



The Influence of Sound on Narrative Experience in Interactive Games

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Abstract

Implementation of more decision making in digital media is one of major developments that has been happening in recent years. This study investigates the intricacies of that in the interactive narrative's genre and more specifically on the influence of sound towards the user engagement. How sound affects the audience's experience and if it has any effect on players' choices. Participants were split into groups with three different conditions to test how the same story presented in different ways can have a considerate divergence in the users' perception. The experiment's findings, even though limited due to the small sample size, showed the importance of sound in promoting sense of control and both sensory and emotional immersion in the narrative. This paper aims to signify the need for future studies not only on sound in branching narratives, but also on the general user experience with the genre.

Resumo

A introdução de mais tomadas de decisão nos media digitais é um dos principais desenvolvimentos verificados nos últimos anos. Este estudo investiga as complexidades dessa tendência no género das narrativas interativas e, mais especificamente, a influência do som no envolvimento do utilizador. Analisa-se de que forma o som afecta a experiência do público e se exerce algum impacto nas escolhas dos jogadores.

Os participantes foram divididos em grupos com três condições distintas, com o objetivo de testar como a mesma história, apresentada de formas diferentes, pode gerar uma divergência significativa na percepção dos utilizadores. Os resultados deste estudo embora limitados devido ao reduzido tamanho da amostra, evidenciaram a importância do som na promoção da sensação de controlo e na imersão sensorial e emocional na narrativa. Este artigo pretende destacar a necessidade de estudos futuros não só sobre o papel do som em narrativas ramificadas, mas também sobre a experiência geral do utilizador com este género.

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1. Introduction

Interactive narratives is a genre of storytelling experience where the reader/user can influence how the plot will progress depending on their decision. As a format this form of media emerged several decades ago with game books. Jumping years ahead, nowadays, the genre found its place in movies, digital graphic novels and video games. Technology took the fundamental concept of choice-based literature and implemented it into the virtual world. As a part of technological advancement Interactive Digital Narratives (IDN) are now a subject of various academic research.

Even though the genre is conceptually appealing to the people due to the agency and feeling of control over the narrative, this form of media does not meet large audience interest. Even though examples such as Telltale's *Walking Dead* and *Bandersnatch* from *Black Mirror* have managed to leave some impression on the public it can be argued that this is due to the popularity of the franchise, they are part of, rather than the genre. In terms of improvement developers and researchers have focused mainly on how to improve the systems and make the logic behind work better. New models are designed and developed in order to make the stories more sophisticated in their structure. Although that is surely important, this study aims to look more into the experience from the users' perspective. How they, having no knowledge of the game structure, are perceiving this multimedia genre. Mostly how it affects them emotionally to assert their sense of control or to be limited from doing that. It is argued that sound can be a significant factor when it comes to user engagement. Therefore, it is relevant to look at its effect in the Branching Narrative genre. Apart from the expected influence on immersion, the experiment in this research is looking for a deeper reaction in the users. Main one being, if sound can make the players lean towards a certain choice. In other words, can the audio provide some guidance about the story or provoke certain emotions that make people choose one option instead of another. This research is attempting to shed more light on the specifics of IDN and furthermore to offer insights towards the authors on how to improve their stories.

2. Literature Review

Traditional types of media have been challenged by critics and authors in respect of achieving a higher product (Jost, 2020). In the most practical sense this drive is aiming to achieve a project close to reality but still framed in its medium boundaries. The example with literature is that for many years some authors have been experimenting with the possibility of giving control to the reader (Baptista, 2024). What is called gamebook is a form of literature that in specific parts of the narrative gives several choices on how the story should continue (Österberg, 2008). With the development of technology and introduction of digital formats it was possible for other types of media to follow this approach, such as video games and television. The British director Peter Greenaway has stated in reference to films - *“Cinema must now become an interactive multimedia art form [...]. We are forced to confront this new medium that will make Star Wars look like a candlelight reading in the sixteenth century”* (Jost, 2020). These playable stories gained most popularity with the development of video games. With digital media it has been possible to implement sounds and music into branching narratives. It is an important area of study to investigate whether audio features of an interactive narrative have any significant effect on user engagement. Furthermore, what are its influences on the most distinctive aspect of branching stories – the decision making. Can sound and music carry some guidance or carry any significant impact for the users. While there is close to none available resources on the topic, insight was sought from related studies.

2.1 Interactivity and Agency

Digital technologies have changed the way of telling stories. Digital storytelling emerged and it can be described as the way of presenting stories by utilizing one or more digital media platforms (Handler-Miller 2014). The possibility of the user interacting with those platforms resulted in new term being coined, called Interactive Digital Storytelling (IDS) (Rizvic, 2020). But before delving into this form of narratives it is necessary to look into the term interactivity as it creates ambiguity. Interactive is a word that is frequently avoided by writers because it raises the question of whether it addresses the interaction between reader and author or the interaction of the reader with the system (Petrelli, Wright, 2009). In the second case it makes the experience not much different than reading an actual book where you “interact” to turn the pages to see how the story continues. This could be further stretched to the example with *Shadow of the Colossus* and other video games. You have to complete a task given by the system/medium to go on with the story. Looking at it bluntly to turn a page and to kill an enemy are just some actions you are required to do in order to see what will happen next. Dominic Arsenault and Bernard Perron (2008) even go to the extreme and are questioning whether videogames are interactive at all. The way they put it is that they are rather a chain of reactions meaning that instead of players acting, they are reacting to what the game throws at them.

Jensen's definition of interactivity is given as 'A measure of a media's [sic] potential ability to let the user exert an influence on the content and/or form of the mediated communication.' This also corresponds well with the explanation of agency by Janet Murray: "the satisfying power to take meaningful action and see the results of our decisions and choices". (Murray, 1997) Murray is emphasizing on the importance of immediate reaction from the system and the reward for the user. Therefore, she argues that if a series of actions are executed by the player and the outcome was predefined regardless of the actions, it is difficult to assume that much agency was in effect.

In a following study, Murray expanded on her definition even more. She took into account not only the direct explicitly observed consequence, but that focus should also be towards how it affects the user's reactions and expectations. Weir defined it clearly using the term Emotional Agency. Regardless of the outcome of the decision, sense of agency can arise in players. This can usually happen when they experience connection and empathy for the characters (Weir, 2011). In Interactive narratives (IN) sometimes the choices given to the player create a false sense of agency and not affect the storyline. Sara Stang (2019) discussed this in one of her works in relation to *The Walking Dead* interactive game. In it, the player is given choices that appear to be significant for the plot progression. But that comes as not completely true because all of the branches lead to just a few endings. However, from the perspective of the user taking certain choices shape the personality of the character. This creates a very personalized experience for the player and therefore they will perceive it as interactive and immersive. This raises the discussion that IN can benefit more, not by focusing only on structure and system complexity but also on how it affects the player.

Another important point also noted by Weir is the difference between local and global agency. In the case of local agency, the goal is to present immediate feedback, a clear response of the taken choice. This is important so that the player can perceive straight away how their decisions shape the characters and the narrative. Even though the consequences may be minor, and their effect will not extend to the future events, it can be helpful for the players to situate themselves in the story. On the other hand, global agency occurs when "the final ending of the story... [is] determined in a smooth and continuous fashion by what the player does." Unlike local choices, here the immediate consequences may be subtle, but once the story reaches a conclusion there should be clear indications of causal relationship.

After reviewing the different definitions of interactivity in story containing digital media, now it would be more comprehensible to study the genre of Interactive digital narratives. To explore the different concepts and structures and how they affect the user experience.

2.2 Interactive Digital Narratives (IDN)

A categorization of IDN can be created on multiple criteria. One reason for that is, as mentioned, the ambiguity of the term interactive. The type of IDN that this study is focusing on is branching digital narrative. That means, the story, or at least the perception of it, is shaped by the player's choices, offering a personalized experience (Wilson, 2020). At the dawn of digital technologies, a genre

emerged, called Hypertext fiction. With the use of hyperlinks, the user is able to freely wander in a narrative maze and construct a story in an explicitly personalized manner. However, in the interviews conducted by Petrelli and Wright (2009), readers have expressed a certain feeling of discomfort from reading such multi-linear fiction. The interviewees even expressed a lack of control and uncertainty of boundaries. It was noted that with traditional books you have the awareness of the remaining pages, and you can go forwards and backwards freely while with labyrinth of hypertext fiction you may become lost.

Later with the development of digital media it became possible to differentiate IDN by the form in which they are presented. They could be in a text format, or as a video game or in a video/movie format. Of course, combinations of these have been also explored. Another specification is the input type by the user. There we have parser-based and choice-based IN (Mukherjee, 2023). Parser-based means that the actions by the player are done essentially by typing their input. An example of that is an IN called *Façade* (Milam, 2008). The main character is visiting a couple, who are his close friends. The user has a textbox in which they can write their lines. In other words, the interactions are limited to only dialogue, but the idea is that you can write anything thus, shaping the narrative. The choice-based type is where at a decision point you are given several options to choose from. First thoughts would be that the parser type is offering greater level of agency, and it may seem that there are unlimited possibilities. However, this is actually not the case.

There is a fundamental paradox that defines interactive narratives. On one side there is the storyline. Usually, stories follow a specific structure. The most fundamental ones are the three-act structure by Aristotle and the Hero's Journey defined by Joseph Campbell (Goodman, Simkins, 2014). On the other side is the agency - the ability of the player to decide on their own what will happen with the characters. These two terms are opposing each other, and you want to focus on one the other weakens. Based on this, two genres emerge – narrative games and playable stories. It is evident in each of them what has been foundational. In narrative games the plot's aim is to enhance the gameplay and give it context. In *Super Mario* you can play the levels in order to complete the game but having the goal to save the princess adds much more to the experience. In playable stories, however, there is no winning or losing. Instead of beating the game you observe how the game world evolves, based or not on your actions. Two specific examples were given by Marie-Laure Ryan with *Façade* and *Sims* (Ryan, 2009). *Façade*, as mentioned, is a parse type of game where you type in your lines. However, the system holds huge limitations in favor of the narrative. Sometimes your input may be completely ignored. In other words, the plot leads you while giving you just some trivial sense of agency. This is also called the top-down method when creating an IN. In *Sims*, you have a vast number of options for action; hence the presented plot is reduced to basic task completions. (Ryan, 2009) This is called the bottom-up approach, which if not plotless then it is heavily affecting the structure. Without authorial control we can lose the effect of closure to the story. But here Ryan adds an interesting point:

“If there is a drawback to bottom-up systems, it is the lack of closure of their output: without top-down authorial control, it is virtually impossible to create an Aristotelian curve of rise and fall in tension, or a sequence of events that stops after a conflict has been resolved. But closure is not

indispensable to narrative pleasure: throughout literary history, from the never-ending Renaissance narrative of Orlando Furioso to the feuilleton novels of Dickens, Trollope, or Eugene Sue in the nineteenth century and to the modern TV soap operas, readers have time and again been fascinated by narratives that go on and on, like life itself.” (Ryan, 2009)

Studying branching narratives, it is essential to look into some choice types that affect the player’s emotional agency. Kway and Mitchell mention three examples (2018). First to mention are Unchoices. A close case was already given with Shadow of the Colossus, but basically it occurs when the user is presented with just one choice or path of action. A clearer instance of this can be seen in the game The Wolf Among Us (2013). In one part of the plot the player is asked to repeatedly keep pressing the Q key to save their character. They do not know what exactly this action does and in a way are forced to do it. In regard to video games Unchoices are proposed to have a strong effect for the emotional agency. The connection and empathy for the character makes the user feel engaged and responsible for their fate. Similarly, we have False Choices. You are facing a multiple-choice decision but whatever you decide the outcome is the same. This can be seen in Bandersnatch (2018) – a famous example of interactive television. In the beginning you are given a couple of trivial decisions such as choosing a brand of cereal and later what music to listen to. As expected, these choices do not carry any significance to the overall plot, but it can be argued that they are still useful. First off, they help the viewer get familiar with the format. As it was streamed on Netflix it was presumed that the majority of the watchers are new to the genre. Other than that, those decisions create an opportunity for them to relate with the protagonist. Picking their favourite song for the main character to listen to they already have something in common. Fridlund and Gustafsson framed this very gracefully:

“...inconsequential choices can provide agency by allowing the player to approach situations in different ways, and bring up the example, if Han Solo in Star Wars was re-dubbed to give lukewarm responses instead of his usually brash lines, the story would stay the same but the meaning behind the story and events, and the audience’s understanding of Han Solo as a character would shift.”
(Fridlund, Gustafsson, 2023)

False choices can prove to be inefficient when talking about the replay value of the story. Once you experience that the other choice has the same outcome, you most likely will lose some of the excitement.

The last type is Flavor choices. These may have some minute consequences, but their overall purpose is to enhance the emotional response in the player. With these choices he or she can reflect on their characters and better understand them. That can help in order to make the right choices later.

The last factor to observe is the replayability. After the first completion of the game and going through multiple decision points, the player starts to wonder what could have happened if different choices were made. How would that change the final outcome. Contrary to linear narratives, in IN it is possible to test this. With the understanding of local and global agency throughout the first try, the user has now a different task – to explore the possibilities. Kway and Mitchell mentioned this. When replaying a game, they could see that their focus was shifted. They were actively trying to stray from

the previously taken path which to some degree unsurprisingly affected the emotional engagement (Kway, Mitchell, 2018). The player is not that attached to the characters and acts strategically. However, now the drive to play becomes the desire to investigate the different endings. Roth argues that multiple playthroughs do not benefit the appreciation for the narrative. He states that “*exploring different endings makes a story less unique*” (Roth, 2019). Once experiencing all the endings each separate one loses some of its integrity. For example, if in one branch a character close to us dies and in all others survives, their death becomes less effective to us.

2.3 User Experience

To put everything in context it is important to look at every aspect that affects the use of experience. This would help during the methodology when it will be attempted to define what importance is held by each feature of the genre. Roth defined twelve dimensions by which to structure the criteria. Those are split into three main categories – Agency, Immersion and Transformation (Roth, 2016).

2.3.1 Agency

The importance and the different measures of agency have already been explained in detail but here Roth gives a more structured overview. He divides it in three – Usability, Local and Global Effectance and Autonomy. In similar study Middleton established many more dimensions to evaluate an IDN (Middleton), however, dealing with so many would create ambiguity when presented to participants. Therefore, the ones suggested by Roth will be more effective for this study.

Usability is related to the hardware and system interface. Depending on the context some techniques may or may not work. If the value of this is high, then naturally the user will have less problems operating the interface which will improve their experience.

This category can also include system prompts, meaning non-diegetic feedback for the selected choice. In *The Wolf Among Us* this is used occasionally, where after a decision, you see a sentence on the screen like “*Snow will remember that*”. This helps the player form a better understanding of the NPCs without abrupting the narrative.

Effectance has been explained when talking about local and global agency. What should be noted, however, is that the amount of Effectance after a decision should be carefully leveraged. Giving too much control to the user could result in boredom and promote less curiosity.

Autonomy is defined as the feeling of freedom that you experience. Low levels of this can be concluded when the player feels forced to make a specific choice or the number of options is very limited. *Bandersnatch* is an apparent example. Shortly after the beginning the main character is asked if he would like to develop his game at home or in the game company office. Selecting to work at home you soon realize that this is a dead end, and you have to go back and choose the other option (Mukherjee, 2023). To achieve good results on this component, dead ends should be avoided and

possibly offer more choice options. Still, however, this has to be balanced as too many options could get the player lost.

2.3.2 Immersion

Immersion is also a multilayered term that contains different perspectives. It can be perceptual or related to the narrative. The terms used by Roth are Flow, Presence, Believability, Role-identification, Curiosity and Suspense.

Flow is expressed as the engagement to the task at hand. The focus on overcoming the obstacle may result in complete immersion. This category can be observed mostly in video games as there, apart from following the narrative, you are expected to complete certain tasks. The problem at hand should be neither too easy so the player feels bored, nor too challenging, which will result in giving up. It is expected that with the progress of the game, the skills of the player will improve and that requires the difficulty of the challenges to also increase. While this is absent in playable stories, it does not mean that it is detrimental to the genre. A good narrative and focusing on other approaches for immersion can still lead to a satisfactory experience.

Presence relates to the sensory immersion of the player. The feeling that the virtual experience is not actually mediated and blends with reality. Roth writes about three types of presence: Spatial related to the immersion into the game world. This could be achieved either by provoking the imagination of the player or by tricking their senses. By achieving a certain level of realism through audio and visuals it is possible to transport the player into any fantasy world. Next is social presence which relates to the interactions with the characters within the game. If the communication is authentic then the user can feel like he is speaking with a real person. And lastly is the self-presence as the feeling of self-identity inside that world.

Believability is a dimension similar to presence but driven more from logic. If through your actions in the game, you sense a logical outcome then you can say there is a particular believability in the game. *“The active creation of belief requires a reactive environment in which the interactor experiences agency, while the narrative evolves in a plausible way and characters react in a credible manner”*.

Role-Identification comes from the fulfilling the desire to “become” the main character. To experience the story from their eyes and feel what they feel. For that to happen, the interactor should understand their character – their motives, their fears etc.

Curiosity is a crucial aspect of a narrative experience. In most cases this is what motivates the viewer to continue onwards. Curiosity is often linked with the feeling of uncertainty which should be well utilized by the creators. It is advisable to alternate between higher and lower levels of uncertainty. Revealing information to the player reduces the uncertainty, but results in a feeling of achievement and closure, which is essentially a positive emotion. Curiosity is expressed to be linked with a future-focused state which improves engagement.

Suspense is also related to uncertainty, but it is more associated with the emotional tension in the narrative. It is expressed as a stressful experience but once resolved again it results in accomplishment and closure. Suspense is built more easily for linear narratives because in IDN the possibility of wandering in between story branches makes it difficult to control.

2.3.3 Transformation

Transformation is particularly affiliated with the narrative as Murray believes a story has to be transformative (Murray, 1997). What IDN offers in contrast with linear formats is an improved connection with the plot as the player participates.

Eudaimonic appreciation is arguably the easiest to be evaluated by the readers. Apart from the agency and the immersion what really stimulates the user are the aesthetics of the product and how it resonates with his/her personality. The aesthetic pleasantness derives from the quality and style of the auditory and visual representations. With limitless possibilities, digital technology allows for an infinite range of artistic styles in both sound and visuals. Technology made it possible to make everything look and sound as real as life, but creators can still work with more non-realistic themes. The pleasurable sensory experience can strongly influence the player's engagement. In addition, people seek deep personal meaning in the media they consume. In other words, it is important for the story to present prospects that are related to relevant life events. By observing the characters act in the plot, the users can draw insights that they can utilize in their lives.

Positive and Negative affect is one to have a clear impact. Stories can conclude with a happy ending leaving us with feelings of excitement, joy and content but they could also end up in a sad tone where not everything turned out fine. In the second case we may feel sad but still appreciate the experience and promote some thinking. Some even argue that a concept is better grasped from a more negative conclusion rather than positive.

Enjoyment is listed as the last dimension and is categorized by the overall opinion of the narrative. Here it is crucial to mention that a happy ending story does not always result in high enjoyment. If the story seems, for example, boring or confusing, the player will be left with a bad impression. That is most often due to high expectations built either through previous experience or by opinions of others.

2.3.4 Case Study Example

These twelve dimensions were utilized in another study by Roth and Koenitz, trying to assess the user experience in *Bandersnatch* (Roth, 2019). The interactive episode of the *Black Mirror* series follows the life of a young boy who has the ambition to develop his video game. The viewer is able to participate in the story as he/she decides what the main character - Stefan, does to achieve it. The study's results show that users overall enjoyed the experience but found some significant limitations.

Paradoxically, they expressed their lack of actual control due to binary options and forced decisions. Authors should reflect from similar types of reviews and adapt.

All those twelve dimensions can help to empirically see what is lacking from a specific IDN and to understand better the needs and expectations of the players. Additionally, when we focus attention on the sound in IDN, those dimensions will play a crucial role in figuring out the effects of auditory stimuli on the experience.

2.4 Sound

The role of sound in media has been studied for a long time. Regarding film, George Lucas allegedly has said that “sound is half the picture” (Wright, 2008). However, there is a lack of research for the significance of sound in IDN. How much, if any, does it affect the decisions of the players? Does it influence the levels of emotional agency towards the characters? Can it give clues about the story that are essential to complete a path?

For streamline purposes and to support the context of the following study, the research was focused on how sounds are used in text-based digital media.

Written narratives have been trying for a long time to build an idea of the soundscape within the story world. This idea, to demonstrate sounds through the use of text and visuals, peaked with comic books. This was the use of onomatopoeia or words that sound as the sound they are trying to express. “Pow”, “Bang”, “Wham” are just some of the examples and they really left little to the imagination. Groensteen defined comics as monosensory as to perceive them you have to depend only on your sight (2013). However, with the advance of technology, this was no longer needed in the digital domain.

However, implementation of sound in written formats opened several new problems. One and probably biggest of them is related to the timing of the sounds. Goodbrey’s opinion on digital comics is that for them to remain comics and not animation, the control of the pace has to be left to the reader. But if the role of sound is to enhance realism it is expected to portray some of the action. At the same time the reader has to follow said actions as he reads the text. Unlike movies for example, where you both see and hear a gun shot. You experience the event with both senses. With written text that is very difficult to achieve having the unpredictability of the reader. Some read faster, some slower, some want to re-read a sentence. Philippe Marion theorized this by establishing the terms heterochrony and homochrony. Homochronous media, like movies, is defined by the fact that it is consumed in an intrinsically programmed time. On the other hand, heterochrony allows the reader to browse through the content at their own pace. In the webcomic *The Mr. Nile Experiment* at a certain point the main character comes across a radio. When the reader clicks on the radio, it starts playing (Goodbrey, 2017). In *Devil in the Kitchen* the creator Kean Soo took a simpler approach. Throughout the narrative there is an audio player on the top of the web page and the viewer can play and stop the audio on their preference. However, Goodbrey argues that this approach falls behind due to its

limitations. First of all, in this narrative the audio does not present the whole sonic environment. It seems to be focused primarily on the music. And the other significant point is that of usability and immersion. The audio bar positioned at the top, “outside” the story is resulting in less immersive and aesthetic experience. And again, it does not really solve the issue with asynchronization as the clip just plays from start to finish. This forces the reader to follow the soundtrack when it is suggested that the opposite should be the goal.

Paolucci also studied the appearance of sound in graphic novels and noted that it is important to divide the sounds into categories as each require different approach when implementing (Paolucci, 2019). First it is crucial to define if a specific sound populates diegesis. Intradiegetic sounds occur in the story world and are perceived by the characters (gunshot, train etc.) while extradiegetic ones are to be experienced only by the reader (music). Another property that has to be explored is the duration of the sound. Longer sounds such as the ambience and music are less impactful on the users and allow them to take their time while momentary sounds are associated with instant action in the narrative, like for example a detonation. Here comes again the problem with asynchronization and why many digital novels rely only on durational sounds. Paolucci addresses the use of the mouse click as a potential solution to the problem as it can act as a trigger for the momentary sound (Paolucci, 2019). A clever use of that would benefit the experience significantly. However, rather than having an audio player outside the borders of the story content, it could be implemented in the graphics or the text.

One example that shows a sophisticated use of sound in a digital narrative is *The Boat* (2015) adapted by Matt Huynh. The story is based on a real story by a girl sent on a ship after the fall of Saigon. This audio-visual project can be experienced on a web browser and navigated simply by using the mouse. Using the scroller the comics-like story starts to unravel with audio and visuals changing adaptively and seamlessly. For instance, when the boat is hit by a storm the illustrations are swaying left and right as if taken by the waves. The use of sound is masterfully used as well with different soundscapes blending from one to another naturally. Kiara Williams did a study trying to investigate the use of sound in Digital Graphic narratives using *The Boat* as foundation of her research (Williams, 2023). Assigning two groups of participants she presented them the story. One group of subjects starting with sound until the midpoint and without onwards. The second group did the opposite. In the results the researcher tried to evaluate as much as possible of the factors that could affect the engagement of the participants but in relation to sound, they showed strong appreciation and preferred it with the audio.

The effect of sound on engagement could arguably be matched with the visuals. A particular study tried to identify if user engagement is higher when people watch a video or listen to the same narrative in an audio format. Even though the participants expressed that they felt more engaged watching the video, their physiological metrics such as heart rate and body temperature elevated while listening. The authors suggest that the act of listening requires more attentiveness due to need to picture the story in your head. Arguably this supports the hypothesis that sound can purposefully help with the engagement. What is left to explore is if it can affect positively or negatively the user’s decisions while reading an Interactive Digital Narrative.

3. Methodology

3.1 Procedure of the Experiment

To test the research hypothesis of this study, an experiment was conducted using an interactive digital story as the subject of a case study. Fifteen participants were divided into three groups, with each group playing the story under different sound conditions. The control group played the game without sound, the second group experienced what is referred to as tense sound, and the third group played with tranquil sound. Participants were randomly assigned to groups, with five individuals in each. The participant pool included ten males and five females, all aged between 22 and 27 years. The experiment was undertaken in Bulgaria, therefore, with one exception, all participants were Bulgarian. However, the entire case study was conducted in English.

The procedure was carried out individually with each participant in an empty room. Due to travel limitations for some participants, not all sessions were held in the same location, but efforts were made to maintain consistent conditions. At the start of the experiment, players were allowed to play independently without distractions. After their initial playthrough, each participant was asked if they wanted to play again. After finishing playing, participants completed a survey based on their group, with those in the sound groups answering additional questions related to the audio experience. A short open discussion followed the survey to gather detailed feedback from the participants. These interviews were semi-structured, guided by a list of questions from the interviewer. Each session was audio and screen recorded for analysis and documentation purposes.

3.2 Story

For the purpose of the study an original interactive narrative game was developed and subsequently presented to the participants. Among the various types of interactive narratives covered in the literature review, the choice-based format was selected for this project. This decision was primarily made to confront the participants with clear binary (A or B) options, thereby enabling an investigation into their decision-making process. The game was constructed using Arcweave, an online platform specifically designed for creation of branching narratives. Arcweave provides all the fundamental tools necessary to build a text-based interactive story, including classic branching options as well as basic programming functionalities such as variables and if-else statements. The text is organized into panels, which are then linked by arrows to form the branching structure of the whole plot. Additionally, the platform features basic integration of sound, offering essential tools such as looping and delayed playback to enhance the auditory experience.

Regarding the story structure, the Branch-and-Bottleneck model was used (*Figure 1*). This model essentially offers chronologically parallel narrative paths that, at certain points, inevitably merge with the main storyline. The primary advantage of this structure is that players can arrive at the same scene

while having undergone entirely different experiences up to that point. However, the main drawback—which will be discussed further in the results section—is that it may diminish the enjoyment of the story upon subsequent playthroughs. While each branch provides unique events and evokes distinct perceptions of the plot, all paths ultimately lead to the same conclusion. Nevertheless, for the purposes of this study, this model is effective because it allows for each participant to have a unique experience during their initial playthrough.

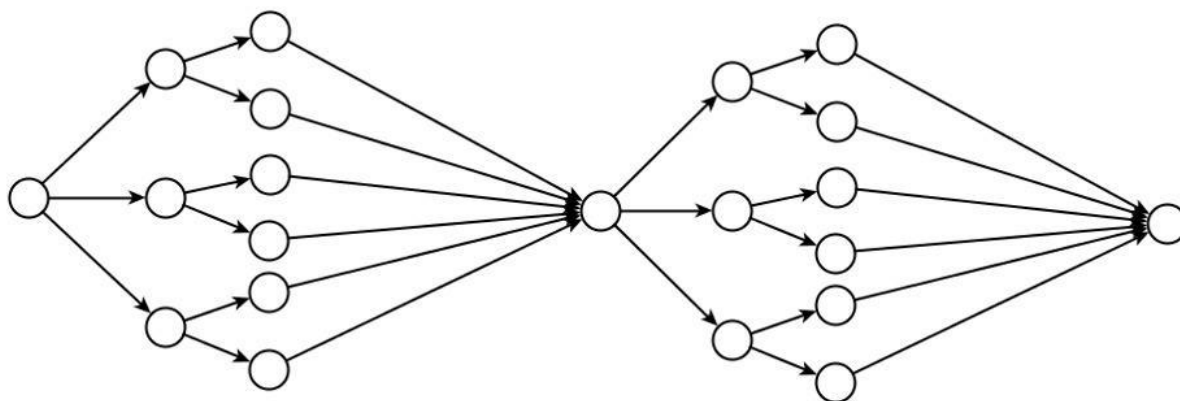


Figure 1.1: Branch-and-Bottleneck model

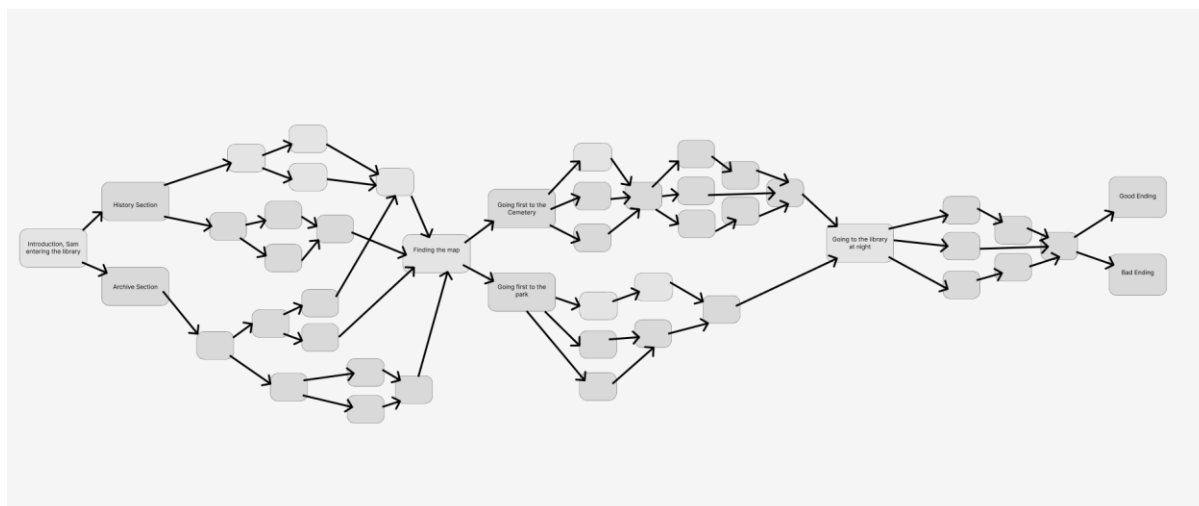


Figure 1.2: Simplified Map of the Story made for this study with major branching points

During the development of the narrative, efforts were made to implement as many concepts from the state of the art as possible. Significant emphasis was placed on the concept of emotional agency, ensuring that each branch provided a unique experience. Global agency was achieved through the subtle use of global variables, which produced outcomes that, while sometimes unnoticeable, were logically consistent. The narrative also aimed to establish global significance by introducing information throughout the story that would become relevant and helpful towards the end of the plot. Flavour choices were included to offer a degree of personalization without altering the main storyline. Additionally, false choices were deliberately used not to restrict player autonomy, but rather to emphasize the significance of the final decision. It is also important to note the incorporation, even though limited, of artificial intelligence. Specifically, the poem within the story, intended as a clue for

solving certain puzzles, was generated by providing key clues to ChatGPT, which then composed the poem in a rhyming form. A transcript of this interaction can be found in the Appendix ([Appendix 1](#)).

The goal of the sound design was to create a realistic yet emotionally immersive auditory environment. Distinct soundscapes were crafted to situate the player in specific locations and to make transitions between locations more perceptible. Sound effects were employed to accentuate particular actions within the story, enhance realism, and, in some cases, elicit specific emotional responses. For the separate audio versions of the game, two sets of tonal sounds (drones) were designed: one intended to convey a tense and dark atmosphere, and the other to evoke a more relaxed and bright mood. These soundscapes correspond to different locations within the narrative and are intended to elicit specific emotional responses from the player, depending on the context. Full list of the used sounds and their respective purpose can be explored in [Appendix 4](#).

The plot of the story centres on a young teenage boy who discovers a treasure map. Driven by curiosity, he follows a series of clues in search of the treasure. His decisions lead him to different locations at different times, placing him in diverse situations. The protagonist must rely on his intelligence and knowledge to overcome challenges and ultimately discover the valuable artifacts. The mystery-adventure genre was chosen due to its broad appeal across different age groups and genders. The overall tone of the narrative is pleasant and predominantly light-hearted. ([Appendix 2](#))

3.3 Pilot Test

Before commencing the main experiment, a pilot test was conducted to identify and address any procedural shortcomings. The pilot revealed several areas for improvement, primarily related to the preparation and execution of the experiment rather than its content. The pilot participant completed the survey on paper, which posed challenges for data preparation and analysis, as responses had to be manually digitized, reducing efficiency. Another significant issue identified concerned the use of scaling terms in the survey responses; many of the questions did not have answers that adequately match the expected response type. This issue was also noted by the participant during a post-experiment discussion. Due to the flexible nature of the open discussion, no major changes were made, except for the addition of a few questions regarding user experience.

4. Results

In this section the findings of the 15 participants will be analyzed and general conclusions will be built from them. The measurable data from the survey is used as a foundation of the findings and then the discussions further support them. As was mentioned in the literature review, the main model by which the users are questioned is the one defined by Roth and Koenitz (2016). The main categories: Agency, Immersion and Transformation are what best outlines Interactive Digital Narratives. Broaden

more by their related subcategories, it is more comprehensible to see how the players perceive the story – what aspects of it are working better or worse. Looking into sound we will first look into the results in comparing if the game had any sound in it or not. Then we will analyze whether playing the same game with different sounds can have an effect on the user experience. Complete results from the survey can be found in [Appendix 3](#).

4.1 Sound vs No Sound

Fundamentally, it is good to start by comparing the results by whether the participants experienced the story with or without sound. By the design of the study there is a nonequivalence in the number of participants in this example, but it is beneficial to do this regardless. More than half of all participants were mostly if not totally unfamiliar with what Interactive Narratives are and therefore were curious to explore this new thing (*Figure 2*). Most of the others who were more or less familiar, on the other hand, were interested to see how well it was done. There were some cases of people with a good understanding of the genre but with negative opinions about it. As potential users their opinion was also useful and informative.

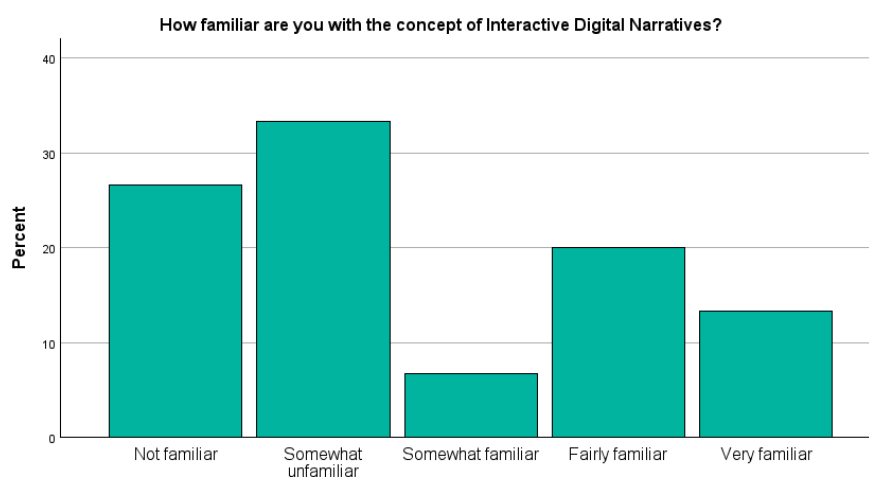


Figure 2

4.1.1 Agency

By the work of Roth and Koenitz (2016) the first aspect to look into is agency. It has been noted that the feelings of freedom and control are essential for the players to engage more in interactive stories. As we have discussed sometimes it is more about the perceived feeling of agency that can result in better satisfaction.

Participants in this study have shown higher perceptions of agency and effectiveness of their decisions when they played it with sound (*Tables 1 and 2*). In terms of navigating through the game and interacting with the interface users did not face any significant issues no matter what group they were

in. This of course was to be expected due to the straightforward gameplay, but also because sound had no role in assisting the players with the system. Conceptually in a video game the audio can indicate certain actions by UI sounds thus affecting the users' relationship with the software but for this game that was not the case. However, some participants have admitted that in specific moments they were led to believe that they need to pick a choice quicker due to the sound being pressuring.

“Lean towards a certain choice? Yeah. When it got a little bit more suspenseful, fast-paced, maybe ...I needed to think fast I need to go for a decision, so yeah. ...I'm still lingering to the lock code. “

(participant in the Tense sound group)

Players who played with sound have expressed that they felt their decisions were more meaningful and had long term effect on the outcome of the story. The distinction in the results here is not insignificant. It shows that even though both groups have explored the same game story-wise, sound had made one feel that their choices carry more weight to the plot.

The overall opinion about the agency in the game was somewhat mixed with people fundamentally acknowledging the specifics and limitations of IDN. However, they have felt that decisions in the early parts of the story were offering a small number of choices due to the need for the story to follow a certain trajectory. Most players would have wanted to have more options and in some cases to do specific things that were not available.

“I would love to maybe have more choices but I feel like for the story progression, it makes sense too to just go ahead. “

(participant in the Tranquil sound group)

“Probably slightly limited because they're probably I would think of something narratively different, but I believe that those choices are good and you have to try one or another, but maybe it will be good to add more in my opinion.”

(participant in the Tense sound group)

One participant has expressed that more choices would have made it harder for her to make a decision.

“I guess I didn't really feel limited because maybe if there were more choices I would have Been Confused. Or maybe take more time to decide what I want to do or can't really decide what I want to do. “

(participant in the Tense group)

While some have expressed that the story appears to be too linear and, in a way, leads you in a certain direction, others were somewhat fond of that as they wanted to see how the story would unravel. The ones who played the game a second time have recognized that their action did have significant

consequences to the plot, and some have experienced what they have called ‘a butterfly effect’ or in other words global effect from their actions.

Agency				
		How easy was it for you to navigate through the game?	How meaningful do you believe the choices you made were, regarding the outcome of the story?	How much do you believe your decisions made a long-term impact on the progress of the story?
No sound	Mean	4,00	2,60	2,80
	N	5	5	5
	Std. Deviation	1,000	1,517	,837
Sound	Mean	4,30	3,30	3,60
	N	10	10	10
	Std. Deviation	,823	,675	,516
Total	Mean	4,20	3,07	3,33
	N	15	15	15
	Std. Deviation	,862	1,033	,724

Table 1

Effect of Sound on the Agency		
	How much did sound influence your perception of control over the narrative?	Sound played a considered part when facing a choice.
Mean	4,00	3,70
N	10	10
Std. Deviation	,816	1,160

Table 2

4.1.2 Immersion

The following block by Roth and Koenitz is Immersion. This aspect is part of every digital world or story-based creation. Highly achieved levels of Immersion can surely elevate the engagement and appreciation by the audience. Here once more there are noticeable differences in the results by both groups. Sound made the game more believable and helped them feel that they are within the story (Tables 3 and 4). Having no other sensory stimuli other than the text and sound made it easier to distinguish how the lack of audio can make a difference. Sound made it easier for the participants to also identify better with the main character. Because the player makes choices on behalf of the main character it is fairly important for them to be able to see the events from his perspective. Curiosity and

suspense were mentioned in the literature review to be one of the main drivers to carry on with the narrative. These emotions are the hooks by which the players would aim to finish the game rather than giving up after the initial encounter. Based on the results, the sound group had shown a higher feeling of curiosity and suspense while playing. Participants were asked how challenging it was for them to make a decision. That would show how invested they are in the story and if they reached something similar to a flow state. In other words, were they too bored due to the lack of challenge or were they overwhelmed by the difficulty of progressing willingly with the story. The people who played with sound found it neither too challenging, nor too easy to make a decision which is a desired balance. On the other hand, the players with no sound have shown little to none difficulty when making a decision which implies that they were not invested enough in the experience.

During the open discussion people from the control group openly discussed the experience to be bland by being only text. Some have mentioned the need for some visual stimuli, while others would have appreciated some background music that would have set the tone for the story. They found it hard to relate with the main character and certain detachment from the story.

On the other hand, the sound groups were very stimulated by the auditory aspect of the story. It was communicated that the ambiances made it so much easier for them to understand where they were and to step into the narrative. Certain sound effects played a considerable role in users' experience. The approaching footsteps and the evil laugh among others were mentioned the most for having an emotional effect on the players. These sounds were even causal for their decision making. Interestingly, sound aroused people's imagination and made it easier for them to visualize the storyworld. Some users have mentioned forming a stronger connection with the main character through sound-triggered empathy while others were more focused on the feeling of presence within the virtual spaces.

“Probably represent how or somewhat how the character should make decisions, but I wouldn't say they're strongly intertwined. I think it just happens for a person who is playing the game to think and to be influenced by the sound, especially in the moments where there is tension. It kind of puts you in the position of the character and thus influences you to make the decision based on emotions that the character could feel. ”

(participant in the Tranquil sound group)

In some cases, users mentioned paying more attention to the sound in order to get a clue for making a decision.

“I thought when I had to choose the combination for the code that the sound might tell me what the combination might be, but I, I don't think it was like that.”

(participant in the Tense sound group)

Some disruptions in the sound were mentioned that resulted in temporary distraction. Reasons were mostly technical or difficult to solve. A couple occurrences were noted where the looping of the sound

was noticeable, or a sound effect was too loud. These issues were completely valid and fortunately resolvable. The other issue was more connected to the reading pace of each player. As it was covered in the literature review, the problem of triggering sounds in a text-based story is a difficult one. Most players have approached the matter with understanding; however, it still restricted realism.

		Immersion					
		What level of presence have you experienced while playing the game?	How believable was the world and the story for you?	How well did you identify with the main character and their story progression?	What levels of curiosity have you experienced while completing the story?	How suspenseful was the story?	How challenging was it for you to make a choice?
No sound	Mean	3,60	3,80	2,80	3,80	3,00	1,60
	N	5	5	5	5	5	5
	Std. Deviation	,894	,837	1,095	1,304	1,000	,894
Sound	Mean	3,80	4,30	3,50	4,40	3,40	2,50
	N	10	10	10	10	10	10
	Std. Deviation	,632	,675	,527	,699	,843	1,269
Total	Mean	3,73	4,13	3,27	4,20	3,27	2,20
	N	15	15	15	15	15	15
	Std. Deviation	,704	,743	,799	,941	,884	1,207

Table 3

		Effect of Sound on the Immersion					
		Sound helped you identify with the main character and their challenges.	Sound helped you to feel empathy towards the main character and helped you experience the story through their perspective.	Sound offered details about the story which the text didn't.	Sounds were accurate and represented well what is happening in the story.	Sound improved the mystery element of the story and provoke you to keep on.	Sound played a significant part in the suspense of the story.
Mean		3,80	4,20	4,10	4,50	4,60	4,50
N		10	10	10	10	10	10
Std. Deviation		,789	,919	,876	,527	,516	,527

Table 4

4.1.3 Transformation

Transformation is characterized by how an artistic piece influences the audience and if it makes it feel a certain way. That can be achieved both by the content or by the means, in other words aesthetics of the work. During the survey participants were asked particular questions about what emotions they had felt while playing. On figures 3 and 4, the different emotions expressed by each group can be explored. Clearly it is difficult to compare the two groups by having different sample sizes, but still there are some conclusions that can be drawn. It is evident that the sound group has experienced a wider plethora of emotions. And more specifically emotions related to current states such as tranquility, worry etc. All participants that played with sound have said to be focused and the majority to be determined while playing. This was not the case for those who played without sound which shows that having auditory stimuli can very much improve the attention towards the story. From the table below we can see that this was also the case for their overall enjoyment. Participants also mentioned an appreciation towards the aesthetics of the soundscape of the game. Some have referenced genres and titles to which they related the audio environment.

Overall, the plot was also well appreciated with some elements were said to add a lot to it. One of the most praised elements was the poem, which by people's opinion, carried a lot of depth and uniqueness to the story. Another thing was that even though the reveal of the antagonists was expected by some, it still created a good twist and dynamic to the story. And lastly most participants have expressed that their main motivation for keeping on was to find the treasure, and subsequently to figure out what it is. Completion of the game was something that created for them a sense of achievement and content.

Looking at long term transformative results from the story, the biggest one came from the participants that were not familiar with the interactive narrative genre. After they played the story, they admitted they would like to explore other similar works. For most this type of game was something that they rarely or never did but they would be enthusiastic about exploring it more. This supports the hypothesis that while the genre is entertaining for people, there are some difficulties in its accessibility and promotion.

What level of enjoyment have you experienced while playing

Sound	Mean	N	Std. Deviation
No sound	3,40	5	,894
Sound	4,20	10	,789
Total	3,93	15	,884

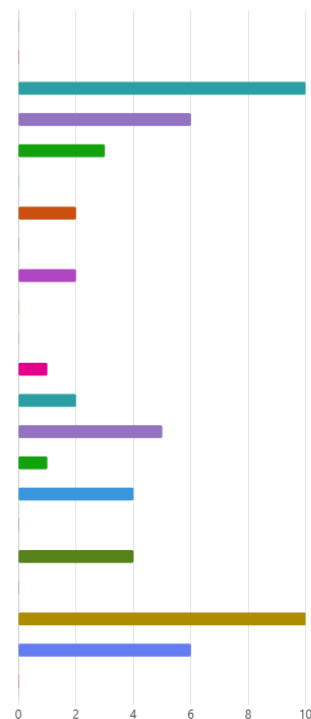
Table 5

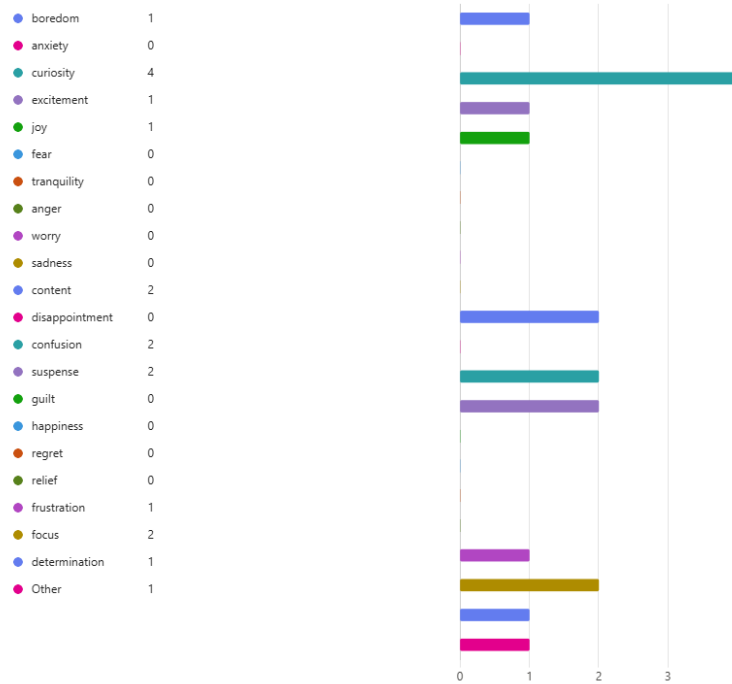
Aesthetic Role of the Sound

	How well did the sounds correspond to the style and feeling of the story?	How aesthetically pleasing were the sounds in the story?
Mean	4,40	4,20
N	10	10
Std. Deviation	,516	,789

Table 6

- boredom 0
- anxiety 0
- curiosity 10
- excitement 6
- joy 3
- fear 0
- tranquility 2
- anger 0
- worry 2
- sadness 0
- content 0
- disappointment 1
- confusion 2
- suspense 5
- guilt 1
- happiness 4
- regret 0
- relief 4
- frustration 0
- focus 10
- determination 6
- Other 0





Figures 3 and 4: Emotions expressed by players when playing with Sound (Top) and without (Bottom)

4.1.4 Replayability

Replayability is an important feature of Interactive narratives. It is essentially what distinguishes it from the other forms of multimedia experiences, because it offers potentially a very different experience in the next playthroughs. In this study it was compelling to see how each participant reacts to the possibility of replay and how they alter their way of playing on the second try.

Out of the 15 participants, 9 wanted to play a second time. Those who did not play again mentioned in one way or another during the open discussion that from their first perception of the game they would not experience a drastic difference if they wanted to try again. Here it is not hard to understand their decision. That is why it was mentioned that with the Branch-and-bottleneck model could encounter this issue. Even though the separate branches could offer distinctively different experience it does not appear so from the first go. Motivated by the discussion in the interview, most of them noted that they would like to try again to explore where the other choices would lead them. The users that did play more than once had a clearer picture of how the story expands and shrinks, therefore they have given a more objective opinion on the story structure. Main reason for their second run was because of losing the first time. For those who managed to win from their first time, the motivation to play again was to explore and potentially reach a different ending. Although that is not the case with this particular story it was crucial to see how potential users would think after reaching an end of a branching narrative.

When people were asked what their motivation would be to play again, everyone's response was to explore and check out the other options. Some of them that had more experience with games wanted to even break the game. Or in other words to see where the most illogical choices would lead them.

Similar notions were also expressed by others. They have said that during their first playthrough their actions were driven by their inner compass. Therefore, on their next try they would be doing something out of their way just to see how it would go.

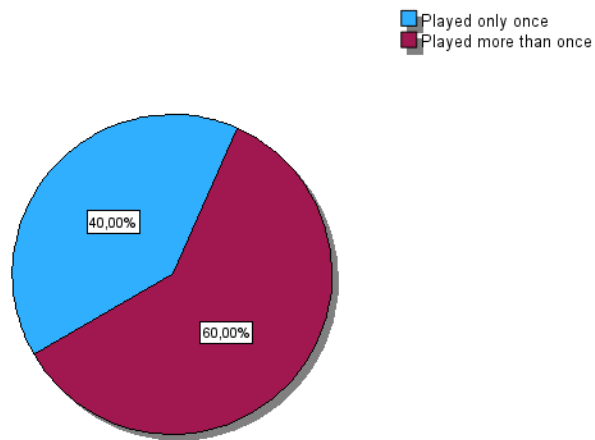


Figure 5

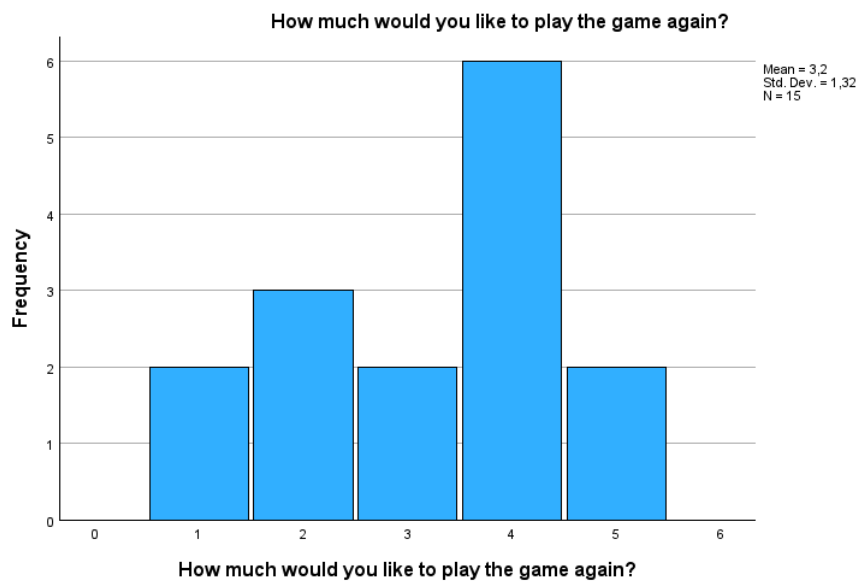


Figure 6

It was considerably evident that participants paid much less attention to the sound on their second playthrough. While they expressed afterwards that they appreciated the sound in the story, when they played again, they went quickly through the text just to get the grasp of how the story changes.

4.2 Sound Group One vs. Sound Group Two

When comparing the two sound groups, it became clear that participants’ reactions were more subjective than expected (*Table 7*). To understand their feedback, it’s helpful to first look at how the two soundtracks were created, since the process is inherently subjective as well.

Fundamentally, the tense soundtrack was designed to promote more negative and dark feelings and influence the players in that way. The drones in that version were mostly low rumbles or dissonant tones, which were meant to keep players on edge and provoke darker emotions.

On the other hand, the tranquil soundtrack was created to do the opposite. It consisted of higher in frequencies and calming background sounds aimed to put players at ease and encourage a sense of curiosity and adventure. The intention was for this version to make the story feel lighter and positive. And while the main focus was on the positive reaction, it was recognized that in some scenes it was necessary to provoke some suspense and significance towards the decision making.

Throughout the experiment, participants from both groups shared interesting and sometimes surprising thoughts. Data shows that most agreed with the belief that sound fits well with the story and helped them feel more immersed. This was regardless of the group they were in. Their opinions were supported in the open discussions, where people explained how the audio shaped their experience. People from the ‘tense’ version have mentioned being on alert in some scenes and pressured to make a choice. While participants from the other group have said to be transported right from the start to a somewhat dreamy place.

These findings suggest how powerful sound can be in shaping how people experience and interpret interactive stories. Sound isn’t just background noise—it can influence the way players feel about a narrative and how they engage with it. For authors of IDN, this means that careful sound design can be a key tool for drawing players in and making stories more engaging.

		Sound groups comparison				
Group		Sound helped you identify with the main character and their challenges.	Sounds were accurate and represented well what is happening in the story.	How well did the sounds correspond to the style and feeling of the story?	How aesthetically pleasing were the sounds in the story?	What emotions have you experienced most while playing?
Calm	Mean	4,20	4,40	4,40	4,00	
	N	5	5	5	5	5
	Std. Deviation	,447	,548	,548	,707	
Control	N					5
Tense	Mean	3,40	4,60	4,40	4,40	
	N	5	5	5	5	5
	Std. Deviation	,894	,548	,548	,894	
Total	Mean	3,80	4,50	4,40	4,20	
	N	10	10	10	10	15
	Std. Deviation	,789	,527	,516	,789	

Table 7

5. Conclusions

5.1 Discussion

While this study offers a good overview of the influence of sound in interactive narratives and the engagement in this type of digital media in general, there is definitely room for improvement.

First of all, for this experiment a larger sample size would have been better. Having 5 participants in each group is not a sufficient amount for solid justifiable conclusions. The game and survey could be sent out to remote participants in order to get significantly more results and therefore more concrete quantitative data. In this study the open discussion part made it harder to get a larger participant number as it requires personal interaction. That part was considered essential for this particular study because it promotes sharing detailed opinions and perspectives from which to draw correlations with the players' survey responses.

Another potential drawback in this study could be the limitations of the story and the platform. While Arcweave makes it easy to create branching narratives it is still lacking in some of its functionality and customization. Using a game engine for game development could achieve better results. The triggering of the sound effects could be executed in some more interactive and engaging way. For example, by pressing a certain icon or word within the text. To an extent that could resolve the issue with the asynchronization of the one-shot sounds and the reading pace of the player. All this could be incorporated in further studies. While this research focused on the influence of sound in interactive digital narratives, it still covers the general aspect of the genre in respect to the engagement of the users. Future studies could attempt to focus on just one specific section defined by Roth and Koenitz – Agency, Immersion, Transformation and delve deeper. Still this paper managed to illustrate a possible framework for evaluating opinions of potential users of IDN and could be a steppingstone for more extensive research.

Another way to make the role of sound more apparent would be to tailor the story in such a way that it works better with the audio. Depending on the story and the actions within it, it is possible to give even more functions to the sound. For instance, giving important clues about future tasks or information that could transcend the effect if given as a text form. Although this was done to an extent in this story it could be improved a lot. Expectedly, in that case the function of sound would become essential for the experience for it to be tested without, but that would arguably result in more engaging and immersive experience.

Still this study managed to implement, test and analyze many concepts in the current state of the art. During the writing of the story many different choice types were integrated with the purpose of testing their effect on the players. For instance, False choices and Flavour choices did prove their expected effect and the evidence can be used in future research. The use of sound was also very well in connection with the available works on the subject. For example, as was mentioned the issue with asynchronization is a frequent one in digital stories and in this experiment, it also became a problem

with some participants. Lastly, it can be seen this paper was heavily influenced by the work of Roth and Koenitz (2016) in order to organize the collection of data in a sufficient and comprehensible way. With this experiment it has been proved that their categorization is reliable to draw conclusions about user engagement.

5.2 Conclusion

The genre of Interactive Digital Narratives is as of yet to reach its potential. Technological advancements are inevitably going to improve the complexity of its content; however, it is important to take into account the user experience. While many different things can influence that, one that is often neglected is the sound. This paper has made its effect observable. By comparing three different sound conditions on the same interactive story, it was made more evident where and how can sound play a role in the game. The analysis of the data first looked into the differences between having sound and playing the story in silence. Results have shown strong effect on the users' perception of immersion when they played with the audio. Not only did it help with the sensory awareness within the story world, but it also made the plot more believable for them. The participants more easily identified with the character and shared his emotions. Additionally, the presence of sound showed signs of affecting the feeling of agency for the user but usually on more subconscious and emotional level. Rather than influencing their choices directly, it played with their feelings. On an aesthetic level sound also appeared to have an impact on improving the user engagement. Analyzing the results from the two versions of the sound it was noted that sound has also a significant role in the overall impression of the story. Without changing the text, it was possible to evoke in some players relatively different experiences. The study had its drawbacks such as not big enough sample size, but it still manages to outline the importance and need for more related works.

This research stands among just a few others in evaluating user experience in IDNs and if not the only one that highlights the effect of sound in the genre. The subject demands for follow-up studies that could collect more extensive results in support of the hypothesis. Evidently, digital experiences aim to become more realistic and believable; therefore, the implementation of more agency and decision making is only natural. Therefore, it is essential to study the users' perspective and by that to recognize better ways to address it.

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Appendices

Appendix 1: ChatGPT Poem Prompt

Can you turn the following into a poem Religions brought a lot of terrible things to civilization but it can't be denied that they created a practical compass for the lost And when you end your living path and face the last crossroads Follow the right sign, ignore the false ones

ChatGPT said:

Absolutely, here's a poetic take on your thoughts:

The Compass and the Crossroads

They came with fire, with book and creed,
A tide of rules, of guilt and need.
In temples raised and wars they sparked,
The soul of man was often marked.

Yet in the wreckage, strange and bright,
A flicker glowed—a guiding light.
For those who wandered, blind and tossed,
It gave a star, when all seemed lost.

Not all was good, nor all was grace,
But something stirred in sacred space—
A moral thread, a northward line,
A way to walk, a whispered sign.

And when at last your days are done,
And dusk has swallowed up the sun,
Stand firm before the paths you see—
Choose wisely what your end shall be.

Ignore the glimmer dressed in lies,
Seek not the loud, but quiet skies.
For in that moment, calm and vast,
The truest sign will guide you past.

Want it to be more dramatic, more spiritual, or maybe more modern? I can tweak it however you'd like.

You said:

I want something shorter and very close to the original

ChatGPT said:

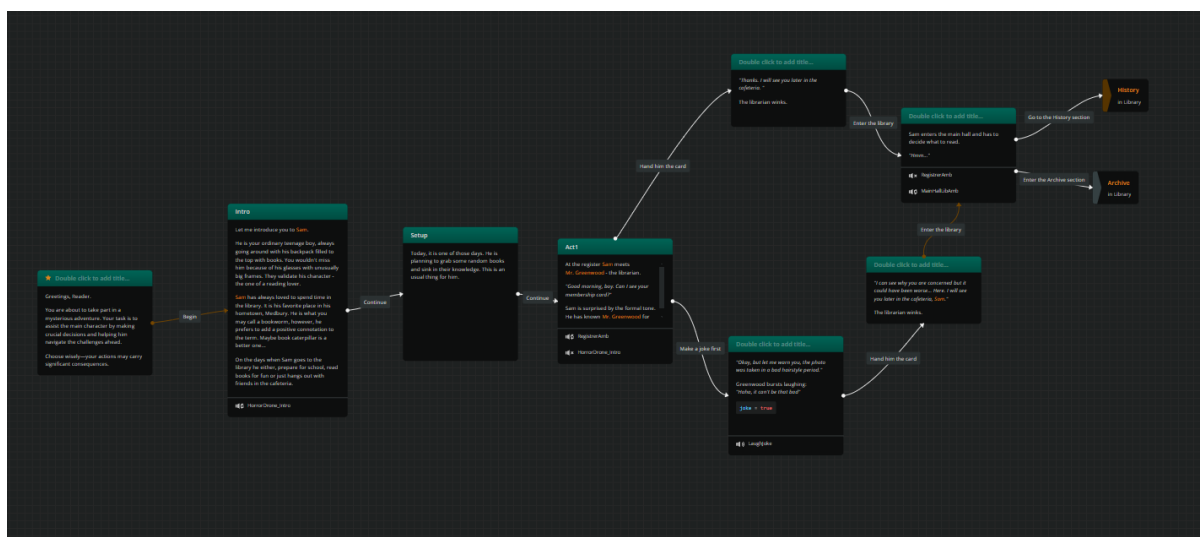
Got it—here's a shorter version, keeping close to your original wording and tone:

The Compass

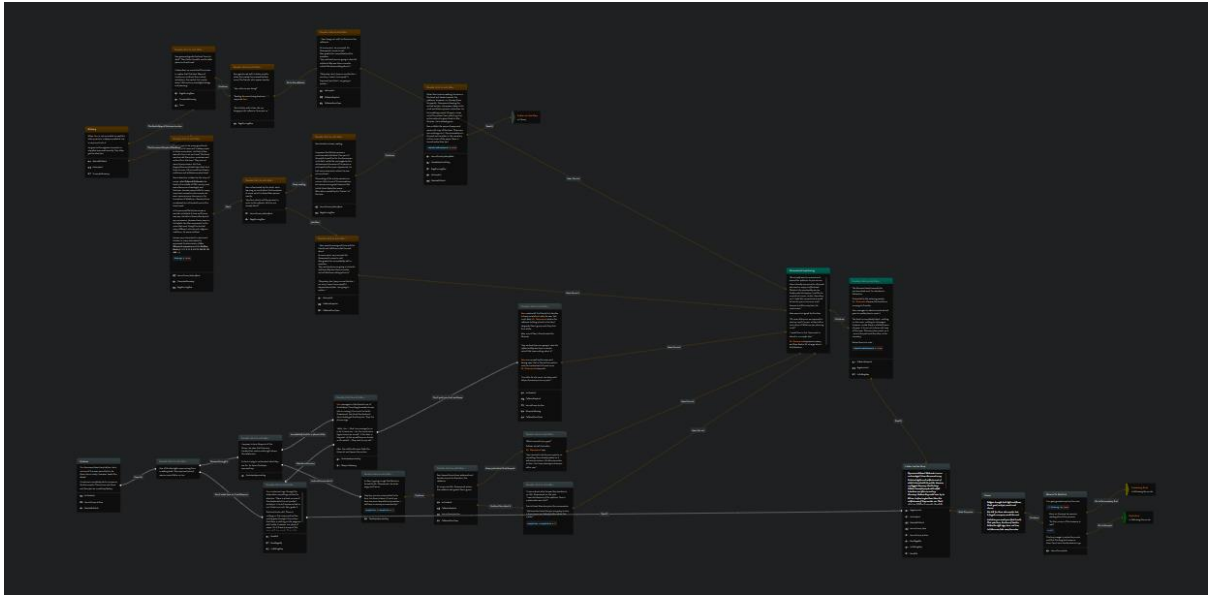
Religion brought both light and flame,
Much good, and yet, much cruel shame.
But still, for those who wander lost,
It forged a compass, worth the cost.

And when you reach your final breath,
That quiet turn, the door of death—
Follow the right sign, clear and true,
Let false ones fade away from view.

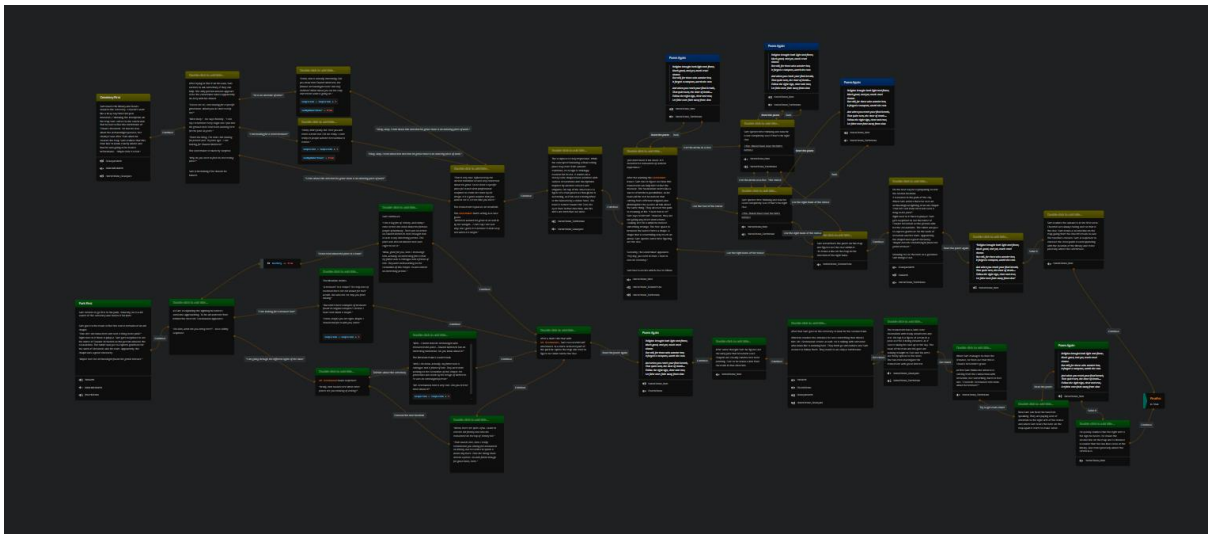
Appendix 2: Screenshots from the story structure and links for the game



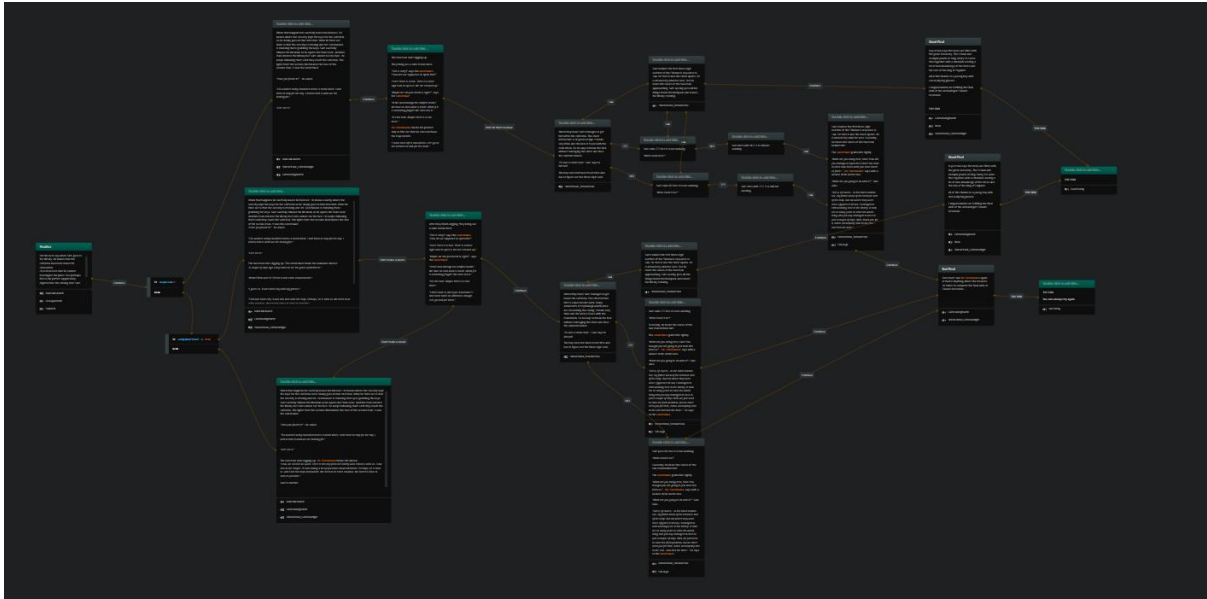
Intro



Library



Following the Clues



Final

Links for the game:

Tense Version:

https://arcweave.com/app/project/8Mlw3RoloA/play?entrypoint=play_btn

Tranquil Version:

https://arcweave.com/app/project/7mEgYAP0nR/play?entrypoint=play_btn

Appendix 3: Quantitative Results (Survey Results)

Control Group Results

Id	Start time	Completion time	Email Name	Age group?	Gender?	How familiar are you with the concept of Interactive/Digital Narratives?.	How easy was it for you to navigate through the game?.
1	5/24/25 17:16:18	5/24/25 17:51:56	anonymous	25-34	Man	Very familiar	Very easy
2	5/25/25 0:24:21	5/25/25 0:43:53	anonymous	18-24	Man	Somewhat unfamiliar	Somewhat easy
3	5/25/25 18:46:20	5/25/25 19:07:53	anonymous	18-24	Man	Very familiar	Very easy
4	5/29/25 14:46:53	5/29/25 15:26:05	anonymous	18-24	Man	Somewhat familiar	Normal
5	6/3/25 20:00:51	6/3/25 20:13:23	anonymous	25-34	Man	Somewhat unfamiliar	Normal

How meaningful do you believe the choices you made were, regarding the outcome of the story?.	How much do you believe your decisions made a long-term impact on the progress	What level of autonomy did you experience when you played the game?.	What level of presence have you experienced while playing the game?.	How believable was the world and the story for you?.	How well did you identify with the main character and their story progression?.
Very	Very	Very high	Very high	Very believable	Very well
Not at all	Not much	Somewhat low	Somewhat high	Neutral	Slightly
Very	Moderately	Very high	Normal	Somewhat believable	Slightly
Not at all	Not much	Very low	Normal	Somewhat believable	Very well
Moderately	Moderately	Somewhat high	Normal	Neutral	Slightly

What levels of curiosity have you experienced while completing the story?.	How suspenseful was the story?.	What level of enjoyment have you experienced while playing?.	How challenging was it for you to make a choice?.	How much would you like to play the game again?.
Very high	Very	Normal	Moderately	Very much
Somewhat low	Slightly	Normal	Not at all	Slightly
Somewhat high	Very	Normal	Not at all	Slightly
Very high	Moderately	Normal	Not at all	Not at all
Normal	Slightly	Very low	Slightly	Not at all

What emotions have you experienced most while playing? (You can select more than one answer)

curiosity;joy;confusion;suspense;excitement;focus;engagement;

curiosity;confusion;frustration;

curiosity;content;determination;

curiosity;content;suspense;focus;

boredom;

Sound Groups Results

Id	Start time	Completion time	Email	Name	Age group?	Gender?	How familiar are you with the concept of Interactive/Digital Narratives?.		How easy was it for you to navigate through the game?.
1	24/05/2025 18:05	24/05/2025 18:29	anonymous		18-24	Woman	Not familiar		Very easy
2	24/05/2025 23:31	25/05/2025 00:10	anonymous		18-24	Man	Fairly familiar		Very easy
3	25/05/2025 14:17	25/05/2025 14:34	anonymous		25-34	Man	Not familiar		Somewhat easy
4	25/05/2025 14:57	25/05/2025 15:13	anonymous		18-24	Woman	Somewhat unfamiliar		Very easy
5	28/05/2025 17:11	28/05/2025 18:09	anonymous		18-24	Woman	Somewhat unfamiliar		Very easy
6	31/05/2025 13:00	31/05/2025 14:13	anonymous		18-24	Woman	Not familiar		Very easy
7	01/06/2025 10:26	01/06/2025 11:24	anonymous		18-24	Man	Fairly familiar		Normal
8	01/06/2025 13:39	01/06/2025 17:30	anonymous		25-34	Woman	Not familiar		Somewhat easy
9	01/06/2025 19:32	01/06/2025 19:57	anonymous		18-24	Man	Somewhat unfamiliar		Normal
10	07/06/2025 10:58	07/06/2025 11:24	anonymous		18-24	Man	Fairly familiar		Somewhat easy

you believe the choices you made were, regarding the outcome of the story?.	believe your decisions made a long-term impact on the progress of the story?.	What level of autonomy did you experience when you played the game?.	What level of presence have you experienced while playing the game?.	How believable was the world and the story for you?.	How well did you identify with the main character and their story progression?.
Very	Very	Very high	Very high	Very believable	Very well
Moderately	Moderately	Normal	Somewhat high	Somewhat believable	Moderately
Very	Very	Somewhat high	Somewhat high	Somewhat believable	Moderately
Moderately	Very	Very high	Somewhat high	Somewhat believable	Moderately
Slightly	Moderately	Normal	Somewhat high	Very believable	Very well
Moderately	Very	Normal	Normal	Very believable	Very well
Very	Moderately	Normal	Somewhat high	Somewhat believable	Moderately
Moderately	Moderately	Somewhat high	Normal	Neutral	Moderately
Very	Very	Normal	Somewhat high	Very believable	Very well
Moderately	Very	Normal	Normal	Somewhat believable	Very well

What levels of curiosity have you experienced while completing the story?.	How suspenseful was the story?.	What level of enjoyment have you experienced while playing?.	How challenging was it for you to make a choice?.	How much would you like to play the game again?.
Very high	Moderately	Somewhat high	Not at all	Very much
Very high	Slightly	Very high	Very	Very much
Somewhat high	Very	Somewhat high	Moderately	Very much
Somewhat high	Extremely	Very high	Very	Extremely
Normal	Moderately	Somewhat high	Not at all	Moderately
Very high	Very	Very high	Very	Extremely
Very high	Moderately	Very high	Slightly	Very much
Somewhat high	Moderately	Normal	Not at all	Slightly
Somewhat high	Very	Normal	Slightly	Moderately
Very high	Moderately	Somewhat high	Moderately	Very much

What emotions have you experienced most while playing? (You can select more than one answer)	These emotions were heavily influenced by the sound.	How much did sound influence your perception of control over the narrative?.	Sound helped you identify with the main character and their challenges..
curiosity;tranquility;focus;	Strongly agree	Strong influence	Agree
curiosity;excitement;joy;worry;confusion;happiness;focus;relief;	Disagree	Slight influence	Disagree
curiosity;tranquility;confusion;suspense;happiness;relief;focus;determination;	Strongly agree	Very strong influence	Agree
curiosity;excitement;suspense;happiness;focus;determination;relief;	Strongly agree	Very strong influence	Agree
curiosity;focus;determination;	Strongly agree	Strong influence	Strongly agree
curiosity;excitement;suspense;focus;relief;	Strongly agree	Strong influence	Agree
curiosity;excitement;joy;suspense;focus;determination;	Agree	Strong influence	Neither agree nor disagree
curiosity;focus;determination;	Agree	Strong influence	Agree
curiosity;excitement;joy;suspense;focus;	Strongly agree	Strong influence	Agree
curiosity;excitement;worry;disappointment;guilt;happiness;focus;determination;	Agree	Strong influence	Agree

Sound offered details about the story which the text didn't..	Sounds were accurate and represented well what is happening in the story..	Sound played a considered part when facing a choice..	How well did the sounds correspond to the style and feeling of the story?.	Sound helped you to feel empathy towards the main character and helped you experience the story through their perspective..
Strongly agree	Agree	Disagree	Very well	Agree
Disagree	Agree	Disagree	Very well	Neither agree nor disagree
Strongly agree	Strongly agree	Strongly agree	Extremely	Strongly agree
Strongly agree	Strongly agree	Strongly agree	Extremely	Strongly agree
Agree	Strongly agree	Agree	Extremely	Strongly agree
Agree	Strongly agree	Agree	Extremely	Strongly agree
Agree	Strongly agree	Neither agree nor disagree	Very well	Strongly agree
Agree	Agree	Agree	Very well	Neither agree nor disagree
Agree	Agree	Neither agree nor disagree	Very well	Neither agree nor disagree
Agree	Agree	Strongly agree	Very well	Agree

Sound improved the mystery element of the story and provoke you to keep on..	Sound played a significant part in the suspense of the story..	How aesthetically pleasing were the sounds in the story?.
Somewhat agree	Somewhat agree	Very
Somewhat agree	Somewhat agree	Very
Strongly agree	Strongly agree	Extremely
Strongly agree	Strongly agree	Extremely
Strongly agree	Somewhat agree	Very
Strongly agree	Strongly agree	Extremely
Strongly agree	Strongly agree	Extremely
Somewhat agree	Somewhat agree	Moderately
Somewhat agree	Strongly agree	Moderately
Strongly agree	Somewhat agree	Very

Appendix 4: Sound List

Ambiences

Name:	Scene:	Objective:
Register	In the beginning, when Sam is entering the library.	To create an authentic and immersive soundscape.
Main Hall	When Sam is not in a specific place in the library.	To create an authentic and immersive soundscape.
History Section	When Sam is in the History Section.	To create an authentic and immersive soundscape.
Archive Section	When Sam is in the Archive Section.	To create an authentic and immersive soundscape.
Cemetery	When Sam is in the Cemetery	To create an authentic and immersive soundscape.
Park	When Sam is in the park	To create an authentic and immersive soundscape.
Cafeteria Daytime	When Sam meets his friends in the cafeteria	To create an authentic and immersive soundscape.
Cafeteria Nighttime	In the final scene, Sam is in the cafeteria during the night and tries to open the chest.	To create an authentic and immersive soundscape.

Sound effects

Name:	Scene:	Objective:
Book Pull	When Sam finds the book in the Archive Section.	To highlight the action
Book Page Flip	After Sam finds the book in the archive.	To highlight the action
Yawn	When Sam is reading the boring book from the History section.	To highlight the emotion of the main character
Laugh Joke	When Sam makes the joke in the beginning, Mr. Greenwood laugh.	To highlight the reaction of Mr. Greenwood.
Unfolding Map	When Sam stumbles across the note and unfolds the paper.	To highlight the action
Evil Laugh	When Sam is caught at the end by Mr. Greenwood, resulting later in losing the game.	To scare the player with Sam being caught.
Turning Book Pages Slowly	When Sam is reading either book in the history section.	To highlight the action
Note Falling and Unfolding	When Sam sees Mr. Greenwood leaving the archive section and drops the map	To highlight the action
Footsteps Approaching	When Sam is in the Archive section and Mr. Greenwood is approaching	To highlight the action and create tension for the player to pick a choice.
Cafeteria Door Open	When Sam goes to meet his friends in the cafeteria.	To highlight the action

Computer Browsing	When Sam is looking for what to read in the History section.	To highlight the action
Blueprint Flipping	When Sam hides in the Archive Section and Mr. Greenwood goes to look at the blueprint of the cafeteria.	To highlight the action
Good Ending	Final Panel when you win	To reward the player and show that they won
News	When Sam manages to run with the treasure and hands it to the museum.	To represent the news broadcasts covering the finding of the treasure
Bad Ending	Final Panel when you lose	To show that the player lost

Tense Variation Drones

Name:	Scene:	Objective:
Church Ruins Drone	In the park, at the ruins	To add some tension but also represent somehow medieval times
Tombstone Drone	At the tombstone of McKenzie	To create an eerie feeling of what is in front of Sam
Archive Drone	In the archive	To add the tense feeling of an empty, dark space where Sam shouldn't be in
Cafeteria Night Drone	At the end, during the night at the cafeteria	Tense feeling that something bad can happen
Reading Note Drone	When the note or the poem are shown	Mysterious drone to provoke deep thinking from the player. And to represent the importance of the note to story
Graveyard Drone	In the graveyard	Ominous feeling
Intro Drone	Introductory panels about the main character	To introduce a darker and mysterious tone for the game
History Book Drone	When reading the book about McKenzie	To express the importance of the content in the book.
Tension Pulse Drone	When facing the choice at the tombstone and at the chest	Rhythmic sound to add tension and suspense for the player to take action

Tranquil Version Drones

Church Ruins Drone	In the park, at the ruins	Angelic feeling in support of the once holy place the character is at
Tombstone Drone	At the tombstone of McKenzie	Holy feel and awe of the masterpiece that is the tombstone
Archive Drone	In the archive	Feeling of being alone in a space with the possibility for anything to happen

Cafeteria Night Drone	At the end, during the night at the cafeteria	The feeling of desolate space and no one to help you
Reading Note Drone	When the note or the poem are shown	Inspiring feeling and evoking hope for a good outcome
Graveyard Drone	In the graveyard	Tranquil feeling of a quiet place
Intro Drone	Introductory panels about the main character	Setting the calm setting and tone to the game
History Book Drone	When reading the book about McKenzie	Adding weight to the content of the book and admiration to the persona of McKenzie
Tension Pulse Drone	When facing the choice at the tombstone and at the chest	Adding the feeling of suspense

Appendix 5: Interview Questions

OPEN QUESTIONS:

1. What was your aim in the beginning of the game? To play it safer, to risk it more, to help the main character or to see how bad it could go.
2. Did this aim change while you played the story and what was the reason for that?
3. Did you see yourself limited by the choices in certain parts of the story and how did that make you feel?
4. Did you feel that some choices were forced on you or had no impact on the overall story?
5. What were your motivations to move forward when you played the story?
6. What part of the story surprised you the most?
7. If you play the game again what will be your motivation to do so?

Sound Part Open Questions:

8. What aspects of the sound got your attention?

9. What adjectives can you assign to the overall auditory experience?

10. Can you say the sound had a different purpose other than representing the auditory world in the story? If yes, did it succeed in that?

11. Have you experienced any confusion from the sound in regard to the story?

12. Was there a moment where the sound made you lean towards a certain choice?

13. Is there anything you want to add?