related to the story. Collectables can be implemented relevant to the narrative in two ways; visually they can be an item that has a meaning in the story and they can open up hidden narratives.

One participant stated that they expect the narrative gathered through the collectables to be relevant to the main story:

> I love doing side quests and exploring the maps finding collectables in games. But certain games takes it too far. *Assassin's Creed* comes to mind there is just too many things to try and find that have no impact on the game. I prefer collectables to be part of quests or more lore stuff about a world that I am exploring or something that gives my character more power like in the *Witcher 3* etc.

In light of the above comment and answers, it can be argued that players enjoy collectables more when they have a meaning towards the story.

22. I enjoy it more when the colectable items are related to the story
116 responses
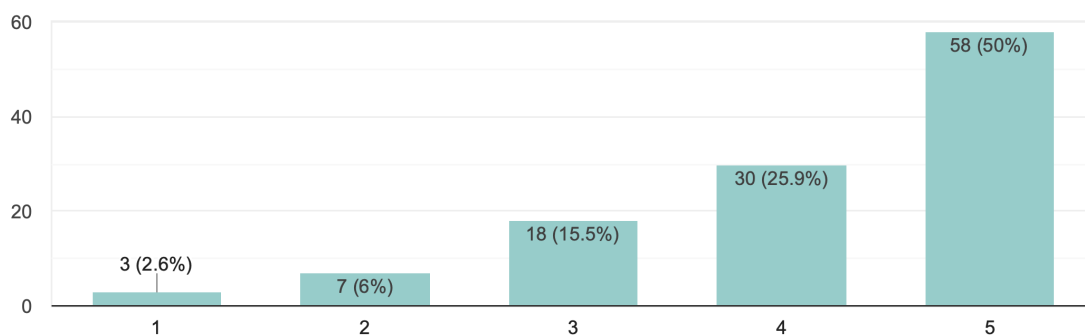
Graph 1. Participants' answers to the Statement 1

4.2.5 Section 5: Gameplay

This section aims to understand how gameplay itself contributes to the players' perception of narrative and if this is enjoyed by the players. Gameplay offers a large amount of interactivity opportunity to the players as well as helping with the narrative through "do, don't show, don't tell" method that is discussed in the gameplay chapter.

*23. During gameplay, I think about the strengths, weaknesses, and personality of my character*

This question has been asked to understand if "do, don't show, don't tell" method is an effective method to deliver the character characteristics by players experiencing it first hand. It is important that players understand the capabilities of the characters and draw their own conclusions through gameplay regarding character's personality and traits to understand if this works, players should think about the characteristics

64

of their characters. Further on, players might not be aware of such narrative method and play the game without thinking about the characters or commenting on their characteristics.

In the survey, it can been seen from Graph 23 that the majority of the players stated that they think about the strengths, weaknesses and personality of their characters. As the majority of the participants agree with this statement, implementing narrative in the gameplay without using written or spoken communication is an opportunity to deliver characteristics of a character.

23. During gameplay, I think about the strengths, weaknesses, and personality of my character
116 responses
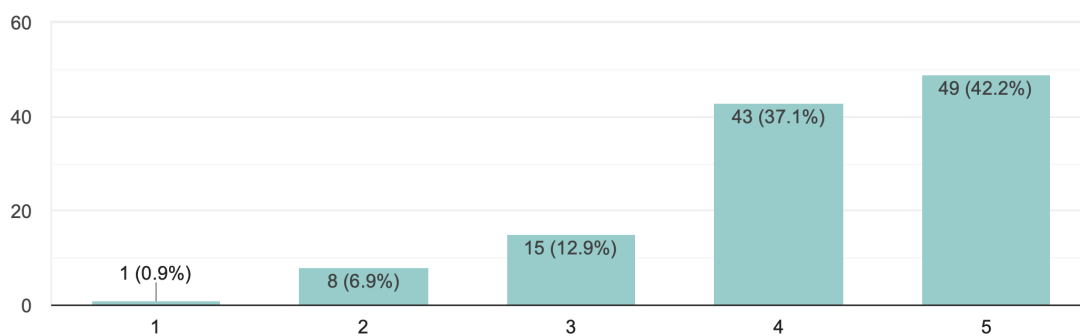
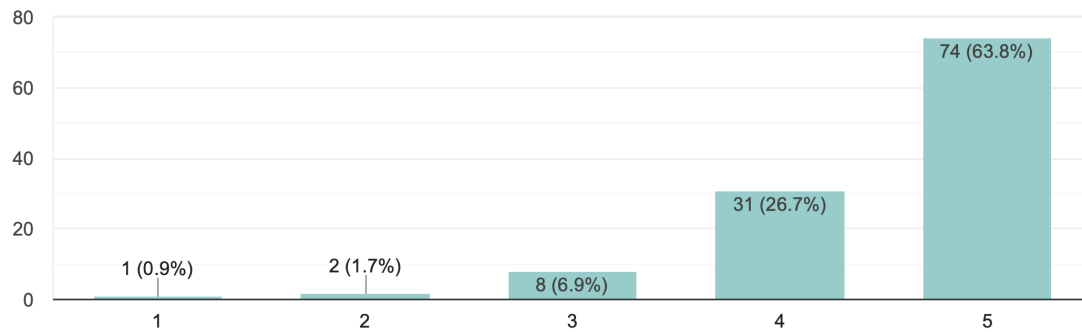Graph 23. Participants' answers to the Statement 23

24. I like when there is more than one way to overcome an obstacle during gameplay

Each player have different play styles, while one player can favor stealth over action another player can choose to overcome obstacles through alternative paths. These different solutions to a problem in games can give different reactions from the enemies or the NPCs. Therefore, creating alternative narratives. This different solutions also support customization and unique experiences for each players.

As can be seen from the below graph, only 3 participants stated that they do not like alternative solutions in games. 90.5% of the participants stated that they like it when there are different ways to overcome obstacles; this shows that game designers should be encouraged to implement different solutions to obstacles. As stated above, in terms of narrative, using this preference of players, different narratives or nonlinearity can be added to a game.

24. I like when there is more than one way to overcome an obstacle during gameplay
116 responses

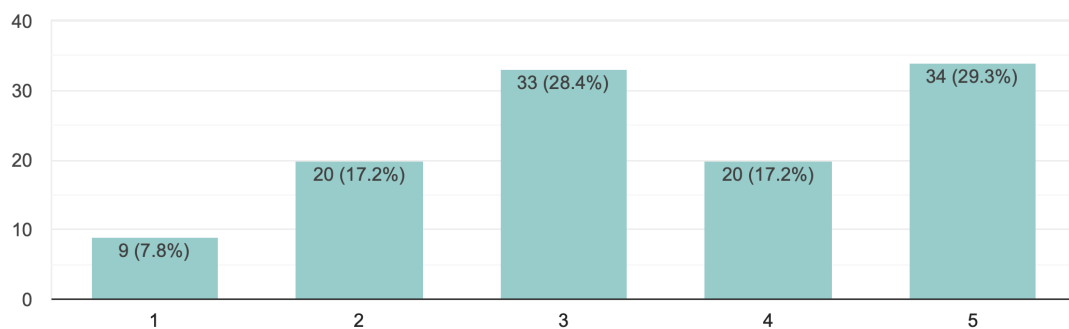Graph 24. Participants' answers to the Statement 24

25. I focus on story more when mechanics are easier

This question has been asked to understand if the gameplay can prevent the player from understanding the narrative. Such as, mechanics can prevent the player from understanding what is going around them narrative-wise.

This statement has received mixed answers from the participants, as seen from Graph 25, while the majority stated positive agreement that there are non-negligible amounts of negative or neutral answers. Nevertheless, more players stated that they focus to story more when mechanics are easier. However, this statement failed to ask if the players enjoyed it more when the mechanics are easier. Therefore, the answers cannot be interpreted as players enjoy it more when they get to focus more on the story or when the mechanics are easier. To that end, the data and the statement is inconclusive to state preferences of the players regarding easy mechanics.

25. I focus on story more when mechanics are easier
116 responses

Graph 25. Participants' answers to the Statement 25

26. I like feeling like the main character when playing a narrative-driven game

This question has been asked to understand if game designers should focus on creating empathy and immersion for players through gameplay. If players enjoy immersion and empathy, therefore a game that gives importance to implementing such elements would be preferred and enjoyed by the players.

As can be seen from the below graph, majority of the participants stated positive agreement with 68,1%. On the other hand, there is also considerable amount of neutral answers for this statement. Nevertheless, well over half of the participants stated that they enjoy feeling like the main character.

26. I like feeling like the main character when playing a narrative-driven game
116 responses
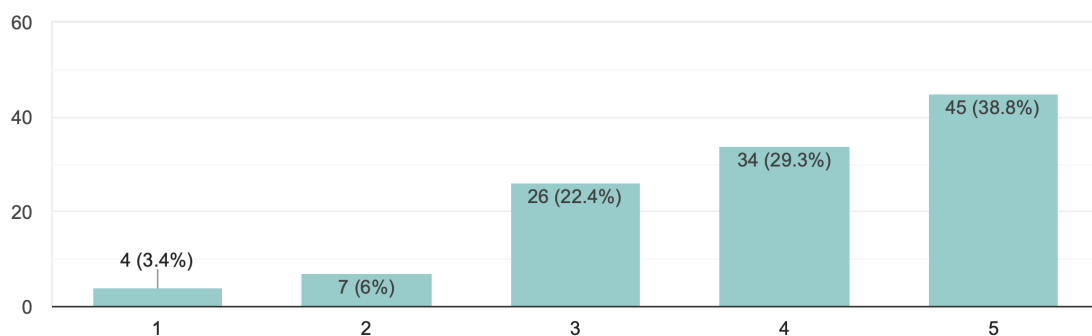
Graph 26. Participants' answers to the Statement 26

*27. I enjoy a game more when I overcome the obstacles without game giving me tips*

Gameplay can be challenging at times and players may require tips or can get help from walkthroughs. Such as in *Tomb Raider* (Square Enix, 2013) players are able to see interactable objects or location of their objective through pressing a key and receiving hints. While game giving hints can be helpful at times, it can also make the game easier for the players and lowers the challenge.

One important thing to consider in this question is that, this question was not asked about the tips as given in the example above from *Tomb Raider* (Square Enix, 2013) rather games forcing the players to receive the hints, not making it an optional feature. More than half of the participants stated that they enjoy a game more without game giving the tips. On the other hand, a little over quarter of the participants stated neutrality, meaning hints does not effect their gameplay experience. Nevertheless, it can be understood from the answers that players should

not be forced to getting the hints but they should be implemented as optional.

27. I enjoy a game more when I overcome the obstacles without game giving me tips
116 responses
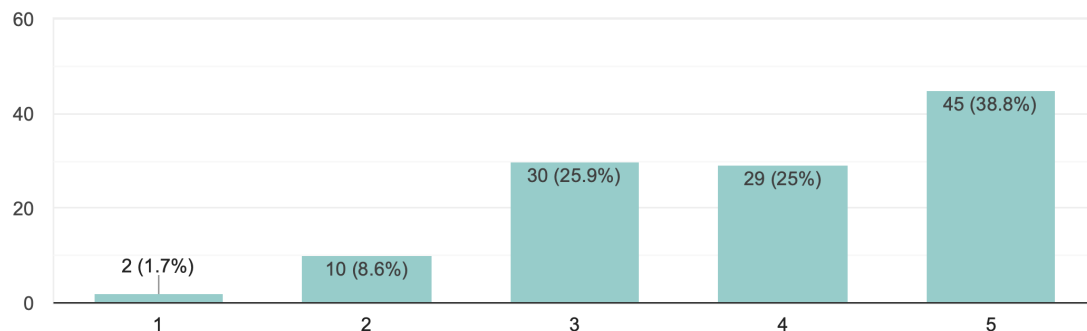
Graph 27. Participants' answers to the Statement 27

28. My status in the story (how far I have become) is important for me and I would like to be able to check it:

During pilot study 2, a participant commented that they would like to be able to check their progress when playing a narrative-driven given. This question has been added into the research based on the feedback received in pilot study to understand the preference of the majority of the players on this subject and if it is an important feature to implement in a narrative-driven game. 65.4% of the participants stated that they would like have this feature in narrative-driven games.

One participant commented to this question as the following:

> I'd rather certain things come as a surprise, and knowing where I am might give it away (like if something seems climactic but is actually a twist midpoint).

While the progress bar is an expected feature by the players, the above comment should also be taken into account and progress bar and chapter system should be

featured without giving away important turning points in a game.

28. My status in the story (how far I have become) is important for me and I would like to be able to check it

116 responses
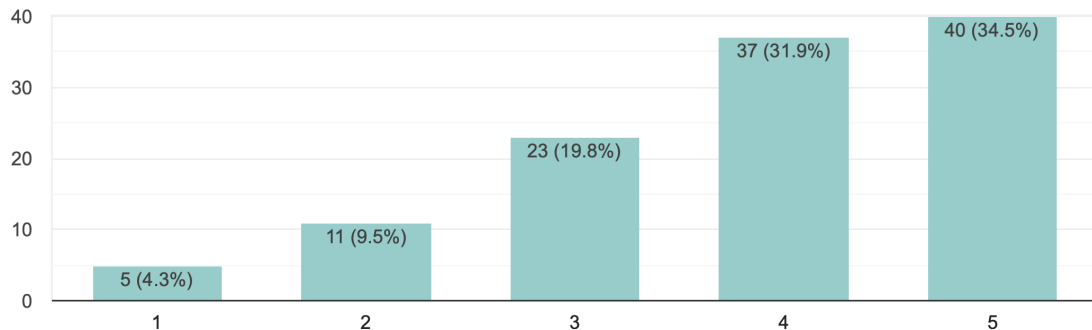
Graph 28. Participants' answers to the Statement 28

29. When they are present I like it when I have more than one equipment/weapon to use:

As mentioned previously, each player has a different play style. Players can choose to use long ranged weapons or can choose to adopt a short ranged play style. These kind of different approaches to the game also creates unique experiences for the players. Further on, in some games these weapons also comes with origin stories. Such as, dual pistols of Lara Croft is a signature weapon in the game series. However, *Tomb Raider* (Square Enix, 2013) offers a range of weapons to the players from bows to handguns and each weapon has a different narrative based on how the player acquires it.

As can be seen from graph 29, other than one participant, each participant stated neutrality or positive agreement to the above statement. This graph confirms that a high majority of the participants enjoy being able to use different equipments or weapons. Game designers can use these elements to implement different narratives or to support the main story. Dual pistols being a signature weapon for Lara Croft and being acknowledged throughout the community suggests that such equipments or weapon can be used to create a narrative around the character.

A participant argued that:

> You have to understand that its not a lot of fun when you have 10 weapons to use but it is all the same and not unique. Again for ex *AC-Revelations* the game had 20 and more swords to choose if i remember correctly none of them

add new animations or unique abilities. It was a waste of time. What i mean is its not about the quantity its about quality.

This comment suggests that unique weapons should not be implemented to just add more options to the players that present the same gameplay. Therefore, when implementing different choices to the games in the form of weapons, each weapon or equipment should offer a different experience to the players.

29. When they are present I like it when I have more than one equipment/weapon to use
116 responses
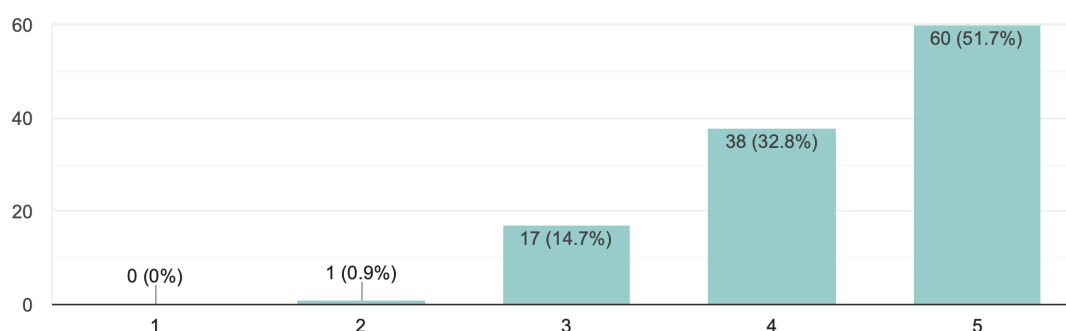
Graph 29. Participants' answers to the Statement 29

30. I prefer that my actions have meaning towards the story:

This question has been asked to understand if actions players make during gameplay itself should be meaningful for the story.

Almost 90% of the participants stated that they enjoy a game more when their actions have a meaning towards to story. This data suggests that actions of the players should have a meaning for the continuation of the story. The actions players need to make or the input they need to give to pass a level, mission or quest should be purposeful. As previously discussed with side stories, players enjoy the gameplay more when it is meaningful for the story and has an effect on it.

30. I prefer that my actions have meaning towards the story
116 responses
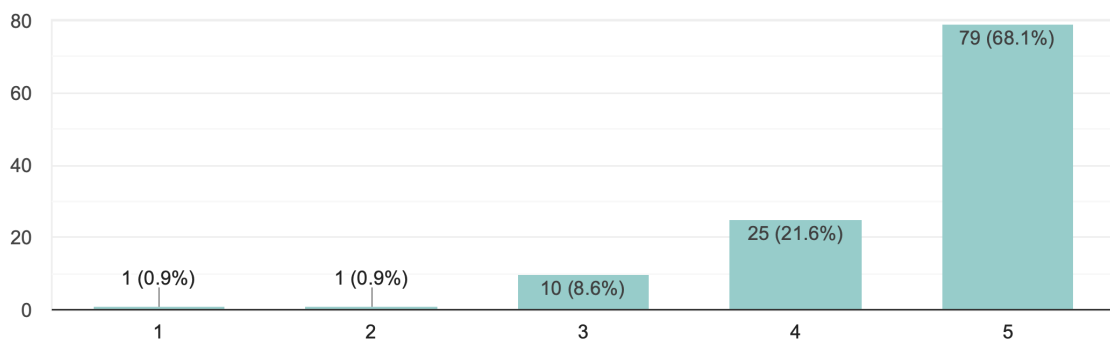
Graph 30. Answers to the final question in Gameplay section

Above section that discusses gameplay, did not receive many comments regarding to explanation of the answers. Therefore, it can be argued that the results of the statements are enough to make conclusions.

4.2.6 Section 6: Achievements

Achievements itself does not directly offer a narrative experience to the players. However, achievements create objectives for the players that lead to different narrative opportunities.

31. Achievements set by designers are encouraging for me to continue playing the game:

Achievements are aimed to raise player motivation and engagement (Volkmar et al., 2019). This question has been asked to understand if players enjoy achievements and they are encouraging for the continuation of the narrative.

Surprisingly, only a little over 50% of the participants stated agreement to this statement considering that in the previous answers more participants have stated similar agreements with the statements. As can be seen from the graph below, while majority of the participants stated that they find achievements encouraging, there is non-negligible amount of participants disagreed or stayed neutral towards this statement. Therefore, this data is inconclusive to deduce to a single guideline but it still shows that majority of the participants find achievements encouraging and motivating.

A participant commented that they do not like achievements to be hard:

71

I do try to find more information about objects like books in the game (exp. in *Divinity: Original Sin 2*, you have to read some books from libraries to solve 2-3 quests but the game only mentions about them in some random dialogues and you have to search for those books to learn about a character's backstory) But if those achievements are too hard to find and it hinders me a lot, then I might skip them.

On the other hand, another participant commented that they like it more when they are harder:

Achievements(especially hard ones) give me a reason to keep playing after i have mastered/finished a game. I do not pursue achievements in the early stages of a game and do not care about easy ones.

These comments also supports that players have differentiating preferences on achievements.

31. Achievements set by designers are encouraging for me to continue playing the game
116 responses
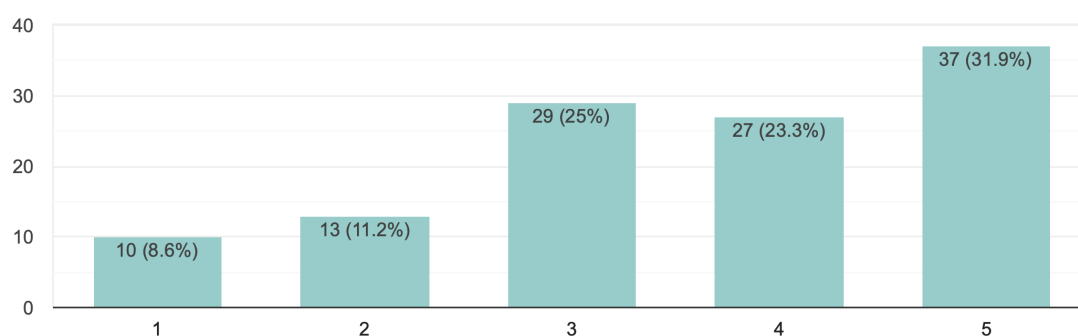
Graph 31. Participants' answers to the Statement 31

32. I follow achievements to see if there is hidden narrative in them:

In some narrative-driven games players are presented with hidden narratives if they complete achievements. Such as, players can choose to follow different paths in nonlinear games, and these are hinted in the achievement screen. Players can see that there are achievements to be completed that rewards the player with narrative only if they have completed the said achievement. This achievements can be achieved by collecting all or a certain number of collectable items, or by selecting different storylines during a replay of the game.

Below, graph 32 shows that 54.3% of the participants stated that they complete the achievements in order to find out about the hidden narrative. This suggest that if

game designers want to implement such feature in a game a little over majority of the players will follow it. However, it is clear that achievements are not favored by a reasonable amount of players. Similar to previous statement, this statement does not give a clear answer on player preferences but shows that a little over 50% of the participants follow achievements.

32. I follow achievements to see if there is hidden narrative in them
116 responses
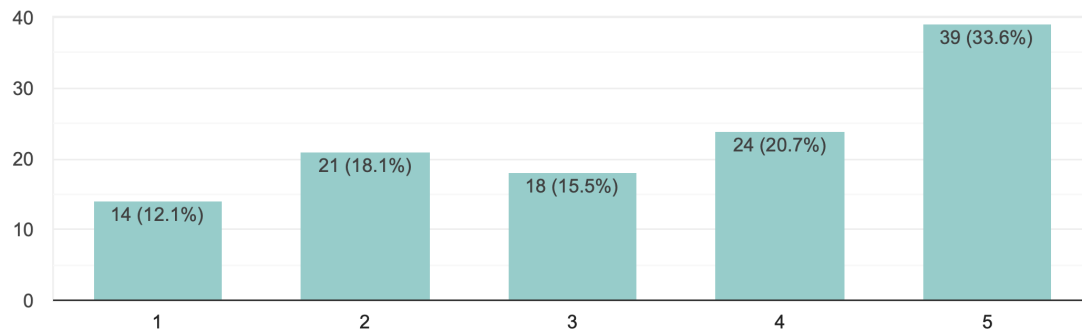
Graph 32. Participants' answers to the Statement 32

33. I believe achievements are an important source of narrative:

This question has been asked as a follow up of the previous question. While the previous question did not ask about the enjoyment of the players with achievements but their routines, this question has been asked to see the if the players give importance to the achievements which is to understand if achievements are essential for narrative-driven games.

Interestingly, the answers to this question did not receive a majority vote. As can be seen from the below graph, 42.2% of the participants agreed with the statement while 37.1% of the participants disagreed and 20.7% is stated neutral. Therefore, the answers in this question is inconclusive to comment on it. As it can also be seen from the previous statements in Achievements section, players have mixed answers on the subject of achievements.

33. I believe achievements are an important source of narrative
116 responses
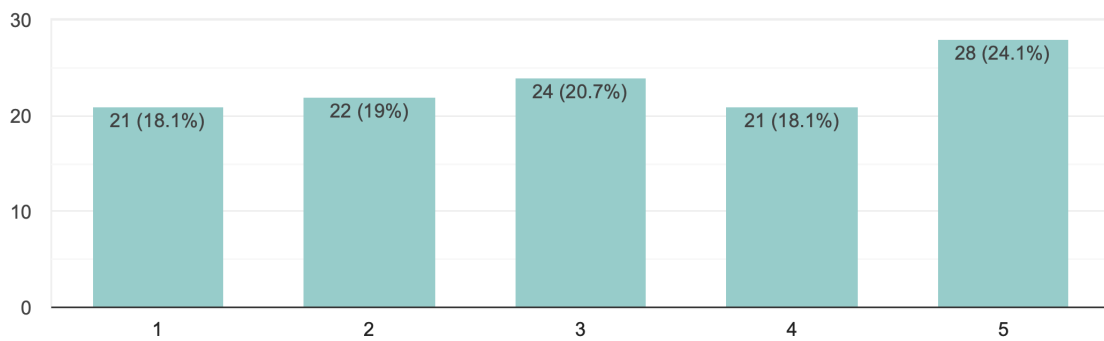
Graph 33. Participants' answers to the Statement 33

34. I try completing the achievements to learn more about the story:

Similar to previous answers in this section, statement 34 also received mixed answers. In the graph below, the answers shows that majority of the players do not have a single opinion on the above statement. Further on, two participants, one stated agreement and one stated disagreement commented as the followings respectively:
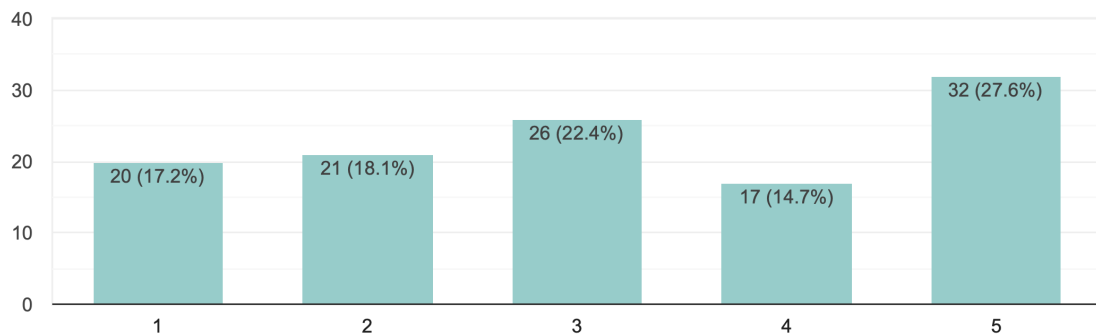
The only reason i look into them;

Achievements are important, but not for the story.

These comments also suggests that there are different types of players when it comes to achievements. However, no further conclusion can be made from the below graph as the majority of the participants did not meet on agreement or disagreement.

74

Graph 34. Participants' answers to the Statement 34

Achievements section in the survey received mixed answers to the statements and also received mixed comments on achievements. Below comments from the survey shows that participants have very differentiating answers on the subject:

> It's only my opinion, i believe many would disagree but achievements breaks the illusion. Player should do things because he/she wants to do them, you can motivate the player by giving reasonable rewards to activities rather than unlocking miserable achievements like rewarding player a non op very good looking sword if he completes the map pieces, put some lore in it so it doesn't stinks and voila you just made player spent more time in the game and satisfied him;

> A bit in a grey-zone about achievements. They can spoil stuff, before I get to it, but yes, they can also show things from a new perspective. I don't mind them being there, but I certainly don't need them to be there;

> I find achievements immersion-breaking and always disable the system options to display them. In particular, I started doing this when playing through *Dragon Age II*, when I got a jarring achievement notification right after completing a romantic scene with one of the game's love interests;

> I will not be playing the game if there are no achievements. I would have nothing to complete and work towards, and nothing to show for any work done.

Above comments also support the different player types argument made by Volkmar et al. called *BrainHex* which states that there are seven different archetypes of players such as Seekers who like exploring or Achievers who is focused on finishing

objectives. They have suggested that achievements should be adaptable on the basis of individual player types (Volkmar et al., 2019).

## 4.2.7 Section 7: Linear & Nonlinear Stories

Questions in this section has been asked to understand player preferences on linear or nonlinear storytelling. As previously stated, linear and nonlinear storytelling are when the story continues on one line without branching and when the story has a nonlinear structure that shapes the story based on player actions.

35. I enjoy a narrative-driven game more when there is more than one outcome of the story:

This question was aimed to understand if players enjoy nonlinear games where there is more than one outcome of the story. Graph 35 shows that no participant has strongly disagreed to the statement but well over majority of the participants stated that they enjoy a narrative-driven game more when there are alternative endings. This suggests that if a narrative-driven game has more than one outcome, it will be enjoyed by more players.

35. I enjoy a narrative-driven game more when there is more than one outcome of the story
116 responses
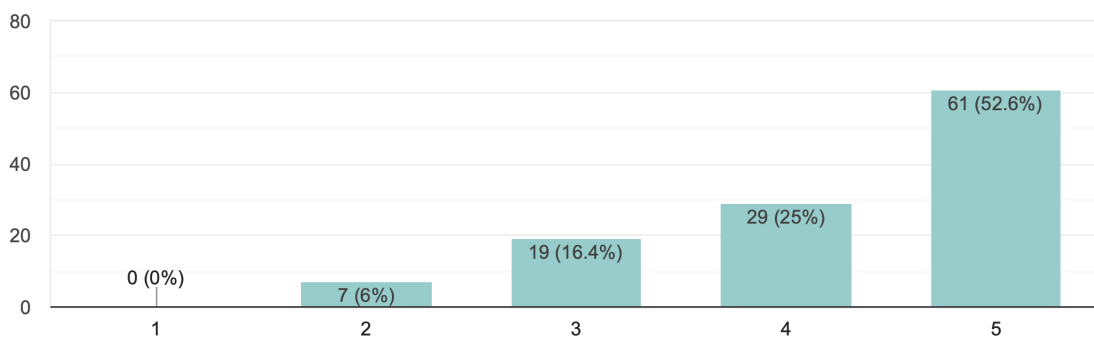
Graph 35. Participants' answers to the Statement 35

36. I prefer games that have a single storyline that I can't change:

Similar to the previous question, this question has been asked to understand player preferences in multiple ending stories. In total, 44.8% of the participants stated that they they prefer games with multiple endings. However, as can be seen from the below graph, participants stated mixed answers. 31.9% of the participants stated that they are neutral to the statement which can suggest that they both enjoy single storylines and multiple choice stories. Nevertheless, the data is inconclusive to state

a single opinion of the majority of the participants. However, answers to the previous statement showed that majority of the participants enjoy multiple ending stories. The answers to this statement contradicts to the previous statement by percentages on each answer but both of the questions received the majority of the answers in favor of multiple ending stories.

36. I prefer games that have a single storyline that I can't change

116 responses
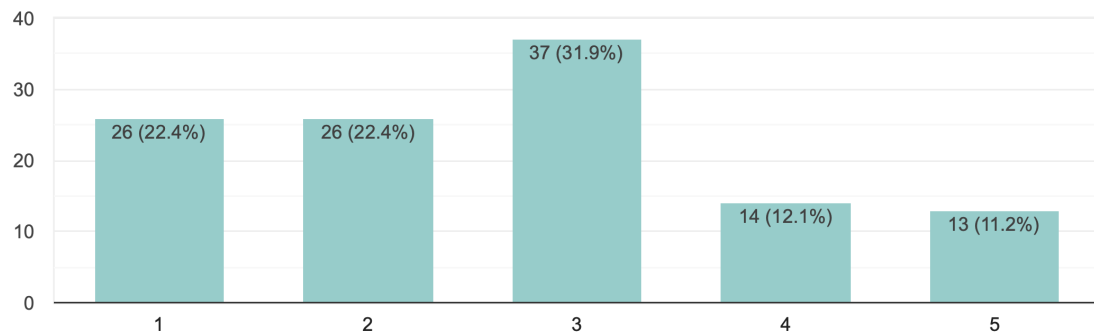
Graph 36. Participants' answers to the Statement 36

37. If the game has more than one outcome, I replay it to see different outcomes:

Multiple ending games offer different outcomes to the players based on the choice they make or actions they take. Therefore, in each replay if these interactions have been made differently than the previous play session, players are able to see different narratives of the story.

Over 60% of the participants stated that they do replay the game more than once to see the outcome. This is an encouraging data for game designers to implement multiple endings in their games.

To show the view of the players who do not replay in order to see the different outcomes, two participants commented and shared their views:

> A game with multiple endings has no replay value to me if in order to get different endings you have to replay a lot of parts of the games without them being any different from the path I already cleared. If the paths are very different and offer me new insights then I love to play the other endings as well! A good example for that is *Bury me my Love* where some dialogue does repeat from other paths but after maybe 10 minutes you are given another choice that opens a completely new storyline that I have not explored yet. A bad example is *Fire Emblem 3 Houses* where if you were to choose a different house than in your first play through, you'd have to replay like 10 hours or so

of exactly the same events again before there will be any new content for you to enjoy;

It depends on how different those outcomes are, how much the rest of the game changes, and how strongly I feel about those outcomes. Typically, if the changes outside of the ending itself are minor, I don't tend to select choices that I strongly dislike (such as the pro-Templar options in *Dragon Age Origins* or *Dragon Age II*). Alternatively, some choices or factions are so repulsive that I can't side with them no matter what kind of content they have (like the Legion in *Fallout New Vegas*). Even when I'm not as opposed, it helps if there's more narrative and character content on the level of an entire section of the game that isn't seen otherwise (like the routes in *Fire Emblem: Three Houses*, where I was really not inclined toward Azure Moon but did it to see the story anyway).

These comments show that it is important for players to see the effects of the different routes they are taking during gameplay. Therefore, in order to ensure the replays and encourage players to see different narratives, these alternative routes should offer players stories that they did not come across during the previous play session.

37. If the game has more than one outcome, I replay it to see different outcomes
116 responses
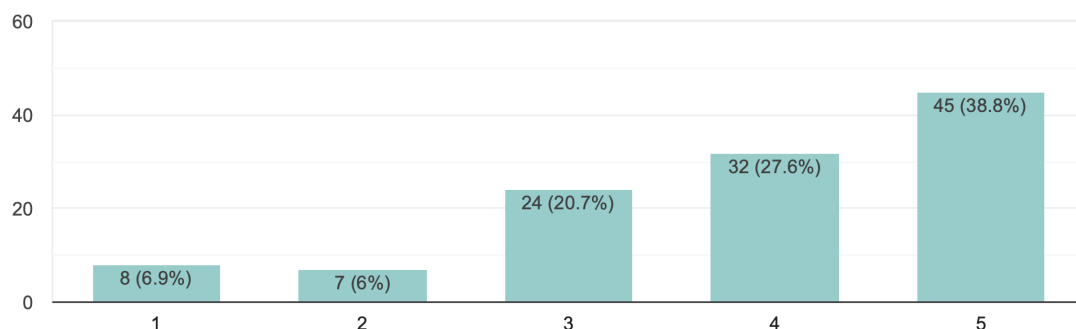
Graph 37. Participants' answers to the Statement 37

4.2.8 Section 8: Music and Sound

Music and sounds are an essential elements for games both for telling the narrative or providing feedback to the players.

38. I play games with sound on:

Even though game provides sound to the players, players might be playing the games without the sound. If there is a case where the player is presented a part of the narrative through sound and they are playing the game without the sound, then the narrative would not be delivered to the players.

Answers to the statement 38 can be seen below, 87.1% of the participants stated that they play the games with sound on. However, rest of the players who play the games without the sound and hearing impaired players should also be taken into account and if a narrative is aimed to be delivered through music, lyrics should be presented on the screen in order to avoiding gaps in the story.

38. I play games with sound on
116 responses
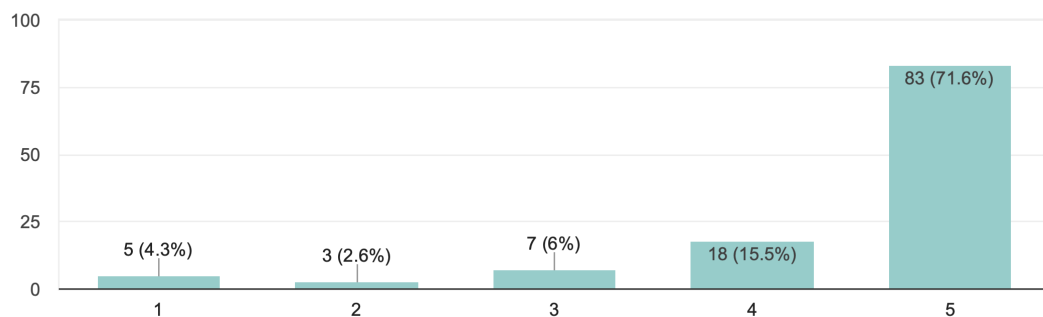
Graph 38. Participants' answers to the Statement 38

39. I pay attention to the lyrics of video game music:

Similar to previous question, this question also aimed to understand if players are open to receiving a narrative delivered through audial cues such as lyrics. 56% of the participants stated that they pay attention to the lyrics of video game music while this percentage shows that majority is able to follow a narrative through lyrics, there are considerable amount of players who is not open to receiving such narrative. However, this data suggests that majority of the players have expectations from the lyrics. As stated in the previous question, this data also supports the idea of presenting lyrics written similar to a subtitle.
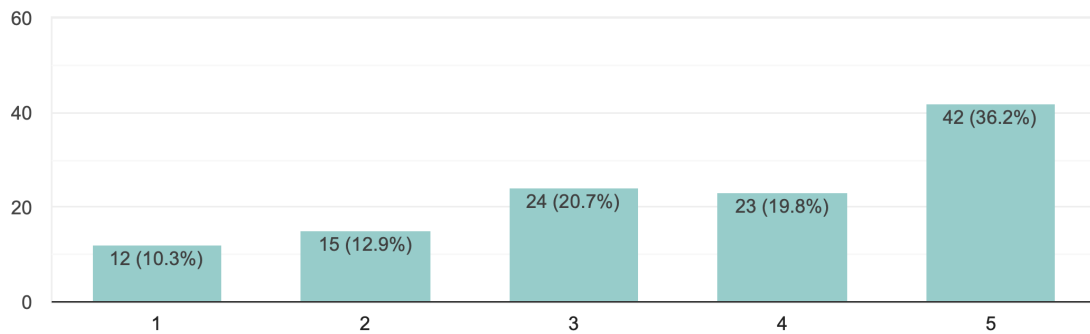
Graph 39. Participants' answers to the Statement 39

40. I pay attention to audial feedbacks to my actions (i.e losing health, power ups):

Last question in this section asked about the interactive audio. Interactive audio is an important element in games to provide feedback to the players.

More than 75% of the participants stated that they do pay attention to such audial cues. Interestingly, there are participants that do not pay attention to such sounds. This result is interesting as interactive audio is an important element to include in games. However, participants who stated disagreement to this statement did not comment on the question. Therefore, it is not possible to understand the reasoning behind not giving importance to the interactive audio from this study.

However, a participant in favor of interactive audio stated they enjoy the implementation of interactive audio in *Overwatch* (Blizzard Entertainment, 2016):

> A game that does this well is *Overwatch*. I really enjoy hero ultimate voice lines and some lines when they ask for specific things like "attack the objective" etc. They make the game feel more alive.

Thus, based on the above comment and majority's agreement with the statement, interactive audio elements should be implemented in a game.

40. I pay attention to audial feedbacks to my actions (i.e losing health, power ups)
116 responses
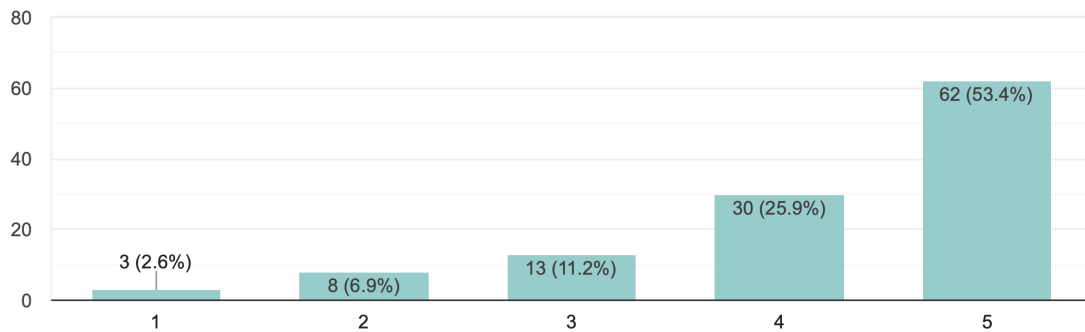
Graph 40. Participants' answers to the Statement 40

4.2.9 Section 9: Art and Visuals

Similar to audio, some visual elements also present players with parts of the narrative. Such as, art style can support the narrative by creating the setting relevant to the story of the game, or visuals itself can be the narrative without providing the player with a written or spoken narrative. Further on, certain aspects of the aesthetics of a game can affect the players' emotions (Hölttä, 2018).

41. Art style is important for me when I am considering buying a game:

In Narrative Through Visuals chapter, it stated that Keo argues that a game's most important feature when marketing is visuals (Keo, 2017). In order to see the participants' views on this argument, visuals and their effect on marketing has been asked through the above statement.

77.6% of the participants stated that art style is important when they are deciding to buy the game. While this support the argument made by Keo, this question does not ask if it is the most important aspect players considering during a purchase. However, it indeed shows that art style is very important for the players if they are considering buying a game.

41. Art style is important for me when I am considering buying a game
116 responses
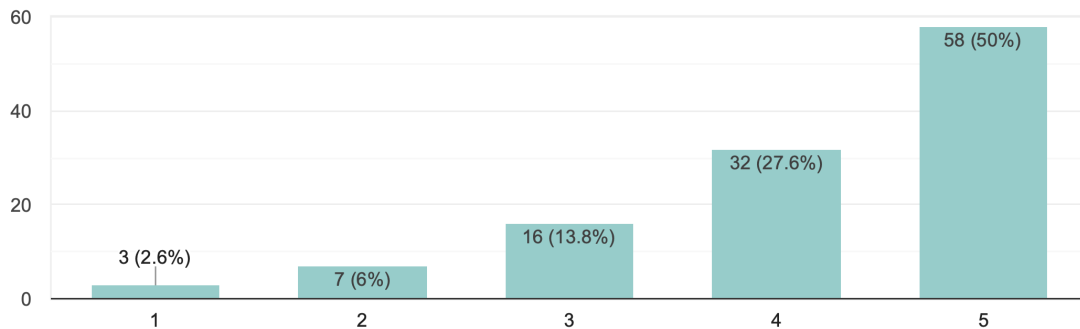
Graph 41. Participants' answers to the Statement 41

42. I observe the scene and the environment during gameplay to be aware of my surroundings:

Setting of a game gives visual cues about the narrative, and effects the player's approach against the story. Players being aware of their surroundings shows that the scene and environment is appropriate for narrative through these elements, namely, environmental storytelling that has been discussed previously. Further on, this question also suggests that the art of the game is viewed and examined by the players.

Over 85% of the participants stated positive agreement towards the above statement, while this data shows that narrative can be implemented through visuals, gameplay also can get positively affected by such narrative. For example, environment and scene can be used to implement solutions to the obstacles that requires observations of the players. Such as in *Braid* (Jonathan Blow, 2008), players need to observe the scene and visual elements to find out the solution of the puzzles where the solutions are hidden within the visual elements. In this game, these visual elements also support the narrative of the game by telling parts of it through imagery.

Participant answers in graph 42 shows that these kind of narratives can be implemented into the games through art to support and enhance the narrative. As mentioned previously, video games are a storytelling method that is told by the game designer to the players, such narrative can be a part of the story and if a game designer chooses to tell the story through this method, this data shows that players are open to receiving and story.

42. I observe the scene and the environment during gameplay to be aware of my surroundings
116 responses
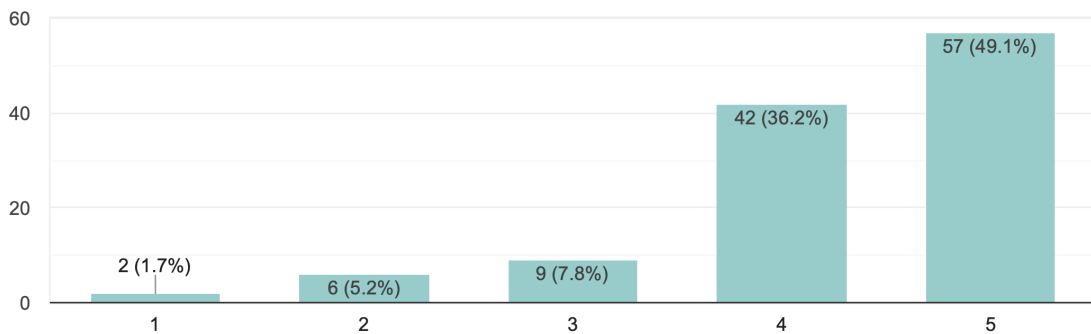
Graph 42. Participants' answers to the Statement 42

43. I observe the scene and the environment during gameplay to discover the art of a game:

While similar to above question, this question specifically asked about the players and their perception of the art around them in a game and importance players give to the art style.

As can be seen in below graph, almost 80% of the participants do observe the scene and environment in terms of its art. Further on, only 6% of the participants stated that they do not observe the scene and environment in terms of art.

43. I observe the scene and the environment during gameplay to be discover the art of a game
116 responses
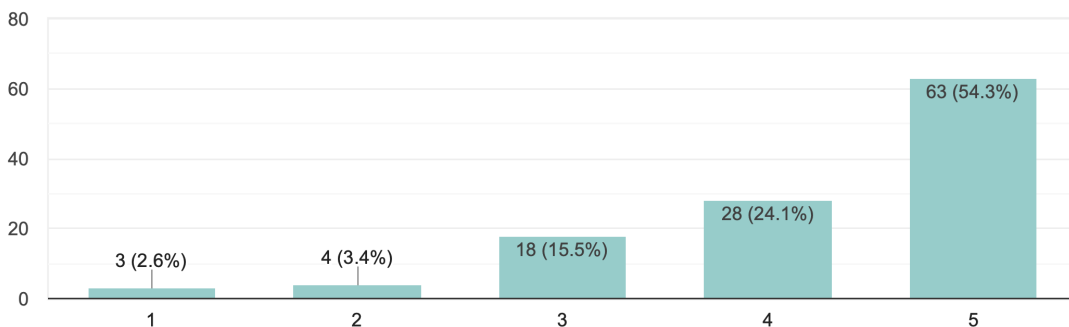
Graph 43. Participants' answers to the Statement 43

44. I enjoy a game more when art style and cinematography complements the story (i.e. a dark story having a darker atmosphere):

As mentioned in the Narrative Through Visuals chapter, generally the visuals of a game reflects to the narrative of the game. For instance, in *The Darkest Dungeon (Red Hook Studios, 2016)* eerie narrative of the game is complemented by the visual aesthetics of the game. This question has asked to understand if this method is preferred by the players or do they enjoy a game more where the art style does not match to the story.

Over 85% of the participants stated that they enjoy a game more when the art style and cinematography matches to the narrative. Thus, it can be deduced that when art style matches the narrative thematically, it is more enjoyable for the players.

44. I enjoy a game more when art style and cinematography complements the story (i.e. a dark story having a darker atmosphere)
116 responses
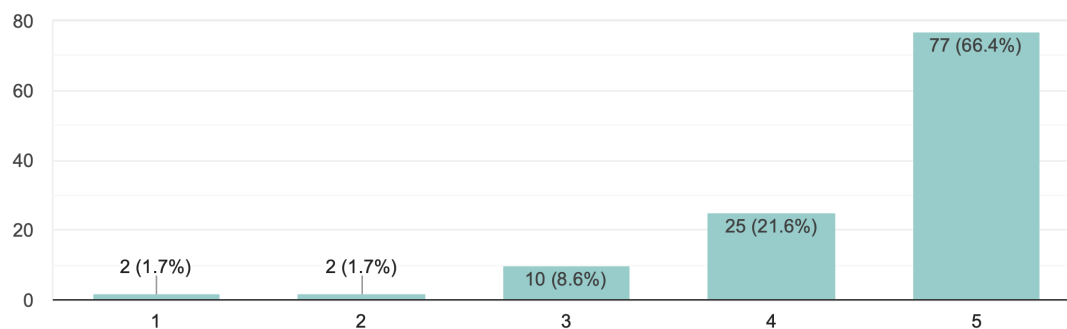
Graph 44. Participants' answers to the Statement 44

45. I like exploring the map to find hidden stories:

There are gameplay elements that require the visual observation of the players in a map, such as caves or hidden rooms. If players are enthusiastic towards finding and solving visual cues, narrative can be implemented in these hidden areas or with hidden symbols. Therefore, the question has been asked to see if the players enjoy such narrative.

It can be seen from the data in graph 45 that more than 60% of the participants strongly agreed with the statement, in total 78.4% of the participant positively agreed with the statement. Thus, narrative through visual elements such as hidden symbols are an effective element for the majority of the players.

45. I like exploring the map to find hidden stories
116 responses
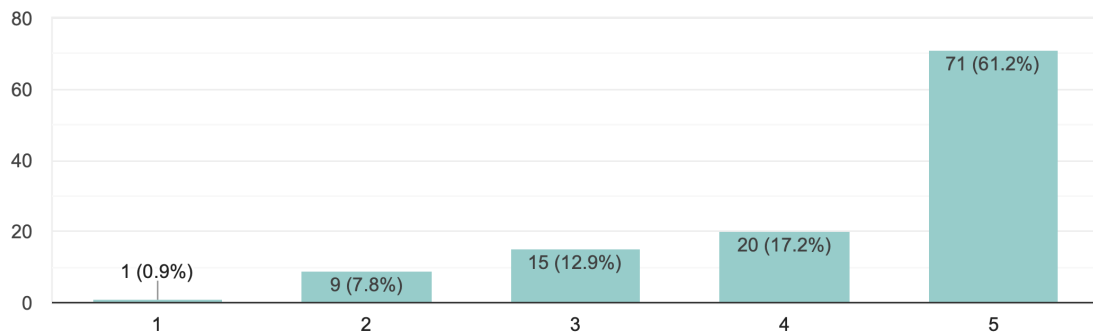
Graph 45. Participants' answers to the Statement 45

4.2.10 Section 10: Cutscenes

Cutscenes are important visual elements in narrative-driven games. Some games choose to implement cutscenes as movies where the player is able to sit and watch without performing any action but some games implements cutscenes as interactive gameplay elements where players are expected to perform quick time events. Further on, cutscenes are important narrative elements that can create interactivity opportunities for the players.

46. I prefer cutscenes interactive with quick time events where I have some control over my character:

This question has been asked to understand if the general preference of players is leaning towards interactive cutscenes or movie like cutscenes. It can be seen in graph 46 that participants did not lean towards to a single answer which shows that there are differentiating opinions on cutscenes and interactivity they offer. More participants stated that they enjoy quick time events than those who stated that they enjoy movie like cutscenes. However, these these two opinions only differ by 18.1% which is not a significant difference to come to a conclusion regarding interactivity in cutscenes.

Therefore, the answers to this question is inconclusive to develop heuristics but it shows that both methods are enjoyed by the players but interactive cutscenes with quick time events are enjoyed by more players. In order to see a pattern in this comparison, the question can be asked to a higher number of participants and a different outcome might be expected by further data collection.

On the subject of quick time events, some participants stated their opinions, in order of the comments, they have answered; agree, strongly disagree and strongly disagree respectively:

> I like singular decisions in cutscenes, or a timed quick decision. I do NOT like having to spam several different buttons fast;

> I don't like quick time events in cutscenes because i often sit back to enjoy the scene and suddenly i have to move back to the keyboard / controller and i don't like that, I like it if there is interactivity in the form of choices that i can make with replays or stuff like that;

> I like a good cutscene. They can lend a lot to the story. I HATE QTEs. With a passion. But I do enjoy good cutscenes. As long as they don't dominate the actual gameplay too much and "rob" you off an important choice, they can be very good to both tell a short introduction, display a consequence of choice or even just set the mood or show you the area... maybe even hint at something...

Therefore, participants who stated negative agreement to the statement believes that cutscenes are an important source of narrative, however, they do not like reacting during an enjoyable scene of the game. Further on, last comment above also suggests that cutscene should not make the important decision in place of the player.

46. I prefer cutscenes interactive with quick time events where I have some control over my character

116 responses
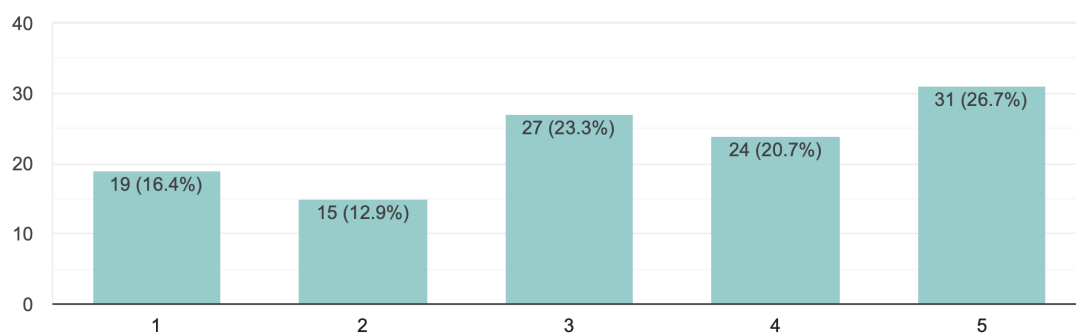
Graph 46. Participants' answers to the Statement 46

47. During gameplay, I pay close attention to cutscenes:

Cutscenes are implemented to deliver an essential part of the narrative to the players. However, these cutscenes are also offered with skipping options which results in players missing the narrative if used or simply players might not pay

attention to the cutscenes. If there are such cases, cutscenes should not be used to deliver narrative to the players as it will not be effective.

Below graph shows that only 8 participants, 6.9% of the participants stated that they do not pay attention to the cutscenes. Therefore, it can be argued that cutscenes can be used as an effective source of narrative to participants.

47. During gameplay, I pay close attention to cutscenes
116 responses
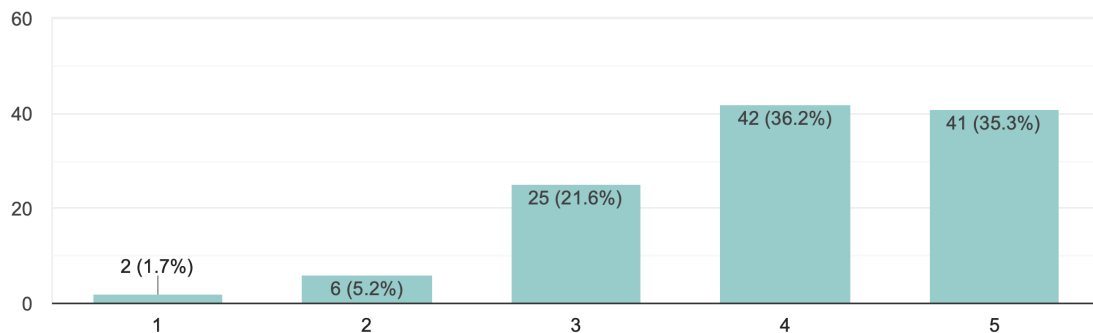
Graph 47. Participants' answers to the Statement 47

48. If not interactive, I skip cutscenes:

This question has been asked to understand if the interactivity is crucial for cutscenes and if the players are using the skipping option when they are not interactive.

57.7% of the participants stated negative agreement to the statement denoting that they do not skip the cutscenes if they are not interactive. A little more than quarter of the participants stated that they do skip the cutscenes if they are not interactive. However the data suggests that cutscenes do not have to be interactive for players to enjoy them.

A participant strongly disagreed with the statement suggested implementing pause option to the cutscenes:

> I'm actually annoyed when cutscenes can be skipped accidentally, or if a 'skip' prompt is visibly displayed more than once. I don't want to skip it (though I might like to pause it, which should be a separate option), and when I'm getting in to it I don't want to see some pointless prompt getting in the way.

In light of this comment, pause options for the cutscenes, if not already implemented, should be evaluated.

48. If not interactive, I skip cutscenes
116 responses
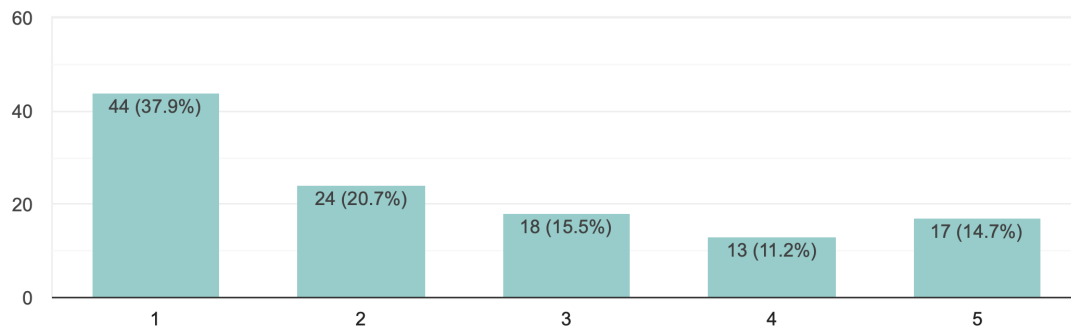
Graph 48. Participants' answers to the Statement 48

49. *I like having cutscenes in narrative-driven games:*

This question has been asked to understand if the players are generally in favor of cutscenes in narrative-driven games or against them. Graph 49 shows that almost 75% of the participants stated that they do enjoy enjoy cutscenes. However, almost quarter of the participants stayed neutral against the statement. Nevertheless it is clear that players are in favor of cutscenes and they like having them in games.

49. I like having cutscenes in narrative-driven games
116 responses
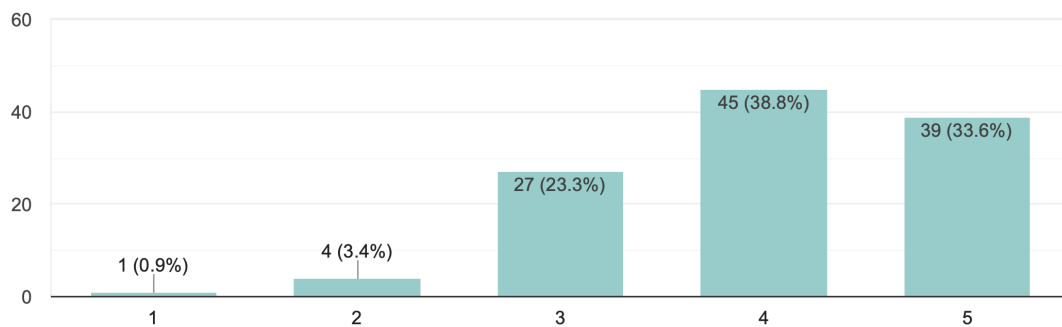
Graph 49. Participants' answers to the Statement 49

50. I believe cutscenes interrupt the gameplay (interactivity):

This question has ben asked to understand if cutscenes are interrupting the gameplay by putting the player in a passive status (Silva, Cardoso and Oliveira, 2019). During a dramatic tension of the gameplay, cutscenes can cut the scene and pause the interactivity. This question has been asked to understand if players are thinking cutscenes are causing such situations.

Almost half of the participants stated that they believe cutscenes are not interrupting the gameplay but more than quarter of the participants stated that they believe cutscenes are interrupting the gameplay.

However, this question failed to ask if this is a problem for the players, as players might consider that even if the gameplay is interrupted it might not cause a problem. Therefore, this question is not sufficient to uncover the importance of cutscenes on interactivity. Hence, no further analysis should or will be made in terms of heuristics. Moreover, no participant has commented on the question in regards to this discussion.

50. I believe cutscenes interrupt the gameplay (interactivity)
116 responses
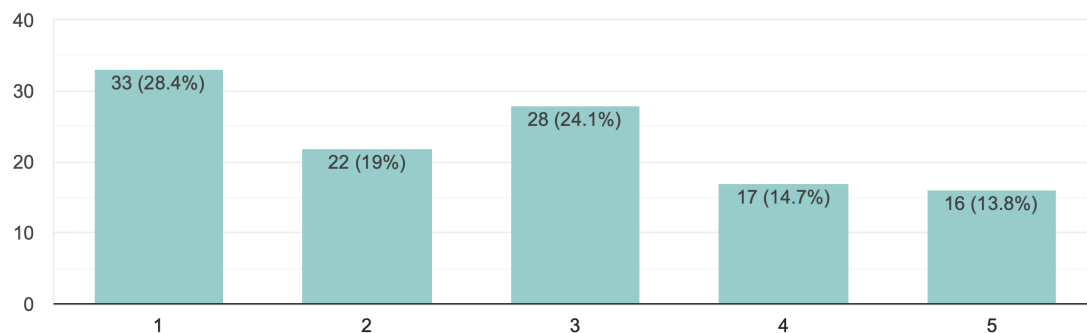
Graph 50. Participants' answers to the Statement 50

4.2.11 Section 11: Other opinions

Last section in the survey has asked one question to the participants to further explain their reasoning in any of the questions or if they have felt any important feature of narrative-driven games has been missed to discuss in the survey. The approach to this question has been kept similar to the previous open ended questions and the question has not been kept required to fill in order to finish to survey.

Some suggestions from the participants on the survey have been received:

> Opinions about checkpoint/save strategies should have been collected;

> Do you prefer games from bigger titles(like Bethesda) or indie games? These questions can be asked maybe.

Although checkpoints are important to ensure the continuation of the game, their effect on narrative is minimal. Further on, preferences on AAA companies or indie companies do not have an effect on narrative. As this thesis aimed to understand the effect of interactivity on narrative, such elements have not been discussed in the research.

Another participant stated that questions were too indisputable:

> Great survey had a good time filling it but in my opinion questions were kinda obvious. Most of the people will think the same. There will be so little controversy. You should ask more controversial questions other than that it was great.

Research was aimed to see patterns in the answers through the majority of the participants, this was aimed to be reached through the similar answers of participants. Therefore, the questions have been phrased clear and obvious in order to ensure reliable and understandable analysis of the survey. However, this comment will be kept in mind for a possible future research on the subject.

Further on, two participants stated what is most important for them in a game:

> Art, music and everything mentioned in the survey is very important to me and will be the reason I buy or try a game. Sometimes some games can get stale but the art/music or combat is interactive enough to keep one playing;

> I think the two most important elements are the story and gameplay dynamics.

Also one participant suggested an alternative method of using NPC interactions:

> I wanted to add that I love having the possibility to have social dynamics with NPCs, and to see them react to the plot/what's happening alongside the player and the main character.

This suggestion is similar to reputation method discussed in the Interaction with the NPCs and Environment chapter. It is proposed that agents can remember and share the actions of the players and predict the players' behaviors and act according to previous actions of the players (Mooney and Allbeck, 2014). This interaction method can be an enjoyable environment for the players and should be further evaluated.

4.3 Summary

The previous chapter, Analysis of the Answers, has focused on the analysis of each statement separately. This chapter analyzes statements from a section together and aims to summarize the elements discussed based on the relevant questions. Starting from the next paragraph, the sections are analyzed in their order of occurrence in the previous chapter, and the summarization of the sections is made in order of the number of statements.

The first section was aimed to understand the demographic of the participants and narrative-driven games they enjoyed the most. These questions have not been asked towards contributing to the heuristics but showed us that there are participants from every age group and the most preferred storytelling method of the participants is nonlinear and multiple ending stories.

In section 2, the answers in the survey have been used to identify players' opinions and preferences on interactivity, and the story suggests that players pay close attention to the story; this shows that story should be consistent throughout the game. The story is also a motivating object to continue playing the game for the participants. On the other hand, when a player gets stuck at an obstacle, the story loses its motivation for some players. Therefore, gameplay and story must complement each other and be on par with one another in terms of difficulty to make story and gameplay driving force for each other. This does not mean that the gameplay should be easy. However, gameplay must not be impassable or very hard to overcome. To put it another way, in narrative-driven games, the continuation of the story should be prioritized over hard to achieve gameplay to offer a better narrative experience.

Well over half of the participants stated that they enjoy a game more when they get emotionally affected by the story. Hence, it is essential to give place to elements that provide emotional depth for the players. Participants also stated that the story is an essential element when deciding if they will play a game or not. Thus, it is essential to give weight to the narrative during the marketing of a game.

Participants stated that they enjoy side stories. However, some participants stated that they expect the side stories to be consistent and meaningful with the main story; they have criticized the games that implemented side stories as 'running errands.' In terms of interactivity, the majority of the participants stated that they enjoy high interactivity time. However, a comment suggested that interactivity should not be prioritized over the narrative and should not be implemented to create more interactivity opportunities for the players.

Based on the analysis of the answers and discussions, this thesis suggests the following heuristics for story and interactivity in narrative-driven games:

Table 1. Heuristics table for the Story & Interactivity category

Category: Story & Interactivity
1.   Story is consistent throughout the game
2.   Story and gameplay complements each other in terms of difficulty to ensure the continuity of the game
3.   Story of the game is prioritized over hard to beat gameplay
4.   The game has elements that create emotional depth for the players
5.   Story is given importance while advertising the game and during the design process
6.   Side stories are meaningful and relevant to the main story
7.   Story and meaningfulness of the actions are prioritized over interactivity

In Section 3, customization options have been discussed based on the answers received from the survey. Answers for statement 8 suggest that majority of the participants enjoy customizing their character's appearance. However, not all narrative-driven games can implement appearance customization. Generally, game series features the same main character in each game; this cannot be done through a character with a different appearance in each game. Nevertheless, narrative-driven MMORPGs or open-world games can support character customization, and this element should be considered to implement.

Moreover, a participant stated that character customization creates immersion and empathy for the players. In the discussion of the previous section, it is noted that players enjoy emotional depth in the game; this comment suggests that character customization can be used to create emotional depth for the players through immersion and empathy. Discussions of statements 9 and 10 also support this idea, and results show that character customization should be implemented if empathy is aimed to be achieved.

Skill customization is another feature enjoyed by the participants; almost 90% of those who participated stated that they enjoy customizing their characters' skills. This customization can be implemented as customizing the characters' abilities or can be implemented as customizing the characters' expertise on a subject. The number of positive agreements to the statement suggests that game designers should be encouraged to implement some skill customization. Further on, the customization section results support Skolnick's idea of "some amount of choice and customization of player character" (Skolnick, 2014, p. 155). Moreover, the majority of the

participants stated that they care about their choices during customization. Therefore, it can be assumed that game designers can use customization options to deliver narratives to the players, and these options should be meaningful. As discussed in the Customization chapter, game designers can implement backstories to the customization options offered to the players. Finally, game designers should also implement different difficulty options to the games. However, it is suggested that this difficulty option should not be implemented as just buffing the enemies but making the gameplay itself more difficult by harder to dodge bullets or more complicated pathways.

Table 2. Heuristics table for the Customization category

Category: Customization
1. If possible, character appearance customization should be implemented
2. If empathy and immersion is aimed to be achieved, customization should be used
3. Game should give place to skill or expertise customization
4. Game should offer some amount of customization for the players
5. Customization should be meaningful and deliver narrative to the player
6. Game should offer different difficulty options
7. Difficulty options should not be implemented with just harder to pass enemies; instead, the gameplay itself should get harder

The next section of the survey was concerned with Interaction with the NPCs and Environment chapter.

Based on the answers on statement 15, participants stated that they enjoy exploring the map, but they want the map not to repeat itself as places and events. Moreover, participants stated that they pay close attention to the dialogues, which shows that the dialogues should be consistent with the story and there should not be gaps in the dialogues. Further on, the majority of the players stated that they enjoy dialogues more when they are interactive, this interactivity does not have to create nonlinearity for the story, but players enjoy dialogues with the NPCs more when they can make an input to the dialogue. Some players also stated that they give a break to the main story to explore the map. As stated previously, this can cause tracking off from the main story. Therefore, it is important that the narrative players receive through map exploration to be a continuation of the main story and should also be relevant to the main story.

Interaction with the NPCs is an important source of narrative in video games. While the majority stated that they enjoy these interactions, there is a significant amount of

participants who stated they do not enjoy these interactions. In order to make the narrative experience more enjoyable for the players, NPCs should be implemented carefully and enjoyable for the players. In order to ensure this, other preferences of players, such as interactivity during dialogues, should be taken into account. Similar to this comment, participants stated that they enjoy dialogues more when they are presented with options to choose from. Hence, multiple-choice dialogues are preferred more by the players.

Participants also stated that they want their actions to have meaning towards the main story. Some participants stated that multiple-choice questions are meaningless if these choices do not affect the story's outcome. The final question in this section asked about the collectible items; participants stated that they want the collectible items to be relevant to the story. Therefore, game designers should implement collectible items to support the story itself both visually and meaning-wise.

Table 3. Heuristics table for the Interaction with the NPCs and Environment category

Category: Interaction with the NPCs and Environment
1. Map of the game should not repeat itself with places and events
2. Dialogues with the NPCs should be consistent with the story
3. Dialogues should offer interactivity to the players
4. Environmental storytelling should be a continuation of the main story and should be relevant to the main story
5. NPC interactions should be enjoyable for the players
6. Dialogues should give multiple options to the participants
7. Choices in multiple-choice dialogues should affect the outcome of the main story
8. Collectable items should be relevant and meaningful towards the story

The next section in the survey has discussed gameplay. Gameplay and game mechanics contribute to the players' perception of narrative by making players perform unique actions and with the "do, don't show, don't tell" method mentioned previously. This uniqueness also allows players to represent themselves and their playstyle in games. Further on, in nonlinear games, gameplay can also change the narrative based on the players' decisions.

In order to "do, don't show, don't tell" method to deliver the intended narrative, players should spend time thinking about the meaning of the actions they make. The majority of the participants stated that they spent time thinking about the characteristics of their characters. Therefore, the "do, don't show, don't tell" method

is an excellent method to deliver a narrative. Further on, nearly all participants stated that they like it when they can overcome an obstacle by different approaches.

The relation of easy mechanics and understandability of the narrative was inconclusive to comment on as statement 25 received mixed answers. Moreover, well over half of the participants stated that they enjoy a game when they feel like the main character. This data shows that immersion is an essential element of narrative-driven games. During gameplay in some games, players are given hints. While some games implement these as optional, some games present players with hints even if they do not ask for them. The majority of the participants stated that they do not like being forced to get hints but rather have them as an optional feature. Participants also stated that they like having a progress bar to see how far they have come in the story, but the progress bar should not spoil the story.

Except for one participant, all participants stated neutrality of positive agreement towards different weapons and equipments. Different weapons and equipments also support customization and unique gameplay. However, these tools should not be implemented to add variety but should offer players different experiences with each tool. Further on, almost 90% of the participants agreed that they expect the gameplay should support the story, and their actions in the form of mechanics have meaning towards the story. Therefore, players should not have question marks to understand the result of their actions and see how it affects the story.

Table 4. Heuristics table for the Gameplay category

Category: Gameplay
1. Gameplay presents narrative through "do, don't show, don't tell"
2. Obstacles should have more than one solution
3. Gameplay should immerse and engage the player
4. Hints should be presented as optional features; if players are stuck at an obstacle game, should not give a hint without players asking for it
5. Game should feature a progress bar to show how far players have come
6. Progress bar should not spoil the story or climactic scenes
7. Different tools in games should offer different experiences
8. Player actions have meaning towards the story

The next part of the survey has asked to discussed player preferences on achievements. The single most striking observation from the data on achievements is that majority of the players do not have a single opinion on achievements. These mixed answers show that there are design issues in achievements that cause many

players not to like them. However, the data in this section is not significant enough to develop heuristics. One important conclusion that can be made is that players are aware of the hidden narratives in achievements, and the majority follow them. Therefore, game designers can choose to use achievements as such. However, the mixed answers in favor of and against achievements show a considerable number of players who do not enjoy achievements. As mentioned, Volkmar et al. suggest that achievements should be made adaptable to the players' playstyle archetypes (Volkmar et al., 2019). The data in this survey also supports this idea; therefore, this suggestion takes place in the heuristics proposed in this thesis.

Table 5. Heuristics table for the Achievements category

Category: Achievements
1.   Achievements should be adaptable to the player types
2.   Achievements can be used to deliver hidden narratives to the players

The next section in the survey has discussed Linear and Nonlinear Storytelling methods with the participants. Answers to the first two questions in this section suggest that many players enjoy games with multiple endings more. However, the disagreements and neutral answers in statement 36 suggest that there are also many players who like single storyline games or favor both types of stories.

Nevertheless, taking statement 20 and its answers into account, which states that players prefer dialogues with multiple answers and want these dialogues to result in different outcomes for the game and the data in this section, suggests that players enjoy games with multiple ending more. Moreover, the majority of the participants stated that they replay the games to see the alternative endings; however, some participants commented that they do not want these replays to be the same as the first play session. It is important for the players to see the effects of their choices and should offer players different storylines from the previous play session.

Table 6. Heuristics table for the Gameplay category

Category: Linear & Nonlinear Storytelling
1.   Gameplay should offer multiple endings to the story
2.   Gameplay should encourage replays for alternative endings through new storylines
3.   Each storyline should offer different experiences in terms of story
4.   In multiple ending stories, players should see the outcome of their actions

Turning to the next section, participants discussed their preferences on music and sounds in games. Firstly it is essential to understand if players are open to receiving a narrative that is delivered through audio elements. To that end, the first question in this section has asked about if the games are played with the sound on. While more than 85% of the participants stated that they play the games with sounds, remaining participants and hard-of-hearing players should also be considered if a narrative is aimed to be implemented through audio. Therefore, a good practice of audio implementation should offer optional subtitles that explain the sounds and lyrics on the screen. Further on, a little over 55% of the participants stated that they pay attention to the lyrics of the video game music, which creates new opportunities for the narrative to be implemented in lyrics.

Importance of interactive audio to provide feedback to the players discussed previously. More than 75% of the participants stated that they give importance and pay attention to such audial feedback when interacting with particular objects that result in a change in the game. This suggests that players are expecting to hear feedback on their actions.

Table 7. Heuristics table for the Music and Sound category

Category: Music and Sound
1. Sounds should be described as subtitles that are offered as optional features to the players
2. Video game music lyrics can offer a narrative to the players
3. Players should be provided with feedback on their actions through interactive audio

The next section in the survey has discussed the art and visual elements of a narrative-driven game.

Well over majority of the participants stated that art style is an important element when deciding to buy a game. Therefore, while marketing a game, art style should be highlighted and given importance during the game's design process. Further on, participants also stated that they are observing the environment and visual elements. In light of this, if a game designer wants to implement hidden narratives or easter eggs through visual cues, this communication would not be unreciprocated by the players. Participants also stated that they enjoy observing the game's art style, which supports the first heuristic in the Art and Visuals category in the below table. Therefore, art is important for the game's marketing, but it is also important during the gameplay and should be carefully implemented in the game. Similarly, participants stated that they enjoy a game more when the art style and cinematography match the narrative. In order to make visuals more enjoyable for the participants, the art style of the game should be thematically similar to the narrative.

Table 8. Heuristics table for the Art and Visuals category

Category: Art and Visuals
1. Art style is given importance while advertising the game and during the design process
2. Hidden narratives through visual elements can be implemented
3. Art style of the game should match the narrative thematically

The final section of the survey that asked Likert scale questions has discussed cutscenes.

Answers in this section state that the players enjoy both quick time events and movie-like cutscenes. However, it is suggested by the participants that quick time events should not be implemented as just spamming buttons. Moreover, it is also suggested that cutscenes should not take the chance of making an important decision from the player.

Cutscenes are an essential and effective way of storytelling in narrative-driven games that are enjoyed by the players and should be used. However, as the participants did not show a single opinion in favor of more interactive cutscenes or cutscenes without any interactivity, the method to implement them is up to the game designer. A conclusion that can be made in the subject is that cutscenes with quick time events are enjoyed by more players. Moreover, a participant made an important suggestion for improving cutscenes by implementing a pause option, and this should be taken into consideration if the game does not have such an option.

Below, table 9 concludes the heuristics developed through the research in this thesis.

Table 9. Heuristics table for the Cutscenes category

Category: Cutscenes
1. Quick time events should not be in the form of spamming buttons
2. Cutscenes should not make crucial decisions of the story in place of players
3. Cutscenes should feature a pause option
4. Cutscenes should be used to deliver narrative

The final section of the survey has discussed the survey itself with the participants and if there were essential elements of narrative-driven video games that have been left out in this research. No further heuristics are developed through this section as no data was collected.

This concludes the results and analysis of this research. The next chapter concludes the thesis and discusses the methods, findings and suggests future works that can be carried out in the light of this thesis.

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5. Conclusion

The main aim of this study has been to contribute to the game industry with guidelines that gives importance to the players' needs and likes through identifying the players' preferences that give a better narrative experience in narrative-driven games. The results on these preferences have been reached through a survey that has been distributed through various gaming and survey-related platforms. These results have been analyzed to understand what is enjoyed by the majority of the players and what narrative-driven games should give place or avoid in order to deliver the narrative better.

Based on these preferences, a heuristics approach has been developed from the players' views which can be found in the previous chapter and Appendix E. As mentioned previously, these heuristics or guidelines are not necessary to follow during the development of a game, but rather should be used as an inspiration or understanding the issues in a narrative-driven game if there are any. In comparison to previous heuristics in the literature, the most significant aspect of the heuristics in this thesis is that they are developed through players' views.

The results showed that players have specific preferences enjoyed by the majority through the analysis of the patterns. This thesis summarized these preferences and presented them as heuristics. These heuristics are developed that based on the majority of the answers, in general, players tend to enjoy the similar implementation of interactive narrative elements. This thesis contributes to the literature by guidelines to follow when designing a narrative-driven game that is developed through players' preferences and based on their previous experiences. If these guidelines are followed, game designers can avoid common problems in games, and the product is expected to give a good narrative experience to the players through interactivity.

Nevertheless, the results did not show one mutual answer from the participants, but the answers have been discussed from the majority's point of view. The decision to use the survey has proven the study's validity as players showed similar and clustering answers in almost every question, but participants did not show a hundred percent agreement for the questions. As this was discussed before as a limitation that each player enjoys different things in a game, the majority has been considered during the analysis. Therefore, these heuristics and this study is not a complete guide to make a perfect game for every player but suggestions to consider putting into a narrative-driven game. Moreover, narrative-driven games also have different sub-genres based on the plot or the storyline, and each game can choose to handle the gameplay differently. For instance, an action-adventure narrative-driven game can be like Uncharted 4 (Naughty Dog, 2017) and main-story oriented, or it can also be

like The Elder Scrolls V: Skyrim (Bethesda, 2011) with an open world and awaiting to get discovered. In regards to this, each game might offer different interactive narrative elements; therefore, each game designer should first decide what best suits their game then consult heuristics.

Further on, in comparison to the other heuristics sets, the proposed heuristics in this thesis covers different and more specific categories that are not discussed in other heuristics, and various heuristics are entirely new to the literature. These heuristics are also developed for a specific genre of games, namely narrative-driven, which is not the case in the heuristics discussed in the Previous Works chapter.

5.1 Discussion & Future Work

As mentioned, the main aim of this study has been to contribute to the game industry with guidelines that focus on developing a better narrative experience. By focusing on this, the narrative-driven game genre has been selected to analyze further and develop heuristics. Two essential aspects of narrative-driven games have been taken into account; interactivity and narrative. By addressing these aspects, essential elements that cover both of these aspects have been researched further. In order to develop the heuristics, player preferences have been found out through a survey, and heuristics have been developed based on players' enjoyment in narrative-driven games. This makes the heuristics reliable as they are based on what players like. However, future work for this research should cover the evaluation of these heuristics by designing a game that has been developed using these heuristics, and players should evaluate and rate this game. Such research can further explain if the proposed heuristic in this thesis can make a difference in the narrative-driven game design field.

This research and method have been designed to reach the aimed result by proposing heuristics developed through players' likes and dislikes. However, if this research were done for a specific sub-genre of narrative-driven games, such as action-adventure, the results would be more precise, and the guidelines would be easier to implement. Therefore, future work for this research also includes genre-specific research through the same methods used in this research and developing heuristics for different genres of narrative-driven games. The proposed heuristics in this research can also be used to evaluate games during prototyping, design process, or after the game has been developed to find design issues that can lower the effectiveness of the narrative that is aimed to be told to the players.

A mistake in this thesis has been that some statements have been too generalized to make a specific outcome. Such as, answers to statement 43 on observation of the scenery and environment is not clear enough to deduce to a guideline. While some

questions have received further explanation in the provided area for their comments, some vague statements did not receive any, and the reasoning behind the answers could not be further examined. Therefore, to analyze the answers clearer, the statements should have phrased straight to the point. Alternatively, each question might have required further explanation for more accurate analysis; however, that would lower the response rate.

Further on, the 5-point Likert scale has not given the intended productivity to analyze the answers. The survey has used 5-point Likert scale; however, analysis of the answers have been carried out through the total number of agreements or disagreement without taking strong agreement or agreement taking into account separately. Initially, a 5-point Likert scale has been implemented to see if the players will meet on a single answer; however, answers showed varying answers, and analysis has been carried out through the majority as positive or negative agreement. Similarly, the middle point in the Likert scale has been named as neutral in this study. During the analysis of some questions, the neutral answer did not give the expected meaning to the questions. Thus, in future studies naming the middle point as 'sometimes' will and should be considered to give a better meaning to the answers. Despite this problem, the study was able to gather valuable data and develop the intended heuristics.

Another suggestion for future work is to research different populations to understand if different groups of players have different preferences. This research can dive into the preferences of different age groups, different genders, or people from different countries. Further on, based on the surprising results in the achievements section, research that merely focuses on achievements can be conducted with more statements to deliver guidelines on achievements that give players a better gaming experience.

6. References

Aarseth, E., 2012. A narrative theory of games. *Proceedings of the International Conference on the Foundations of Digital Games - FDG '12*, pp.129-133.

Aker, Ç., Rızvanoğlu, K. and İnal, Y., 2020. Revisiting Heuristics for Evaluating Player Experience in Different Gaming Platforms: A Multi-Modal Approach. In: B. Bostan, ed., *Game User Experience And Player-Centered Design*. [online] Springer, pp.123-161. Available at: <https://link.springer.com/book/10.1007/978-3-030-37643-7> [Accessed 9 April 2021].

Aljammaz, R., Oliver, E., Whitehead, J. and Mateas, M., 2020. Scheherazade's Tavern: A Prototype For Deeper NPC Interactions. *International Conference on the Foundations of Digital Games*, pp.1-9.

Arrambide, K., 2019. Interactive Narratives in Games: Understanding Player Agency and Experience. In: *CHI PLAY '19*. [online] New York, NY: Association for Computing Machinery, pp.1-5. Available at: <https://dl.acm.org/doi/10.1145/3341215.3356334> [Accessed 15 March 2021].

Arsenault, D., Côté, P. and Larochelle, A., 2015. The Game FAVR: A Framework for the Analysis of Visual Representation in Video Games. *Loading... The Journal of the Canadian Game Studies Association*, [online] 9(14), pp.88-123. Available at: <https://journals.sfu.ca/loading/index.php/loading/article/view/155/190> [Accessed 12 February 2021].

Bernstein, D., 1997. *Creating an Interactive Audio Environment*. [online] gamasutra.com. Available at: <https://www.gamasutra.com/view/feature/131646/creating_an_interactive_audio_.php> [Accessed 2 April 2021].

Bernstein, J., 2014. *Characterization, Purpose and Action: Creating Strong Video Game Characters*. [video] Available at: <https://www.youtube.com/watch?v=4mgK2hL33Vw> [Accessed 17 February 2021].

Bertram, D., 2006. *Likert Scales*. [online] pp.1-11. Available at: <http://poincare.matf.bg.ac.rs/~kristina/topic-dane-likert.pdf> [Accessed 29 May 2021].

Bosch, J., 2018. *The Effects of Music on Gameplay in Video Games*. Tallinn University.

Bostan, B., Yönet, Ö. and Sevdimaliyev, V., 2020. Empathy and Choice in Story Driven Games: A Case Study of Telltale Games. In: B. Bostan, ed., *Game User Experience And Player-Centered Design*. [online] Springer, pp.361-378. Available at: <https://link.springer.com/book/10.1007/978-3-030-37643-7> [Accessed 9 April 2021].

Bradford, W., 2020. Exploring the Narrative Implications of Emerging Topics in The Legend of Zelda. *Journal of Sound and Music in Games*, 1(4), pp.1-21.

Bridgett, R., 2021. Dynamic range: subtlety and silence in video game sound. In: K. Collins, ed., *From Pac-Man to Pop Music*, 1st ed. London: Ashgate, pp.127-133.

Brühlmann, F. and Mekler, E., 2018. Surveys in Games User Research. In: A. Drachen, P. Mirza-Babaei and L. Nacke, ed., *Games User Research*, 1st ed. Oxford: Oxford University Press, pp.141-162.

Buuloki, 2020. *New Shadowlands Customization Options Guide Hub*. [online] Wowhead. Available at: <https://www.wowhead.com/guides/shadowlands-character-customization-options> [Accessed 18 March 2021].

Carstensdottir, E., Kleinman, E. and El-Nasr, M., 2019. Player interaction in narrative games. *Proceedings of the 14th International Conference on the Foundations of Digital Games*, pp.1-9.

Collins, K., 2008. *Game Sound: An Introduction to the History, Theory and Practice of Video Game Music and Sound Design*. Cambridge: The MIT Press.

Collins, K., Kapralos, B. and Tessler, H. ed., 2014. *Oxford Handbook of Interactive Audio*. New York: Oxford University Press.

Desurvire, H. and Chen, B., 2004. 48 Differences Between Good and Bad Video Games: Game Playability Principles (PLAY) For Designing Highly Ranked Video Games. [online] Available at: <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.552.2204&rep=rep1&type=pdf> [Accessed 9 April 2021].

Desurvire, H. and Wiberg, C., 2009. Game Usability Heuristics (PLAY) for Evaluating and Designing Better Games: The Next Iteration. *Online Communities and Social Computing*, pp.557-566.

Desurvire, H., Caplan, M. and Toth, J., 2004. Using heuristics to evaluate the playability of games. *Extended abstracts of the 2004 conference on Human factors and computing systems - CHI '04*, pp.1509-1512.
Dornbush, J., 2014. *Press square to feel: The problems with 'Call of Duty's' funeral scene*. [online] EW.com. Available at: <https://ew.com/article/2014/11/04/call-of-duty-funeral-press-button-pay-respects/> [Accessed 11 February 2021].

Engström, H., 2019. 'I have a different kind of brain'—a script-centric approach to interactive narratives in games. *Digital Creativity*, 30(1), pp.1-22.

Engström, H., 2020. *Game Development Research*. Skövde: University of Skövde.

Fabricatore, C., 2007. Gameplay and Game Mechanics: A Key to Quality in Videogames. In: *OECD Expert Meeting on Videogames and Education*. [online] Available at: <https://www.oecd.org/education/ceri/39414829.pdf> [Accessed 23 May 2021].

Fay, T., Selfon, S. and Fay, T., 2004. *DirectX audio exposed*. Plano, Tex.: Wordware Pub.

Federoff, M., 2002. *Heuristics and Usability Guidelines for the Creation and Evaluation of Fun in Video Games*. Master of Science. Indiana University.

Galyean, T., 1995. *Narrative guidance of interactivity*. Ph.D. Massachusetts Institute of Technology.

Gamage, V. and Ennis, C., 2018. Examining the effects of a virtual character on learning and engagement in serious games. *Proceedings of the 11th Annual International Conference on Motion, Interaction, and Games.*

Gee, L. and Dolah, J., 2016. Graphic Styles Appearance in Educational Games to Enhance Malaysian Students Learning: A Preliminary Study. In: *2nd International Conference on Creative Media, Design & Technology (REKA2016)*. [online] Available at: <http://eprints.usm.my/39261/1/PAPER_14.pdf> [Accessed 18 February 2021].

Hamari, J. and Eranti, V., 2011. Framework for Designing and Evaluating Game Achievements. In: *DiGRA 2011 Conference: Think Design Play*. [online] Available at: <http://www.digra.org/wp-content/uploads/digital-library/11307.59151.pdf> [Accessed 18 February 2021].

Hochleitner, C., Hochleitner, W., Leitner, J., Haller, M., Geven, A. and Tscheligi, M., 2009. Using Heuristics to Evaluate the Overall User Experience of Video Games and Advanced Interaction Games. *Evaluating User Experience in Games*, pp.233-256.

Holopainen, J., 2011. *Foundations of Gameplay*. Ph.D. Blekinge Institute of Technology.

Hölttä, L., 2018. *Effects of Art Styles on Video Game Narratives*. University of Turku.

Hurley, L., 2017. *Fallout 4's skeletons have a story to tell | GamesRadar+*. [online] gamesradar.com. Available at: <https://www.gamesradar.com/fallout-4-skeletons-have-story-tell/> [Accessed 21 February 2021].

Irwin, M., 2009. Unlocking Achievements: Rewarding Skill With Player Incentives. [Blog] *Gamasutra*, Available at: <https://www.gamasutra.com/view/feature/3976/unlocking_achievements_rewarding_.php> [Accessed 19 February 2021].

Jerome, C., Howey, A. and Billings, D., 2007. Heuristic Evaluation of a User Interface for a Game-Based Simulation.

Juul, J., 2005. *Half-Real: Video Games Between Real Rules and Fictional Worlds*. Cambridge, Massachusetts: MIT Press.

Kelley, K., Clark, B., Brown, V. and Sitzia, J., 2003. Good practice in the conduct and reporting of survey research. *International Journal for Quality in Health Care*, 15(3), pp.261-266.

Keo, M., 2017. *Graphical Style in Video Games*. HAMK Häme University of Applied Sciences.

Klevjer, R., 2002. In Defense of Cutscenes. In: *Proceedings of the Computer Games and Digital Cultures Conference*. Tampere University Press, pp.191-202.

Klimmt, C., Hartmann, T. and Frey, A., 2007. Effectance and Control as Determinants of Video Game Enjoyment. *CyberPsychology & Behavior*, 10(6), pp.845-848.

Klüwer, T., Adolphs, P., Xu, F., Uszkoreit, H. and Cheng, X., 2010. Talking NPCs in a virtual game world. In: *Proceedings of the ACL 2010 System Demonstrations*. Pennsylvania: Association for Computational Linguistics, pp.36-41.

Lebowitz, J. and Klug, C., 2011. *Interactive Storytelling for Video Games*. Burlington, Massachusetts: Focal Press.

Lebowitz, J., 2009. *Do modern stories need interactivity? A comparison of storytelling methods in media*. University of Advancing Technology.
Lee, T., 2013. Designing game narrative. [Blog] *Hitbox Team*, Available at: <https://hitboxteam.com/designing-game-narrative> [Accessed 9 February 2021].

Lomeland, J., 2014. How can Interactive Music be used in Virtual Worlds like World of Warcraft?. In: K. Collins, B. Kapralos and H. Tessler, ed., *The Oxford Handbook of Interactive Audio*. New York: Oxford University Press.

Malone, T., 1982. Heuristics for designing enjoyable user interfaces. *Proceedings of the 1982 conference on Human factors in computing systems - CHI '82*, pp.63-68.

Mooney, J. and Allbeck, J., 2014. Rethinking NPC intelligence. *Proceedings of the Seventh International Conference on Motion in Games*, pp.55-60.

Ng, R. and Lindgren, R., 2013. Examining the effects of avatar customization and narrative on engagement and learning in video games. *Proceedings of CGAMES'2013 USA*, pp.87-90.

Noble, W., 1993. *Show, don't tell*. Middlebury, Vt.: P.S. Eriksson.

Petrillo, F., Spritzer, A., Freitas, C. and Pimenta, M., 2011. Interactive Analysis of Likert Scale Data Using a Multichart Visualization Tool. In: *IHC+CLIHC '11: Proceedings of the 10th Brazilian Symposium on Human Factors in Computing Systems and the 5th Latin American Conference on Human-Computer Interaction*. Porto Alegre: Brazilian Computer Society, pp.358-365.

Pimentel, J., 2019. Some Biases in Likert Scaling Usage and its Correction. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 45(1), pp.183-191.

Pinelle, D., Wong, N. and Stach, T., 2008. Heuristic Evaluation for Games: Usability Principles for Video Game Design. In: *CHI '08*. [online] New York: Association for Computing Machinery, pp.1453–1462. Available at: <http://10.1145/1357054.1357282> [Accessed 9 April 2021].

Pinelle, D., Wong, N., Stach, T. and Gutwin, C., 2009. Usability heuristics for networked multiplayer games. In: *Proceedings of the ACM 2009 International Conference on Supporting Group Work*. New York, NY, USA: Association for Computing Machinery, pp.169-178.

Rajanen, M. and Rajanen, D., 2018. Heuristic evaluation in game and gamification development. In: *GamiFIN Conference 2018*. Pp.159-168.

Reed, A., 2017. *Changeful Tales: Design-Driven Approaches Toward More Expressive Storygames*. Ph.D. University of California, Santa Cruz.

Riedl, M. and Bulitko, V., 2012. Interactive Narrative: An Intelligent Systems Approach. *AI Magazine*, 34(1), p.67.

Riedl, M. and Stern, A., 2006. Believable Agents and Intelligent Story Adaptation for Interactive Storytelling. *Technologies for Interactive Digital Storytelling and Entertainment*, pp.1-12.

Rogers, S., 2010. *Level Up!: The Guide to Great Video Game Design*. Hoboken, N.J.: Wiley & Sons.

Rouse, R., 2005. *Game Design Theory and Practice: Second Edition*. 2nd ed. Texas: Wordware Publishing, Inc.

Scirea, M., Cheong, Y., Nelson, M. and Bae, B., 2014. Evaluating musical foreshadowing of videogame narrative experiences. *Proceedings of the 9th Audio Mostly on A Conference on Interaction With Sound - AM '14*, [online] Available at: <https://dl.acm.org/doi/abs/10.1145/2636879.2636889> [Accessed 20 February 2021].

Shaver, M., 2018. *Hades - Early Access Review*. [online] AllGamers. Available at: <https://ag.hyperxgaming.com/article/6914/hades-early-access-review> [Accessed 24 May 2021].

Silva, I., Cardoso, P. and Oliveira, E., 2019. Narrative and Gameplay: The Balanced and Imbalanced Relationship between Dramatic Tension and Gameplay Tension. *Proceedings of the 9th International Conference on Digital and Interactive Arts*, [online] Available at: <https://doi-org.libraryproxy.his.se/10.1145/3359852.3359906> [Accessed 15 February 2021].

Skolnick, E., 2014. *Video Game Storytelling*. New York: Watson-Guptill.

Sloan, R., 2015. *Virtual character design for games and interactive media*. Florida: CRC Press.

Solarski, C., 2017. *Interactive Stories and Video Game Art*. Boca Raton, Florida: CRC Press.

Stewart, B., 2015. Environmental Storytelling. [Blog] *Gamasutra*, Available at: <https://www.gamasutra.com/blogs/BartStewart/20151112/259159/Environmental_Storytelling.php> [Accessed 20 February 2021].

Suovuo, T., Skult, N., Joelsson, T., Skult, P., Ravyse, W. and Smed, J., 2020. The Game Experience Model (GEM). In: B. Bostan, ed., *Game User Experience And Player-Centered Design*. [online] Springer, pp.183-205. Available at: <https://link.springer.com/book/10.1007/978-3-030-37643-7> [Accessed 9 April 2021].

Van Allen, E., 2020. *Darkest Dungeon Really Is Getting PvP DLC Next Month*. [online] USgamer.net. Available at: <https://www.usgamer.net/articles/darkest-dungeon-really-is-getting-pvp-dlc-next-month> [Accessed 29 May 2021].

Volkmar, G., Pfau, J., Teise, R. and Malaka, R., 2019. Player Types and Achievements -- Using Adaptive Game Design to Foster Intrinsic Motivation. In: *CHI PLAY'19*. [online] New York: Association for Computing Machinery, pp.747-754. Available at: <https://doi.org/10.1145/3341215.3356278> [Accessed 19 May 2021].

Whalen, Z., 2007. Case Study: Film Music vs. Video-Game Music: The Case of Silent Hill. *Music, Sound and Multimedia*, pp.68-82.

Wharton, A. and Colling, K., 2011. Subjective Measures of the Influence of Music Customization on the Video Game Play Experience: A Pilot Study. *The International Journal of Computer Game Research*, 11(2).

Wijman, T., 2020. *The World's 2.7 Billion Gamers Will Spend $159.3 Billion on Games in 2020; The Market Will Surpass $200 Billion by 2023 | Newzoo*. [online] Newzoo. Available at: <https://newzoo.com/insights/articles/newzoo-games-market-numbers-revenues-and-audience-2020-2023/> [Accessed 19 April 2021].

Zehnder, S. M. and Lipscomb, S. D., 2006. The Role of Music in Video Games. In P. Vorderer and J. Bryant (Eds.), *Playing Video Games: Motives, Responses, and Consequences,* pp.241–258.

Appendices

APPENDIX A:

Appendix A includes survey statements used in the pilot study 1 (Table 10) and in the pilot study 2 (Table 11). The below statements are given to the participant on 5-point Likert scale to show their level of agreements to the given statements.

Table 10. Statements used for pilot study for 7 participants. The statements marked with an asterisk has been reviewed and changed for the second pilot study and the main study.

STATEMENTS USED IN THE FIRST PILOT STUDY		
Story	1	I prefer games that have a story
	2	During gameplay, I pay close attention to the story
	3	The story and narrative helps me motivate to continue playing
	*4	I would play a game with weak gameplay elements but with a strong story
Customization	*5	During character customization I make my character resembling myself
	6	I feel empathy towards the character that I created and customized
	7	I feel empathy towards the NPCs
Interactions: NPCs & Environment	8	I like exploring through the map during gameplay
	9	During gameplay, I pay close attention to dialogues
	10	If not interactive, I skip dialogues
Gameplay	11	During gameplay, I think about the strengths, weaknesses, and personality of my character
Achievements & Notifications:	12	Achievements set by designers are encouraging for me to continue playing the game
	13	Notifications from clients (Steam, Blizzard, etc.) during gameplay effects my experience negatively
Linear &Nonlinear Narrative:	14	I prefer games with more than one outcome
	15	I prefer games that have a single storyline that I can't change
	*16	I feel anxious when my actions affect the outcome of a story
Music	17	I play games with sound on
	*18	Music helps me focus on gameplay
Art	19	The art style is one of the reasons I consider while selecting a game to play

Cutscenes	*20	I prefer cutscenes interactive with quick time events where I have limited control over my character
	*21	I prefer cutscenes as movies, without interaction
	22	During gameplay, I pay close attention to cutscenes
	23	If not interactive, I skip cutscenes

Table 11. Statements used in the the second pilot study

STATEMENTS USED IN THE SECOND PILOT STUDY		
Story	1	I prefer games that focus on a story
	2	During gameplay, I pay close attention to the story
	3	The story motivates me to continue playing
	4	It is important that a game keeps my interest during gameplay with story
	5	If I am stuck in game story motivates me to pass it
	6	I enjoy a game more when I get emotionally affected by the story
	7	Story of a game is an important element for me for deciding if I am gonna play the game
	8	I enjoy side stories and take time to complete them
	9	I prefer games that offer more interactivity time
Customization	10	I like having customization options in games
	11	I feel empathy towards the character that I created and customized
	12	I feel empathy towards the NPCs
	13	I like being able to change the appearance of my character
	14	I like being able to change the skills of my character
	15	I like having lots of customization options
	16	I care about the choices I make during customization
	17	I give importance to customization of my character
Interactions: NPCs & Environment	18	I like exploring through the map during gameplay
	19	During gameplay, I pay close attention to dialogues
	20	If not interactive, I skip dialogues
	21	I read/listen the dialogues even if my choices does not effect the outcome of the game
	22	I like exploring the map to find hidden stories in the game

	23	I give a break to main story during gameplay and explore the map
	24	I enjoy interacting with NPCs
	25	I like games where I am given more than one dialogue options
	26	When given dialogue options, I spent time thinking about the outcomes
Gameplay	27	During gameplay, I think about the strengths, weaknesses, and personality of my character
	29	I like when mechanics challenge me
	30	I prefer games that focus on gameplay
	31	I like when there is more than 1 way to overcome an obstacle during gameplay
	32	I focus on story more when mechanics are easier
	33	Having different difficulty options is important
	34	I feel as a character in the story when I am playing a narrative-driven game
	35	I enjoy a game more when the mechanics are similar to games I played before
	36	I enjoy a game more when I overcome the obstacles without game giving me tips
	37	My status in the story (how far I have become) is important for me and I would like to be able to check it
	38	In Action-adventure games I like it when I have more than one equipment/weapon to use
	39	I don't mind spending time to learn the gameplay and mechanics through tutorials
Achievements & Notifications:	40	Achievements set by designers are encouraging for me to continue playing the game
	41	I follow achievements to see if there is hidden narrative in them
	42	There have been times where I spotted hidden stories through the achievements I got
	43	Notifications from clients (Steam, Blizzard, etc.) during gameplay effects my experience negatively
Linear &Nonlinear Narrative:	44	I enjoy a narrative-driven game more when there is more than one outcome of the story
	45	I prefer games that have a single storyline that I can't change

	46	In narrative-driven games, I like it when my actions change the outcome of the game
	47	If the game has more than 1 outcome, I replay it to see different outcomes
Music	48	I play games with sound on
	49	I pay attention to the lyrics of video game music
	50	I listen a game's music even if I am not playing the game
	51	A game's music is important for me
	52	It is important that a game's sound matched the gameplay
	53	Game music affects my gameplay experience
		I pay attention to audial feedbacks to my actions (i.e losing health, power ups)
Art	54	Graphics and art style is important for me when I am considering buying a game
	55	I enjoy a game more when art style complements the story (i.e. a dark story having a darker atmosphere)
	56	I would prefer a easy to understand UI rather than an eye-appealing but harder to understand UI
	57	I prefer games with realistic art style
Cutscenes	58	I prefer cutscenes interactive with quick time events where I have some control over my character
	59	I prefer cutscenes as movies, without interaction
	60	During gameplay, I pay close attention to cutscenes
	61	If not interactive, I skip cutscenes
	62	I believe cutscenes are an important part of narrative-driven games and like them in games
	63	I believe cutscenes interrupt the gameplay

APPENDIX B:

Below, Table 12 shows the statements used in the main study. Participants have received statements 1-50 on 5-point Likert scale and stated their agreements with the statements.

Table 12. Statements used in the main study

STATEMENTS USED IN THE MAIN SURVEY		
Story	1	During gameplay, I pay close attention to the story
	2	The story motivates me to continue playing
	3	If I am stuck in game story motivates me to pass it
	4	I enjoy a game more when I get emotionally affected by the story
	5	Story of a game is an important element for me for deciding if I am gonna play the game
	6	I enjoy side stories and take time to complete them
	7	I prefer games that offer more interactivity time
Customization	8	I like being able to customize the appearance of my characters
	9	I feel empathy towards the character that I created and customized
	10	I feel empathy towards the NPCs that are not customized by me
	11	I like being able to change the skills of my character
	12	I like having lots of customization options
	13	I care about the choices I make during customization
	14	Having different difficulty options is important
Interactions: NPCs & Environment	15	I like exploring through the map during gameplay
	16	During gameplay, I pay close attention to dialogues
	17	If not interactive, I skip dialogues
	18	I give a break to main story during gameplay and explore the map
	19	I enjoy interacting with NPCs
	20	I like games where I am given more than one dialogue options to interact with NPCs
	21	When given dialogue options, I spent time thinking about the outcomes

	22	I enjoy it more when the collectable items are related to the story
Gameplay	23	During gameplay, I think about the strengths, weaknesses, and personality of my character
	24	I like when there is more than one way to overcome an obstacle during gameplay
	25	I focus on story more when mechanics are easier
	26	I like feeling like the main character when playing a narrative-driven game
	27	I enjoy a game more when I overcome the obstacles without game giving me tips
	28	My status in the story (how far I have become) is important for me and I would like to be able to check it
	29	When they are present I like it when I have more than one equipment/weapon to use
	30	I prefer that my actions have meaning towards the story
Achievements & Notifications:	31	Achievements set by designers are encouraging for me to continue playing the game
	32	I follow achievements to see if there is hidden narrative in them
	33	I believe achievements are an important source of narrative
	34	I try completing the achievements to learn more about the story
Linear &Nonlinear Narrative:	35	I enjoy a narrative-driven game more when there is more than one outcome of the story
	36	I prefer games that have a single storyline that I can't change
	37	If the game has more than one outcome, I replay it to see different outcomes
Music	38	I play games with sound on
	39	I pay attention to the lyrics of video game music
	40	40. I pay attention to audial feedbacks to my actions (i.e losing health, power ups)
Art	41	Art style is important for me when I am considering buying a game
	42	I observe the scene and the environment during gameplay to be aware of my surroundings

	43	I observe the scene and the environment during gameplay to be discover the art of a game
	44	I enjoy a game more when art style and cinematography complements the story (i.e. a dark story having a darker atmosphere)
	45	I like exploring the map to find hidden stories
Cutscenes	46	I prefer cutscenes interactive with quick time events where I have some control over my character
	47	During gameplay, I pay close attention to cutscenes
	48	If not interactive, I skip cutscenes
	49	I like having cutscenes in narrative-driven games
	50	I believe cutscenes interrupt the gameplay (interactivity)

APPENDIX C:

Below images show an example section from the survey used in the main study.

5. Story of a game is an important element for me for deciding if I am going to play the game *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

6. I enjoy side stories and take time to complete them *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

7. I prefer games that I get to be more involved and be interacted with the story *

	1	2	3	4	5	
Strongly Disagree	○	○	○	○	○	Strongly Agree

Is there anything you would like to further explain about your answers in this section? You can use the question number to refer to your answer.

Your answer

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Figure 9. Example of the survey's structure

APPENDIX D:

The Python script written and used to analyze the data of the favorite games of the
participants can be found. The scripts separates the game separated by punctuation
marks and counts how many times a game has mentioned. This script has been
provided in order to ensure the reliability of the analysis method and make the
results reproducible.

```python
import pandas as pd

import re

from collections import Counter


col_list = ['Which games do you think offer good narrative experience to
the players?']

df = pd.read_csv("preferences.csv", usecols=col_list)

df = df.rename(columns= {'Which games do you think offer good narrative
experience to the players?' : 'Game Names'})


split_array = []

arr = []


for i in range (0, len(df)):

    entry = df.iloc[i]['Game Names']

    entry = entry.strip('"')

    split_array.append(re.split('; |, |\*|\n',entry))

    for j in range (0, len(split_array[i])):

        arr.append(split_array[i][j])


Counter(arr).keys()

Counter(arr).values()
```

```python
data = {'Names':Counter(arr).keys(),

        'Amount':Counter(arr).values()}


df_updated = pd.DataFrame(data, columns = ['Names', 'Amount'])


df_sorted = df_updated.sort_values(['Names', 'Amount'], ascending=[False,
True])


df_sorted.to_excel('sorted.xlsx')


df_split = df_sorted.Names.str.split(expand=True).stack().value_counts()

df_split.to_excel('split.xlsx')
```

APPENDIX E:

Table 13 shows the final heuristics that is developed in this thesis. Chapter 4.3 Summary, represents each category separately. Below is the cumulative heuristics.

Table 13. Final heuristics developed through the research in this thesis

Category: Story & Interactivity
1.   Story is consistent throughout the game
2.   Story and gameplay complements each other in terms of difficulty to ensure the continuity of the game
3.   Story of the game is prioritized over hard to beat gameplay
4.   The game has elements that create emotional depth for the players
5.   Story is given importance to advertising the game during the marketing process
6.   Side stories are meaningful and relevant to the main story
7.   Story and meaningfulness of the actions are prioritized over interactivity
Category: Customization
8.   If possible, character appearance customization should be implemented
9.   If empathy and immersion is aimed to be achieved, customization should be used
10.   Game should give place to skill or expertise customization
11.   Game should offer some amount of customization for the players
12.   Customization should be meaningful and deliver narrative to the player
13.   Game should offer different difficulty options
14.   Difficulty options should not be implemented with just harder to pass enemies; instead, the gameplay itself should get harder
Category: Interaction with the NPCs and Environment
15.   Map of the game should not repeat itself with places and events
16.   Dialogues with the NPCs should be consistent with the story
17.   Dialogues should offer interactivity to the players
18.   Environmental storytelling should be a continuation of the main story and should be relevant to the main story
19.   NPC interactions should be enjoyable for the players
20.   Dialogues should give multiple options to the participants
21.   Choices in multiple-choice dialogues should affect the outcome of the main story
22.   Collectable items should be relevant and meaningful towards the story

Category: Gameplay
23. Gameplay presents narrative through "do, don't show, don't tell"
24. Obstacles should have more than one solution
25. Gameplay should immerse and engage the player
26. Hints should be presented as optional features; if players are stuck at an obstacle game, should not give a hint without players asking for it
27. Game should feature a progress bar to show how far players have come
28. Progress bar should not spoil the story or climactic scenes
28. Different tools in games should offer different experiences
29. Player actions have meaning towards the story
Category: Achievements
30. Achievements should be adaptable to the player types
31. Achievements can be used to deliver hidden narratives to the players
Category: Linear & Nonlinear Storytelling
32. Gameplay should offer multiple endings to the story
33. Gameplay should encourage replays for alternative endings through new storylines
34. Each storyline should offer different experiences in terms of story
35. In multiple ending stories, players should see the outcome of their actions
Category: Music and Sound
36. Sounds should be described as subtitles that are offered as optional features to the players
37. Video game music lyrics can offer a narrative to the players
38. Players should be provided with feedback on their actions through interactive audio
Category: Art and Visuals
39. Art style is given importance while advertising the game and during the design process
40. Hidden narratives through visual elements can be implemented
41. Art style of the game should match the narrative thematically
Category: Cutscenes
42. Quick time events should not be in the form of spamming buttons
43. Cutscenes should not make crucial decisions of the story in place of players
44. Cutscenes should feature a pause option
45. Cutscenes should be used to deliver narrative