Megalith Grave Escape
– using escape room game mechanics for cultural heritage sites

Thesis project in Media, Aesthetics and Narration
Masters level 30 credits
Spring 2019
Kristofer Vaske
Abstract

This report documents the development of a concept and prototype for a mobile application with the purpose of making the megalith graves surrounding the town of Falköping more engaging and interactive for visitors. Because of the limitations of working with heritage sites that cannot be altered to support a gaming experience, the usage of escape room game mechanics is explored. Because escape room games depend on the user's observation and exploration of their environment, they serve as a usable inspiration for applications with the purpose of making visitors experience a location in a similar way.

The prototype developed for the project contains puzzles designed for four different megalith grave sites which were then tested with groups of children and parents playing together.

Keywords: Location-based games, spatial games, cultural heritage, escape room games
Table of Contents

Introduction ........................................................................................................................................... 1

Background ........................................................................................................................................... 2
The Megalith Graves of Falbygden ......................................................................................................... 2
Table Mountain Geopark ......................................................................................................................... 2
Falbygdens museum ................................................................................................................................ 2
Location-based Games – Pokémon GO and Geocaching ........................................................................... 3
Spatial games for cultural heritage ........................................................................................................... 3
Treasure codes Malaysia .......................................................................................................................... 4
Aura ......................................................................................................................................................... 4
Escape games ......................................................................................................................................... 5
The mystery of Elin ................................................................................................................................... 6

Problem description ............................................................................................................................... 7
Method ..................................................................................................................................................... 8
Pilot Survey 1 .......................................................................................................................................... 8

Implementation ....................................................................................................................................... 9
Design examples ....................................................................................................................................... 9
Hemliga Klubben ...................................................................................................................................... 9
Escape room mechanics .......................................................................................................................... 9
Digital Escape-the-room games and point-and-click game mechanics ..................................................... 11
Theme & Narrative ............................................................................................................................... 12
Designing for parents and children ....................................................................................................... 13

Prototype Design Challenges ............................................................................................................. 15
The prototype ......................................................................................................................................... 16
The process ............................................................................................................................................. 19

Evaluation ............................................................................................................................................ 20
Pilot prototype test ................................................................................................................................ 20
Testing .................................................................................................................................................... 20
Grave 1 - Ragnvald's Hill ....................................................................................................................... 21
Grave 2 - Klövårdens Passage Grave ................................................................................................... 21
Grave 3 - Logården's Passage Grave .................................................................................................... 22
Grave 4 - Kyrkerör Passage Grave ...................................................................................................... 23

Group observations ............................................................................................................................... 24
Group observations Test 1 ..................................................................................................................... 24
Group observations Test 2 ..................................................................................................................... 25
Group observations Test 3 ..................................................................................................................... 26
The interviews ........................................................................................................................................ 28

Discussion ............................................................................................................................................ 29
Discussion - Ragnvald's Hill .................................................................................................................. 30
Discussion - Klövårdens Passage Grave ............................................................................................... 30
Discussion - Logården's Passage Grave ............................................................................................... 31
Discussion - Kyrkerör Passage Grave ................................................................................................. 32
Discussion – Character, Narrative and Theme ...................................................................................... 33

Future research and development ........................................................................................................ 33

Conclusion ............................................................................................................................................. 35

References ............................................................................................................................................ 36
### Appendix

1. Pilot Study Survey ................................................................. 38
2. Survey Prototype test ......................................................... 40
   Frågeformulär Pilottest:.......................................................... 40
3. Early concept art ................................................................. 42
4. Transcribed Group Interviews ............................................. 45
   Interview 1 ........................................................................... 45
   Interview 2 ........................................................................... 50
   Interview 3 ........................................................................... 54
Introduction

This report concerns a concept study for a mobile application with the purpose of engaging families further with the megalith grave sites surrounding the city of Falköping. The study was developed in communication with Falbygdens Museum and the Table Mountain Geopark project with the aim to introduce an interactive digital experience to a local cultural heritage site.

Both of these organizations, Falbygdens museum and Table Mountain Geopark, have an interest in promoting and educating on the megalith graves that are so abundant around Falköping. This report therefore aims to produce a concept for a mobile application that can be used while visiting the grave sites to provide a more engaging and active experience and study the testing of that prototype.

Because of limitations in being able to make or maintain changes to the physical space of the cultural heritage, the project goal is to simulate an Escape room game experience using only the site as it is and visual aids on a mobile device.
Background

The Megalith Graves of Falbygden

The landscape surrounding the city Falköping, Falbygden, has a unique historical significance. It is home to one of northern Europe's largest concentrations of megalith graves from the stone age and holds about two thirds of all megalith graves in Sweden (https://www.falkoping.se/falbygdensmuseum/). All of the graves are damaged in some way, and work has been done to restore them. They are however still in need of care and maintenance and since they are an important part of the brand of the municipality of Falköping, the municipality is continually working to find new ways of promoting this significant local cultural heritage.

Table Mountain Geopark

The Table Mountain Geopark is a project that includes nine municipalities in the region of Västra götaland with the aim to establish an Unesco Global Geopark in the table mountain landscape of the region (https://www.platabergensgeopark.se/). To get the official UNESCO label it is required that the applying organisation already do extensive work on the geopark project. To achieve this goal the project leaders work on connecting many different parts of the historical and cultural area and demonstrate how they all relate to the unique geological features of the region. Among other things they have received funding to work with storytelling as a tool to spread knowledge about and promote interest in the park as a tourist destination and have organized the history of the area using four themes covering differing time periods. The theme called Earth gives life tells the story about how the geological landscape provided an area ideal for early civilisations to thrive (https://www.platabergensgeopark.se/). These are the societies that built the megalith graves in the area to bury their dead, and of the four themes this is therefore the one most relevant to this report. The other themes are A piece of earths' history, Rocks for a living and The mountains are alive which cover the million year long geological process that created the area, the importance that the mountains have had on local industry and how it's been used as a resource and the role that they have today primarily as a space for recreation respectively. Altogether this shows how broad the interest of the geopark project is.

Falbygdens museum

Falbygdens Museum is a museum operated by the municipality of Falköping with the mission to educate on and display the rich cultural heritage of the sub region (https://www.falkoping.se/falbygdensmuseum/). The museum is located in central Falköping and works in different ways with the historical environment in and around the city. Some of its more prominent exhibits include the museum itself, a reconstructed historical village called Ekehagens Forntidsby with buildings from the stone-, bronze- and Iron age and the over 250 megalith graves in the area (https://www.falkoping.se/falbygdensmuseum/).
Location-based Games – Pokémon GO and Geocaching

Location-based games is a genre of games where the players' location is related to their progression (https://en.wikipedia.org/wiki/Location-based_game). This is most often accomplished to GPS-positioning and the games are often played on mobile devices.

A prominent example of such a game is Pokémon Go, a mobile game by Niantic Inc (https://www.nianticlabs.com/, 2016) that has been very successful at making players venture outside and explore their environment (Juho Hamari, Aqdas Malik, Johannes Koski & Aditya Johri, p. 1, 2018). Though a lot of the content of the game is played out on the screen, the game requires the users to walk to and between physical places to be able to find new items, pokémon and places to battle. Another aspect to take note of is that these sites and points of interest where the players gain tools, quests and opportunities to compete (called pokéstops and gyms) are placed at physical sites that have historical or cultural significance. Pokémon Go is a game with a large budget and millions of players, things that are impossible to replicate within this project. However, the aspects of the outside exploration and the positioning of game content at physical cultural and historical sites, served as an early inspiration for how an application for the megalith graves could be designed.

Another location based game with a longer history than Pokemon Go is Geocaching. Geocaching is something that has existed since the early 2000 (Neustaedter Carman, Tang Anthony and Judge K. Tejinder, p. 336, 2011) but has increased in popularity since smart phones with built in GPS technology have become more common. The core of the activity is to search for and find small containers called caches with the help of GPS coordinates. Inside the cache is a log book where the person finding it can write their name to verify that they were there. Each cache is created and managed by another player that makes sure that the cache does not disappear and also confirms which players have written their name in the log book (Neustaedter, Tang and Judge , p. 336, 2011). The fact that Geocaching is a game that to a large extent is created and managed by it's players means that the game is incredibly scaleable and this is probably also the reason that the activity has spread all around the world (Neustaedter, Tang and Judge , p. 338, 2011). While the project that this report concerns does not have the need of being scalable to large geographical areas or millions of players, the simple concept of letting players search a site more closely for a treasure and that each cache has been carefully hidden in a way that suits it's location, is obviously a compelling game mechanic to many people.

Spatial games for cultural heritage

Irini Malegianakki and Thanasis Daradoumis has written a literary review on spatial games for cultural heritage (p. 1, 2016) where they describe how games are increasingly used for cultural heritage purposes such as learning and tourism. They aim to present a state of the art of how games have been and can be used to enhance the experience of a physical heritage space. The study includes 41 scientific papers and 34 games (Malegianakki and Daraodoumis, p. 3, 2016 ) and goes through how these respond to five research questions:

- In which different ways do spatial games for cultural heritage handle cultural content?
- Which different kinds of interactions with cultural content do spatial games for cultural heritage enable?
In which contexts are spatial games for cultural heritage used?

Do spatial games for cultural heritage enable social relationships?

Which outcomes are reported for spatial games for cultural heritage?

To answer these questions the authors divide the games into genres. They describe that a large part of the games covered are treasure hunt games (p. 5), adventure games and games that in some way facilitate exploration of the cultural content (p. 7). They also describe how many treasure hunt games are used to draw the player’s attention to specific details in the historical environment and can be used to create a degree of mystery and meaning to the exploration of an to the user unknown setting. It is also mentioned that almost half of all the games examined use a simple or elaborate narrative as a way to further engage the player with the tasks presented in the game (p. 7).

**Treasure codes Malaysia**

In the Royal Selangor Visitor Centre in Kuala Lumpur, Malaysia, a treasure hunt with mobile devices was used to make visitors interact more with the exhibition (Kher Hui Ng, Hai Huang and Claire O’Malley, p. 740, 2018). In the centre, visitors could learn about mining in Malaysia, and this had earlier mainly been organised through personal guided tours, but it was reported that the people attending the tour didn’t interact much with the exhibition and the guides where also more comfortable talking about certain parts of the display than others. The treasure hunt was designed as an alternative to the guided tours and as a way to counteract these issues, providing a more interactive and engaging way to explore the exhibition, especially for parents and children (Kher Hui Ng, Hai Huang and Claire O’Malley, p. 740, 2018). The treasure hunt let the visitors of the centre search for hidden symbols in the exhibition that they scanned with mobile devices which in turn unlocked tasks and assignments to be performed inside the venue (Kher Hui Ng, Hai Huang and Claire O’Malley, p. 741, 2018). This mobile tour is in the report said to have resulted in greater learning for both adults and children in comparison to the guided tour of the exhibition (s. 747).

**Aura**

Aura is a term coined by Walter Benjamin describing the role of authenticity and originality in works of art (1936). He uses this term to describe what art has lost in, as he says, the age of mechanical reproduction (p. 4, 1936). A work of art has a “presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence.” and when replicated these qualities diminish, according to Benjamin.

Benjamin argues that the uniqueness of a work of art originates in it’s place in tradition and that they in the beginning had their value in rituals, what he calls the ritual or “cult value” (p. 6, 1936) which is more and more exchanged for an “exhibition value” when they can be easily reproduced. What matters is no longer the physical and authentic work of art but rather it’s quality as an object to be exhibited and viewed by many.

Undoubtedly, the societal progression that Benjamin commented on in the 1930s has now come even further with replicated art being present on screens everywhere in society. It’s
important to consider what this means for a project such as this. Replicated art will be used in the prototype but it's purpose is to amplify the aura of something that's real and tangible – the megalith graves. To make sure that the prototype gives the grave sites more authenticity and impact rather than less because of their likeness being reproduced in the prototype or that the subject is handled carelessly is something to be mindful of during the design process.

**Escape games**

A growing phenomenon in the tourism industry in the last decade is an activity called *Escape games*. Scott Nicholson writes about this concept in a paper reporting on a survey with 175 facilities providing escape room experiences (2015). He describes Escape rooms as:

“....live-action team-based games where players discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) in a limited amount of time” (Nicholson, p. 1, 2015).

It's important to recognize that despite the name an escape room game does not necessarily have to involve the participants escaping or getting out of a certain space (p. 16). Doing so is not unusual, and the name comes from the activity's origins but many games included in the genre use similar game mechanics without using the narrative setting of an escape.

In a brief description of the history and origin of the concept Nicholson (p. 3) writes about how the idea of Escape rooms comes from several different directions. The main areas he brings up as the things that inspired this genre of entertainment to arise are Live-action role-playing, Point-and-click Adventure games & escape-the-room digital games, puzzle hunts & treasure hunts, interactive theater and haunted houses, adventure game shows, movies and themed entertainment industry (Nicholson, p. 3-6, 2015).

It is clear that many different activities and ideas inspired this concept that combines game mechanics with a tourist attraction. Because of this, escape rooms comes in a large variety of styles and function in different ways, but as mentioned they most often include one or several puzzles that must be solved by the players in order for them to progress and/or get out of the facility.

Relevant to this project is that Nicholson also mentions that almost a third of the games analysed had some kind of learning outcome designed into them (p. 24). Teamwork and communication was the most common learning outcome reported, since escape rooms are a group activity, but a number of rooms also taught about other subjects like history geography or incorporated elements of chemistry or astronomy into their puzzles (p. 25). He also mentions that a few museums have explored the use of escape rooms and emphasize that they are ideal for physical spaces with a goal of informal learning (p. 24).

Escape games often includes the use and deciphering of symbols or codes (Nicholson, p. 19, 2015). Otherwise mundane objects in the game environment can be given meaning in how they’re placed, their number or other characteristics that the participants need to figure out to understand how to progress. This is a type of mechanic that seem especially suited to use in the project this report concerns.
The mystery of Elin

*The mystery of Elin* is a game developed at Skövde University with the aim to combine narrative and gameplay and make the city center of Skövde a game board that makes players explore it's historical and cultural buildings (Díaz, Toftedahl &, Svensson, 2014).

The game lets the users take a walk through the city center and uses the art and architecture of central Skövde as components and clues to puzzles that all connect to a bigger narrative about the games' character Elin. Several cultural and historical buildings were identified for this purpose (Díaz, Toftedahl & Svensson, p. 1, 2014).

*The mystery of Elin* app shares many characteristics and limitations with the concept that this project is suggesting. They both have the aim of increasing visitor interaction with said sites and both have to construct an interactive experience without having an effect on the surrounding physical environment.

An interesting thing to take note of is the problems that arose during the summer of 2013 when some of the chosen buildings for *The mystery of Elin* where being renovated (Díaz, Toftedahl & Svensson, p. 5, 2014). This presented a challenge for the game designers since the relevant architectural elements of the buildings couldn't be viewed by pedestrians and they where forced to alter the game route. When designing a game with a physical space in mind it is not possible to influence it may be important to remember that the physical site may also be altered in ways that you cannot affect which in the worst case might make the game unplayable from that point forward. For the purpose of this project it could be assumed that the risk is smaller for something like this to happen since the megalith monuments in question are very old and there is every intention of preserving them as they are, but it might still be something to be aware of.
Problem description

Skövde University was approached by the Table mountain Geopark regarding the question of using digital technology and new media for storytelling. A mobile phone application based around the megalith graves outside Falköping was suggested and Falbygdens museum was contacted to develop the concept further.

To get an accurate needs analysis for the project, representatives of Table mountain Geopark and Falköpings museum were given the opportunity to list their expectations of what this game or application should contain and what results should be aimed for. The main subject discussed was the object of making visitors explore the grave sites to a greater extent. Part of the mission at both Table Mountain geopark and Falköpings Museum is to package the cultural heritage so that it becomes approachable and possible to digest for visitors and tourists and in this work also contextualize the heritage. In a sense, the historical content must be turned into a product that is feasible to enjoy and learn from even if you don't have the possibility and interest to invest a lot of time and effort. This was something that was highlighted as one of the goals of this project. The representatives also expressed a general wish for new thinking and creative approaches to convey their message.

Another aspect brought up was the need to reach a difficult or new audience. This partly refers in general to the before mentioned visitors that are not yet so interested in the content, but also to children. Since young people spend a lot of their time playing games or using tablets and phones (Statens medieråd, Ungar & medier 2017, p. 3, 2017) it was assumed that an interactive mobile experience would make them more likely to engage with the cultural heritage.

Digital media is continually used in new ways to deliver cultural heritage content to the public (Malegianakki and Daraodoumis, p. 1, 2016 ). Games set at physical heritage sites have the benefit of not just teaching users about the subject but to make them actively explore the space. Heritage sites however, often can't be altered much or adjusted to facilitate any type of gaming experience since the preserving of them as they are is one of their most important attributes. Therefore it is important to keep exploring in what way digital and mobile games in a sustainable fashion can be used to enhance the experience of cultural heritage without disturbing the actual sites.

Because of the above stated limitations to creating location-based games for heritage sites the Escape Room game genre is proposed as a source of inspiration. Escape Room games offer an active physical experience while relying on the participants exploration and observation of a location to find the clues and answers to progress forward. This aligns with the goal of making visitors interact with a cultural heritage site and offers the opportunity to create puzzles based on a sites’ features and characteristics.

With the aim of creating an interactive activity at the megalith grave sites outside Falköping without the possibility to make alterations of the physical space the research question is formulated as follows:

How can you simulate an escape room experience using only a static and unaltered cultural heritage site with the use of digital visual/graphical puzzles?
Method

The project required a prototype of the game to be constructed for and tested on a select few cultural heritage sites. Because of the logistics of testing such a prototype with a large number of respondents a qualitative methodology was used. The prototype was tested with groups of parents and children visiting the sites and there solving the prototype puzzles. The test participants' were observed during the play session and semi-structured interviews were conducted to gain an understanding of their thoughts on the experience. While being able to ask questions about the areas that are relevant to the project this method gave room for unexpected feedback to be brought up by the informants.

Because part of the stated goal was to explore how you can develop an engaging interactive experience using the static heritage site as support for visual puzzles, a significant part of this report was be dedicated to analysis of the sites' visual characteristics and how they can be used in combination with common escape room puzzle mechanics.

Pilot Survey 1

For the purpose of this project it was possible to perform a small pilot survey with visitors at Falbygdens museum (see appendix 1). While the amount of respondents is low, ten surveys were handed in, the answers can help inform the design of the prototype.

While a majority of the respondents already had some knowledge about, having visited some of the grave sites and believed that they are interesting tourist destinations as they are, they also believed that an mobile phone application such as the suggested one would make them more likely to visit more of the sites.

A few of the informants did mention that children were less likely to enjoy the grave sites as they are now, and that some kind of game or treasure hunt would make them more interested which confirms some the presumptions that were part of initiating this project, but it should be noted that about half of the informants answered that they thought children would already appreciate the grave sites as they are.

On the question of which features they believed would be most important for such an application to contain where they were given the opportunity to number them from most to least importance the answers where ranked from highest to lowest: That the app - “contains information about the site for anyone that wishes to know more”, “contains visually and pedagogically designed material”, “contains a game or mystery that can be solved on site”, “is user friendly” and “contains a map or directions to the sites”. It should be noted that the alternatives where not divided by large amounts and two informants also added the comments “All of them” and “All five alternatives are important”.

The possibility to conduct this small survey was informative for the project but it must be taken into account that the small amount of informants is not enough to eliminate individual variation. Because of this, some input can be taken from the comments written by the informants about the projects but care should be taken to not put too much weight on any single reply or question result.
Implementation

The following part will cover the work done to combine escape room art and game mechanics with the chosen megalith grave sites.

Design examples

Hemliga Klubben

“Hemliga Klubben” (The Secret Club) is a children’s book series about two children, Moa and Måns, that solve mysteries together (Susanne Macfie, 2016). It’s a detective narrative for kids that invites the reader to be part in figuring out who the perpetrator is (www.hemligaklubben.nu). The writing is constructed in a way to clearly show what clues Måns and Moa pick up about the case so it’s easy to follow along and let’s the reader learn the characters’ secret cipher that they use to communicate without revealing themselves to people around them.

As a continuation of this book series the publishing company MEMO has developed an app where users can take part in solving even more cases (https://memostories.se/digitaladecarfall/). The app uses GPS-positioning to make the player move outdoors to designated locations to find new clues, pair the clues up with suspects and finally guess which one of them was the perpetrator.

It is interesting to note that when starting a new “case” in the app, you either have the option to “play indoors” which means that the GPS function is removed and you can solve the mystery without having to walk, or to “play outdoors” in which case you get to pick among a variety of cities in which to play the adventure. However, once the adventure have started the movement component mostly consists of getting to a designate area in order to get access to the next set of clues. There is no information included about why or how these clues where found at that particular spot.

This would seem to be a case of balancing developing cost with making the game available to a larger audience. To only make a case work within a specific city and location would make the audience very narrow, but it would in turn allow for an experience much more tailored to the area. Instead, the game has been made available to play in many different cities but it seems there is little or no connection to the actual place where it will be played.

Compared to the megalith project, where the goal is to make an interactive experience placed at a specific cultural heritage sites around Falköping, the Hemliga klubben-application could be said to be at the opposite side of the spectrum in regards to balancing reusability with custom-tailored design.

Escape room mechanics

In his report, Scott Nicholson writes about the different kinds of puzzles that were reported to be in the escape rooms included in the survey (Nicholson, p. 19, 2015). This section will go through those mechanics that may be relevant to include in a game application using only visual characteristics of cultural heritage sites.

Although the report shows the data regarding how many escape rooms where reported to use the different mechanics, Nicholson does not explain much about the specifics of what these mechanics contain. However, a blog dedicated to the concept of escape rooms have
elaborated further on the mechanics mentioned in Nicholsons survey (https://blog.nowescape.com/101-best-puzzle-ideas-for-escape-rooms/):

**Counting** – Although complex mathematical problems are discouraged, since it is difficult to be sure that the audience will be able to solve them, puzzles that include counting in some manner can be a good addition. These puzzles can consist of objects of different numbers hidden or scattered throughout the environment and some way of using said numbers, often as a code or cipher. As with many escape room mechanics, a big part of the challenge is in realizing and finding out what to do with the available objects and information. Since one of the goals of the game concept in this report is to make the participants observe the graves more closely, this mechanic is likely appropriate.

**Noticing something “obvious” in the room** – This mechanic is closely related to the former in that it’s about the participants realizing the usefulness of something in the room. Rather than hiding an object that will progress the room further the challenge lies in realizing that the object can actually be of use at all. This is harder to implement in this particular project since the locations cannot be altered, but if the environment allows for the design of such a mechanic it may be useful.

**Searching for objects in images** – In escape rooms depending what theme is intended it’s often fitting to decorate the walls with images or framed paintings. These can be an excellent place to add clues to how to progress forward. In this project however the only available space to put such images is on the tablet screen and the stated goal is specifically to make a game that makes the user look more at the graves rather than at the screen so any mechanic that would make the user search for clues on the screen for an extended period will be avoided.

**Pattern identification** – Similar to finding numbers scattered in the environment this mechanic relies on the participants noticing shapes or patterns reoccurring in several places and using this to solve a coming puzzle.

**Riddles** – Escape rooms are often focused around the participants having to think and figure out how to progress forward rather than just performing a challenging task. This means that riddles can be an ideal mechanic, often requiring the recipient to think “outside the box” to find out the answer. Once again a mechanic like this may be a good fit but only if it can be designed in a way as facilitate interaction with the physical site.

“Prison Island” is an escape room and activity center franchise with facilities in several cities in Sweden (https://www.prisonislandorebro.se/). In Prison Island, the visitors does not get locked into one room, but rather enters a corridor with multiple doors which each leads to a room with a challenge. The rooms all have a time limit, and the group either finishes or fails the task or runs out of time and must then leave the room. The group is awarded an amount of points for their performance in the room but have the possibility of entering it again to increase their score. Visitors pay a fee for playing this game for one to three hours and in that time try to gain an as high score as possible in as many of the rooms as possible.

Before entering a room one can get a clue about the challenge inside from a sign beside it. There the task is graded in three categories - physique, tactics and technique. Most challenges either requires thinking outside the box, solving math problems, memory, cooperation or physical skill and strength such as in climbing or hitting targets. The first time entering a room may be spent mostly trying to understand the nature of the challenge and later attempts to perfect the execution. A lot of the mechanics in the rooms relied on
sensors able to recognise when a player entered an prohibited area causing the challenge to fail, often by touching the floor when meant to climb above it, or the pressing of the correct buttons in order.

Prison Island is a good example of how escape rooms often combine physical challenges and movement with creative thinking and problem solving. The ambition of this project is to be able to implement some of these features into the experience of visiting the megalith graves. The tools for creating the prototype are somewhat limited however. One of the key limitations is the project is the inability to change the properties of the sites. Escape rooms depend heavily on the designers ability to create a physical space that is tailored for a certain experience. The location must both contain the locks or barriers that needs to be overcome as well as every tool or piece of information that can be used to do so. Especially the physical component that is so unique for escape rooms is difficult to make use of, even though it is possible to climb some of the graves it was hard to find pieces of information that the player would gain by doing this and it wasn't possible to challenge their speed or skill in doing it since there is no way to control their performance.

There is still a physical space to work with however and tasks were constructed around the idea that the player needs to move around to find answers by, for example, watching the grave from specific angles.

**Digital Escape-the-room games and point-and-click game mechanics**

Escape-the-room and point-and-click games are two closely related genres of digital games that have a lot in common with physical Escape Rooms ([https://en.wikipedia.org/wiki/Escape_the_room](https://en.wikipedia.org/wiki/Escape_the_room)). Instead of watching their physical surroundings the player uses the surroundings in the game to in the same way progress further. Except the difference in medium or environment escape games and digital escape-the-room games share many mechanics which, as mentioned, derive from the fact that escape-the-room games is one of the things that inspired real life escape rooms to begin with.

A typical setup for a point-and-click or escape-the-room game is that you, the player, gets none or only a limited backstory before being placed in an environment, often a room. The player often has no avatar or player character, but instead plays in first person view. The camera can then be turned to view, for example, the four different walls in the room, and certain areas or items may be clicked to enter a closer view. With a limited backstory the following progression in the game is often found through trial and error, the player looking through the available items and clues to see what can bring them further. For example, on one of the walls there might be a painting with symbols on it and in another part of the room the player, if attentive enough, can enter these same symbols as the answer to a coded lock. The opened lock might give the player a tool, like a screwdriver that then can be used to repair a broken lamp spotted in another part of the room. In this way, one clue and puzzle leads to the next, sometimes several clues has to be combined, and in the end when the player has solved them all the game is complete. The studio Rusty Lake have created a series of escape-the-room games and point-and-click adventures that are used as an example below ([http://www.rustylake.com/tag/rusty-lake-series/](http://www.rustylake.com/tag/rusty-lake-series/)).
Comparing physical escape rooms and digital escape-the-room games most mechanics can be replicated in both categories, however some of them might be easier to create digitally than constructing them with physical objects, sensors or live actors. To make something happen in response to what a player does is a powerful tool for a game designer. This can be an event furthering or halting the players progression, a character appearing to give them more information or story or just sounds or lighting to increase a certain mood. In digital games this is possible to achieve with programming, a scripted response to the player entering a new area or touching an object, but in a physical environment it can be more difficult or resource craving. To make a coded lock open when the right code is entered can work in the same way, but in a digital game it is possible to implement a response from almost any action the player takes while in a real life escape room the same thing might crave sensory systems or a live actor being there to respond to certain events.

Theme & Narrative
Malegianakki and Daradoumis notes in their review on spatial games for cultural heritage (p. 7, 2016) that a narrative can further motivate players to complete the assigned tasks. An interesting story can elevate a game such as this further and will be an important factor in the game concept. However, the focus of this report has been the implementation of escape game mechanics through visual puzzles in relation to the heritage sites, and because of that the discussion of narrative and setting will be less prominent.

Relevant information about the grave and the times from where they originate can be found at many of the signs placed at the grave sites and additional material has been provided by Falbygdens museum. The narrative and objects of the game will delivered by a character and some of this material about the heritage sites will be woven into that same delivery. Since children are one of the main demographics that the clients are hoping to engage with this game the character is designed as a child from the stone age. The player is to assist her in searching for her belongings at the grave sites and she will explain the tasks as well as provide clues if necessary.

It was important to use a light-hearted and child friendly tone while at the same time choosing a style that feels true to the historic material. A balance was struck between a cartoony look with prominent line art and painterly colouring with visible brush strokes for the art style. Idun is designed with large eyes and a small nose and a friendly expression to make sure that players get a positive impression of her as their ally (Isbister 2006, s. 10-11, 27-28). The dialogue will combine friendly lines from Idun describing her and her family, to
make her a relatable character, with pieces of archaeological facts added when possible. As a way to naturally include information about the graves Iduns parents will be builders of megalith graves so in describing her situation to the player she mentions the process they use.

It should also be mentioned once more that Escape Rooms doesn't necessarily need to contain the literal component of striving to leave a confined space, and this project is simply taking it's inspiration from it as a source of game mechanics and puzzle solving (Nicholson, p. 16, 2015). When interpreted literally the term may be likely to cause some confusion for people not familiar with the game genre, which is why it will not be used when introducing the game to it's audience.

An important aspect to focus on was to design the theme, art and narrative so that it works well with the subject matter. Will this material enhance the aura of the authentic megalith graves, as it is described by Walter Benjamin (p. 4, 1936) or will this “mechanical reproduction” detract from it? It was important that the application gave a light hearted impression that is appealing to the children meant to play it, but at the same time not so much as to seem disrespectful or unfitting to the cultural heritage.

Illustration 2: The character Idun explains a puzzle while also teaching about the graves.

**Designing for parents and children**

In the report detailing the work with creating a treasure hunt game in the Royal Selangor Visitor Centre in Kuala Lumpur, Malaysia, the authors write about the challenge of designing an experience meant to be played by parents and children cooperatively and that the parents' behavior can have significant impact on the outcome (Kher Hui Ng, Hai Huang and Claire O'Malley, p. 747-748, 2018). They explain how their game worked best when the parents took part in the game as well as recognized their position as teachers, explaining things further to their child or helping them make connections to the larger world. This was not always the case however, and some parents would either be more focused on playing the
game themselves or letting their children play without engaging with it or helping them understand more. The report suggests taking these things in consideration when designing similar mobile applications (Kher Hui Ng, Hai Huang and Claire O’Malley, p. 748, 2018).

A difficulty with working with these demographics is that it is hard to accurately determine the level of challenge the game should pose to the player. Parents can probably be assumed to have an easier time figuring out the answers to some of the puzzles than the children but at the same time the level of experience using digital applications and games may vary within both groups. In order to reflect this there is some variation in the level of complexity of the tasks presented in the prototype. Some of them are straightforward with a clear explanation of what is required of the player while others require some thinking in order to find the correct answer. In addition to this some tasks are communicated mostly through images while others require a degree of reading, either on the screen or the information signs at the grave site something that the parent might be able to help with if the child is not yet able to or too impatient to do.

To account for the possibility that a task might be too difficult for certain players, or that they don’t really understand what the objective is, a “clue” button was implemented. At every puzzle the player had the option of pressing Iduns’ portrait in the bottom left corner of the screen at which point she would provide additional clues to solving the problem. This is something common in digital escape-the-room or point-and-click games - the inclusion of a way to get more information or even a link to a “walkthrough” were the entire game can be watched or read through so that the player can locate the area they’re struggling in and find the way to progress forward (http://www.rustylake.com/tag/rusty-lake-series/). Since it is a game genre so dependent on the player figuring out the answer or finding hidden items themselves, if they happen to get stuck the experience can quickly get tedious and unrewarding. Because of this developers leave it to the player themselves to decide exactly how much help and support they want in solving the game.

Illustration 3: Pressing Idun’s portrait makes her give the player a clue, explaining the task further.
Prototype Design Challenges

Designing a location-based game for a site that cannot be changed or controlled poses a number of challenges. Since one of the main goals of the game is to increase interaction and observation of the grave sites it is important for this project to thoroughly examine how the sites' visual characteristics can be utilized to their full extent and incorporated in the art and assignments in the game. However, as was found in The Mystery of Elin project, the locations in which such a game takes place can sometimes change in unexpected ways that impact the ability to play it (Díaz, Toftedahl & Svensson, p. 5, 2014). One can probably assume that the likelihood of such changes to these particular monuments is much smaller but at the same time, in order to design as interesting puzzles as possible one might want to use other objects on the near environment that may not be as enduring.

Since game mechanics in escape rooms and digital escape games commonly involve the player carefully observing their surroundings in search for clues it is important to only assign meaning to objects that can always be presumed to be visible. When designing such game mechanics outdoors it’s important to take into consideration that weather and season can affect that visibility and appearance of the site drastically. It should therefore be a priority for the project to only utilize environmental features that are clearly visible in all weather conditions where there’s reason to think people will still visit the sites. For example, deciduous trees are visible in some of the images used as reference for the art in the game, and the photos were taken early in spring. If the game is played in summer all those trees will be in full leaf which might change their appearance and in worst case make the images harder to interpret.

It was decided to use the site “Karleby” for most of the game since there are three graves situated close to each other. The assumption was that the process of getting a testing group together would be easier the fewer places that had to be visited since the traveling between sites will increase the necessary time needed significantly.

[Image: Illustration 4: The three relevant grave monuments in Karleby.]
In order to still get the experience of visiting graves at different sites, which was one of the original goals of the project, the one close to the museum was also used since it's likely that the testing session will start or end at that location.

When the amount of locations was decided on, an effort was made to structure and organize the game to get an overview. Three puzzles per site was originally thought to be a good average which resulted in a preliminary plan for a total of 12 puzzles with dialogue in between. In the end however it is difficult to compare since not all puzzles are as time consuming. One puzzle may take more time to complete and thus in the mind of the designer represent more content and therefore justify the next to be a little shorter.

Since GPS- and scanning-technology were not possible to use for this project, a continuing challenge was to design tasks that actually were helped by being on location. While not entirely without purpose, a game that could just as well be played at home would not fulfill the established goals of this project. Fulfilling this part of the requirements while still providing a series of varied and interesting tasks was the most difficult part of the process. In an escape-the-room game a common mechanic might, as mentioned, be to find a new item and figure out how to use it on the environment to progress further, but since such an activity would play out entirely on screen – finding a digital tool and using it on the digital representation of the graves – it was decided that it didn’t align with the goal of making the player interact with the site.

The prototype
In regards to the resources available for building a prototype for the game, the plan was originally to design puzzles for a digital app, but that could still be tested separately with a prototype consisting of pen and paper. This could be achieved by giving the testers printed versions of jigsaw puzzles or overlaying papers that would show a code when placed correctly. However, even though this method would save resources in form of programming needed to construct a prototype, when considered more closely, it also had drawbacks.

For example, figuring out the correct solution to a coded lock is a very common task in escape room and point-and-click games. When a code consists of 4 digits there’s enough possible combinations to assume that the player will not stumble upon the correct code by
just trying random numbers but instead will have to look around them for possible clues and try the ones they find likely. In a digital game or with a real lock it would be immediately apparent once they found the correct answer and the player could then progress forward, but when testing an analogue prototype someone would have to be there to tell the participants when they got the correct one. This would make for a somewhat awkward interaction when the participants must try out several different numbers before finding the solution and with several groups would also be logistically difficult. In the end it was decided that this approach wouldn’t make for a good testing environment for the prototype and other options for developing it was explored.

A software for making mobile application prototypes called Marvel ([https://marvelapp.com/](https://marvelapp.com/)) was tested and allowed some functionality, but in the end didn’t have the complexity needed to build the puzzles needed. It’s a tool allowing a developer to build a demo of an app that can swap between different screens and look authentic, but without actually implementing any functions. For this project it was essential that the prototype don’t just show images and instructions regarding the puzzles but that the participants can actually enter codes and move objects around on the screen and this was not possible using Marvel.

Construct 2 is a software to simplify the process of making a game and make it approachable for someone that is otherwise not proficient in programming. It's developed by Scirra Ltd. and can be used to create 2D games specifically ([https://www.scirra.com/construct2](https://www.scirra.com/construct2)). Construct 2 puts a user interface on programming that is easily interpreted and thereby allows the creation of a game without the designer seeing or completely understanding the code beneath the surface ([https://en.wikipedia.org/wiki/Construct_(game_engine)](https://en.wikipedia.org/wiki/Construct_(game_engine)).

With the use of Construct 2 it was possible to create a prototype that closely resembled the game that has been conceptualized in this report. Time had to be dedicated to learning and understanding how to use Construct 2 but it still opened up many possibilities for what could be achieved with the available time and resources and it allowed for a well functioning prototype to be assembled. It was not possible however, to include mechanics based on GPS positioning- or camera technology which limited the possibilities of what tasks that could be created in the prototype.

A drawback was that the version of Construct 2 used has a limit on the amount of code a single project can contain. This meant that the prototype had to be split up in different components, and the testers would have to swap between them when moving from one megalith grave to the next. This is definitely not ideal, since it increases the possibility of technical difficulty during the testing, but was still seen as manageable and was outweighed by the possibility to make a prototype with functionality so close to the desired goals of the concept.

The final prototype is a digital game loaded from a website and is ideally played on mobile tablets. As the game starts the player is introduced to Idun, a fictional girl from the area at the time when the megalith graves were constructed. Idun tells the player that her belongings have been scattered at the sites of the megalith graves and that she needs help in finding them again.
During the game Idun continually gives instructions and clues to the player while at the same time telling them about herself and the time that she's from. Facts about the graves and the stone age have been woven into these lines of dialogue in an effort to teach the players about them.

The prototype will be played at two different locations and four different megalith graves. The play session will start at Karleby, where three grave sites are located close to each other, a short trip will then be taken into Falköping and the grave site Kyrkerör is the location for the final bit of gameplay. When the play testing is finished the session will end with a group interview.

At each grave site the players will be presented with a few puzzles to solve. As discussed previously, the solutions to these puzzles are found by observing and exploring the grave sites, sometimes looking at the from different angles or distances. A few of them also incorporate the information signs located by the graves.

In a complete version of this concept the application would open with a map of the area showing available grave sites and some manner of aid in finding them. In this prototype however, the player is already assumed to be at the intended site. In many ways both the overarching narrative and gameplay connection between the different grave sites should ideally be developed further than what was possible in the prototype made for this report, but due to constraints in time and resources the focus of this version is on the development and functionality of the Escape room mechanics in relation to the grave sites. The exact choice of how many grave sites would be included in a full development of this concept would depend on the available budget, but to show a good range of the megalith graves of the

Illustration 6: Early concept art for the map view in the intended application.
area 10-20 graves would be a good start, with the potential to expand to many more if there would be resources available.

The process
Designing the prototype has been a challenging task that's gone through the process of searching for a suitable medium and software to develop it in, learning to use said software, designing as interesting puzzles as possible for the grave sites and finally creating artwork to make them look appealing.

While continuing to design the puzzles for the grave sites it became apparent how difficult it was to work with the limitations of this project. As mentioned, many suggested mechanics are difficult to create when it’s impossible to alter the area of play so the characteristics of the grave sites had to be utilized to as large extent as possible. There was also a risk of the game becoming repetitive if too many of the tasks in essence were variants of “How many rocks make up the grave site roof?” so a lot of time was dedicated to findings ways to make the puzzles seem varied and different. In some cases using information written on the information signs at the locations have facilitated new possibilities for puzzles when there was difficulty in finding aspects to work with on the grave itself.

With more resources it would be possible to include mechanics mentioned earlier in this report like symbol scanning or GPS technology which would help in maintaining a healthy variety in the challenges presented to the player. For a prototype of this size however a good enough selection of different tasks were designed and it was able to serve well for testing the concept.

The prototype art was finalized over time as the Construct 2 code started to take form. A large part of the art depicts the graves or parts of them from different angles but some of it has also been made to represent things mentioned on the information signs placed at the grave sites. As mentioned, a simple art style was used with clear lineart and basic colouring. As the production of the prototype neared it’s end the art was compared side by side and corrected to make sure that it looked consistent.

Illustration 7: Prototype pilot test at the grave "Ragnvalds Kulle"
**Evaluation**

This report concerns a concept for a mobile game app tailored for the megalith grave sites surrounding the city of Falköping. It was developed as a way to provide a more engaging and active experience for the visitors of the heritage sites. Because working with these grave sites provided certain limitations in what could be done with the physical spaces the project goal was to simulate an Escape room game experience using only the site as it is and visual aids on a mobile device. The research question of the study is:

How can you simulate an escape room experience using only a static and unaltered cultural heritage site with the use of digital visual/graphical puzzles?

**Pilot prototype test**

When the prototype was first finished, a small pilot test session was performed on site to examine if there were any directly recognisable problems that would need to be addressed for the main tests to be successful. The pilot test was carried out by a person not belonging to either target demographic of parents or children but the test was still valuable since it was the first one performed on site and it provided valuable observations that served to better the prototype for the coming evaluation.

The main takeaway from the pilot test was that the prototype was unclear in it's messaging and hard to understand. While the main game mechanics were in place, it was difficult to understand some of the instructions and particularly to know when a certain section of the game was finished and it was time to move on to the next grave site.

To remedy this, some of the dialogue and clues were adjusted to be clearer and easier to understand and a symbol was added at the end of each game section that communicated that it was cleared.

**Testing**

Observation and semi-structured group interviews was chosen as a method for evaluation. The interviews were held in this manner since the testers spontaneous reactions and thoughts to the game would be valuable information that might not be as easily found if the interviews were too structured in their format.

The choice of informants could be said to be a convenience sample. Because of the relative length of the testing, one and a half hour, and the requirement of travelling to two different locations, there was some difficulty in gathering enough people to test the prototype. Even though the testing would always be voluntary, this means that all testers thought that the project was interesting enough to invest some level of time and effort to be part of, which in turn may result in their response being more positive because of earlier interest in the subject than an average consumer of the final product.

The prototype was tested at three occasions and was given minor updates in between each in response to the given feedback. The testers were instructed to try and understand and solve the prototype puzzles by themselves, but had the opportunity to ask the observers for assistance if they couldn't find the way forward. At a few occasions they were given assistance from the observers without calling for it if it was apparent that they had difficulty to make progress. To make the following section as clear as possible the tasks of the game will first be presented one by one, together with the notable observations of the testers while
performing it and each group of testers will then be given a section each so as to give an impression of their dynamics and overall performance.

**Grave 1 - Ragnvald’s Hill**

The puzzle of the prototype at Ragnvalds Hill was basically one task completed in several steps. There is a square image in the middle of the screen divided into four equal parts that all holds a fourth of the complete image. By tapping each quadrant of the image, it changes between six different views of the grave. The testers must first complete the image by switching all quadrants to a cohesive image of one angle of the grave. When one image is complete, the previously unsaturated image is filled with colour, the testers are shown a map of the area and are supposed to tap the position from which the completed image can be seen. They were then taken back to the original screen and by continuing to tap the quadrants of the image complete all six images in the same way.

![Illustration 8: The two parts of the task at Ragnvald’s Hill](image)

Several of the participants had some difficulty understanding where to start and some were given assistance to realize that they should be tapping the images to make them change. The same thing happened after the first puzzle was completed and they were returned to the original screen – it wasn’t apparent that they should continue puzzling together the remaining images as well. When they had gotten started however, most participants had no troubles solving the rest of the puzzles.

There was however some difference in what method the testers used: some of them moved around the grave looking at it from different angles as an aid in finding the correct answers while others decided to stay in the same place and solve the puzzle through critical thinking and trial and error instead of moving around the grave. “No wait, I think we can figure it out” one child in one of the groups said to another child, stopping him from walking around it.

**Grave 2 - Klövagården's Passage Grave**

At the second grave, the testers were first confronted with an image of a windmill on top of the grave monument. The information sign by the grave describes how such a building stood on the site up until 1862. Tapping a small plaque in the center of the windmill brings it up closer and lets the user input numbers, with the correct one being the year when the mill was removed.

Again, several of the testers had difficulty knowing where to begin and had to be given assistance in finding that users could press this plaque to bring it closer. Many of the younger participants at this point tried to walk into the grave or looking for it on the rocks,
while the parents often where a little quicker to realize that the number probably was found
in the text on the sign.

Illustration 9: The two tasks at Klövagården’s Passage Grave

In the next part of the prototype, users were shown an image of the grave from above, but
without the rocks making up it’s roof. Not all the rocks of the roof remains to this day, so the
task is to place the rocks that are still making up the roof of the physical grave back into the
image by tapping the correct tiles in a grid on the screen. While a few participants completed
this task at a good pace, several had some difficulty from the fact that the rocks they added
on screen did not entirely correspond to the ones in front of them in size or position. This
made the task confusing for them and difficult to complete resulting in some of the testers
needing assistance.

Grave 3 - Logården’s Passage Grave
The first puzzle at Logården’s passage grave was to sort a number of objects as either
belonging in the grave or not. By reading the information sign, it’s possible to gain a clue but
it is also a task that can be solved largely by critical thinking which is what most of the testers
did. Most groups managed to solve the task after reasoning with each other or reading the
sign, though some assistance was offered to two of the child testers by the leader.

After completing said puzzle, five grey rectangles appear on screen, and the participants
must figure out what they are for. Beside them is a small map of the grave with a dot behind
it, and the clue hints them to look at the grave from a certain position. Tapping the
rectangles makes them rotate, and standing in the suggested spot you can see the five roof
rocks of the grave all being tilted at different angles, which is how you are supposed to
position the rectangles. A few did not grasp the concept of this task immediately, but most
managed to complete it without any assistance.

Illustration 10: The three tasks at Logården’s Passage Grave

Finally, the testers were shown an image of the grave surrounded by different materials.
After being excavated, the grave was starting to collapse and it was filled with gravel to keep
it stable. This can be found on the information sign but also seen if looking at the grave.
None of the testers had issues with this task, some guessed the answer, some found it on the sign and some mentioned that they could see the gravel in the grave.

**Grave 4 - Kyrkerör Passage Grave**

A short distance is then travelled into the town Falköping to get to the last grave site close by the local museum.

There, the application shows an image of the grave but with a few of the rocks detached and in the wrong place. The task consists of placing them back where they belong. The first group had a little difficulty in finding the correct positions of the rocks, and before the next testing session this mechanic was made clearer in the prototype so that the rocks were translucent until they were put in their place. Again there were some difference in how the groups solved this task. Some found the spot where they could view the grave from the same angle as the image and used it as an aid, and others sat on the grave and figured it out through trial and error. In the first test session, one of the rocks happened to get stuck outside the screen and the game had to be reloaded. Before the next session a function was added to make sure it could not happen again.

![Illustration 11: The three tasks at Kyrkerör's Passage Grave](https://en.wikipedia.org/wiki/Cup_and_ring_mark)

In the next part of the prototype, the test participants' again see the grave, from a different angle, but some objects in the scene have been changed. Five objects, when tapped, change into another of three different objects and they must change all five to the ones actually in front of them to progress to the last task. Most testers cleared this task without much trouble. Some confusion was caused by one of the wrong objects being a fictive street lamp slightly too close to a place where there actually was one.

Lastly, the testers were told to walk a short while north of the grave to find a rock with several cavities in it. These are called “cup marks” and were carved out of large rocks and are thought to have been used for ceremonies ([https://en.wikipedia.org/wiki/Cup_and_ring_mark](https://en.wikipedia.org/wiki/Cup_and_ring_mark)). The tester is shown an image of the stone on the screen, but with more cavities than on the original, the task being to highlight, by tapping them, the cavities that are actually there. The process was complicated in a way, by the existence of an information sign with a more stylized image of the rock and it's features. All testers of the prototype quickly decided to use the stylized image on the sign as reference for completing the task instead of the rock in front of them. However, while being easier to read, the stylized image on the sign is upside down in relation to the original. This made the task very difficult to solve for the participants until they were told to use the sign upside down. After the first round of testing this information was incorporated into the clue for that task, now saying “There is a sign that might help you if you look at it upside down!”

Because of the large amount of cavities in the rock, when tapped, they “light up” in groups, meaning that the task is to light up the correct groups of cavities. At first, this mechanic caused some confusion, since this fact wasn't obvious. Testers were observed tapping a cavity
and when the group of cavities it belonged to subsequently lit up, they tried to deselect those of them that they didn’t intend to lighten, causing the whole group to go dark again. To make this mechanic more obvious, the groups of cavities were given different colours after the first round of testing, making it easier to realize that all the ones of the same colour light up and darken again in unison.

Despite these changes, it seemed that many had some difficulty completing the task and several needed some assistance to finish it.

**Group observations**

**Group observations Test 1**

During the first test session, the prototype was played by a family of one father and three kids on two mobile tablets. Since the youngest child was only six years old, a little young for handling the prototype, he was grouped with his father and the older kids, ten and twelve years old, played together on the second tablet. Total time of testing and interview was a little over two hours.

The youngest child had some difficulty participating in the tasks and as time passed he got restless and played around on the grave site leaving the father to solve the puzzles by himself. This might however be expected since the puzzles were designed with slightly older children in mind and the test session took a while longer than anticipated.

In the beginning, the father and the younger child took it slowly, reading the task and walking around the grave to pick the correct angles from which to view it. Having to explain the task to the younger child caused it taking a while for the two to complete the task, but at this point the child seemed to enjoy the game and was engaged in moving around to find the right angles. The father had to work to engage the child however and the final parts were mostly completed by the father alone since the child was more interested in moving around the site.

The older boys quickly realized how the game worked and solved it while being stationary instead of moving around the grave.

At the second grave, the participants were tasked with finding a number and the older boys that arrived before the others first started examining the grave for clues. One of them realized that a likely place for a number may be the information sign beneath the small hill, and from there he shouted the two 4-digit numbers visible in the text, 1872 and 1862, of which the second was the correct one. The next task involves examining how many rocks remain of the grave roof and where they are placed, and position them on a map of the grave. The boys had some difficulty solving this task and in the meantime, the father and youngest child caught up to and solved it before them. Because of the difficulty of being close enough to the tablet to be able to observe each move they made, it can not be said for certain, but after the testing session a bug in the prototype was discovered that may have caused some of the delay for the boys. They climbed and moved around the grave, trying to find the correct way to solve the task, which in itself may be a desirable outcome, but technical difficulties hindering the players progress is obviously never positive.

The first task at the third grave is about sorting objects found in the graves from others that do not belong. The boys had some difficulty finding the information on it but eventually got the right answer. The father and the youngest child sat on the grave solving it together.
without needing to read the sign. Next, they are presented with five stone slabs that can be rotated by tapping on them (seen earlier in illustration 3). After finding the right location from which to view the grave, both groups managed to align the stone slabs to the angles of the roof stones of the grave. The father and youngest child showed some surprise when getting the correct answer, which may indicate that the relation between the task and the real grave wasn’t entirely clear. Finally, they were supposed to pick the right material that was used to fill the grave to stop it from collapsing after it was excavated. The father found the information on the sign while the boys managed to guess the correct one. After completing the task and passing the grave they mentioned “You can see that here!” indicating that they now noticed the gravel filling the grave.

At this point, the prototype tasks for all three graves at this location were completed and a small distance was travelled by car to the last grave site close to the local museum. Here, the test participants first had to reassemble part of the grave as some of the rocks were in the wrong place. It took a little while for both groups to complete the task, the boys finishing mostly by trial and error before the father and younger child. At this point, the six year old child seemed to have tired and was partaking less in the game. He was climbing the grave and pointing at the rocks, but was not by the father’s side solving the puzzle on the screen.

Next were a task in which some objects in the scene of the grave site had been switched for others not there and they had to be tapped to be replaced with the ones corresponding to the actual site. This part was quick to solve for both groups.

Lastly was a task in which to figure out which cavities of a rock corresponded with the actual one in front of them. Here both groups needed some help to finish the game and the father in particular did not seem very motivated to play when the youngest child was no longer taking part and gave up doing it by himself.

**Group observations**

**Test 2**

There were four testers in the second session as well, this time two mothers and two children in the age of twelve and eleven. They also played on two tablets and were allowed to split into groups as they wished, resulting in the two children playing on one tablet and the mothers on the other. Total time of testing and interview was about one and a half hour. Although the prototype has been designed mainly with children or children and parents playing together in mind, it was interesting seeing how these groups worked out.

The children initially had some difficulty understanding what they were supposed to do and was shown how to navigate the first puzzle. They enthusiastically moved around the grave site finding the different spots from which to view the grave and seemed excited each time they got it right. They were heard exclaiming: “There’s that tree” and “We’re good at this”. The parents took a slightly different approach, finding the correct position before finishing the puzzles instead of the other way around.

The children were finished before their mothers and walked to the next grave. In order to not disturb the children, their mothers, when finished, decided to walk to the opposite grave site instead, but for simplicity’s sake the tasks are here described side by side. At the second grave, both groups soon found the correct number on the sign to enter, the children after being given some help in finding where to press to bring the input up and then running around for a little longer compared to the mothers that stopped by the sign immediately. The children then had some difficulty understanding which roof rocks to place in the next task, but found an image at the physical sign that helped them to see it. The adults counted the rocks on the grave and seemed to finish the task without problems.
At the third grave, the children made good progress sorting most of the objects by themselves, but some of them seemed trickier. They were given some assistance from the observers in the form of questions such as “what material does that look to be made out of?” and “which materials do you think they had access to?”. In the end, they found the correct answer but one item had been placed too far down on the screen and didn’t register, so the test observer helped in moving it to the correct position so as to not cause confusion. The adults used the clue reading on the sign to find which objects belonged in the grave. The children had no problems finding the correct angles to rotate the stone slabs, but the adults required some assistance to understand the task. When confronted by the next task, the adults immediately mentioned “there was a lot of gravel under the grave” but still consulted the information sign for confirmation while the children guessed the correct answer almost instantly.

At this point, the testing moved on to the last grave site by the museum. After thinking and testing for a short while one of the children said “Here’s where we’re supposed to be” as he found the view which most resembled the one of the image on the screen. From there they could find the positions in which to place the rocks back in the grave. The adults had a little more difficulty in finding a position in which they recognised the look of the grave and in the end were given some assistance in finding the right place from which to view it. The task in which some objects in the scene had been replaced was quickly solved by the children, mostly using trial and error. The adults had a little more trouble seeing which ones were correct and were given some assistance to finish it.

The last task concerning the cavities of the rock, again was a little difficult to understand for both groups, as discussed further on in it’s own segment. They managed to solve it but it was clear that this particular task was less intuitive than some of the others.

Overall, the participants were given slightly more assistance by the test observers in the second test to make the experience smoother and easier to understand. This means that some parts of the prototype still has a need of being improved so as to be easier to intuitively navigate, and these parts have been taken note of.

**Group observations Test 3**

The third test was conducted with a mother and two children of ages 9 and 7 all playing together on a single mobile tablet. Important to note here is that the mother is employed by Falbygdens museum and has been the main contact with which this concept has been developed. Falbygdens museum and the Table mountain Geopark are the two clients for this project, and that should be taken into account when analysing her performance and answers. The fact that she represents one the parts that ordered this concept to be produced and that might benefit from it may cause her opinions to be more positive than otherwise. Since she works at the museum she also has a lot of knowledge of the subject of the graves beforehand, but she had not seen the prototype before this occasion and did not know what to expect or how to solve it beforehand.

This final test were completed in the shortest amount of time of the three, but also the one that might be said to have been enjoyed least by the playing children.

The test started with the mother reading aloud the text and instruction for the first task. Once again, it wasn’t then apparent how to start playing for the participants, and they where told to tap the images to begin puzzling them together. They then slowly started piecing them together and found the correct position from which the image was seen. When brought back
to the puzzle screen, it was unclear for them what the next step was, so once again they where given some assistance to continue pressing the puzzle pieces and to solve all six of them. The mother handed the tablet to the 9-year old and they continued solving the puzzles. They worked standing still for a little while, just looking at the screen, until the parent said “Lets walk around and look” when they were again tasked with finding the correct viewpoint of the grave. The 7-year old came up to them a few times looking at the screen, but didn't participate actively and instead seemed to enjoy jumping on the large rocks.

When arriving at the second grave, the parent read the instructions aloud again after which they were confronted with the image of the windmill atop the grave. They tried to swipe to spin the wheel of the mill but didn't find anything that worked despite tapping it in many places and was helped to find the signpost with space for the numbers. The children then argued that they need to go into the grave and look for numbers and the younger one shouted “I found a rock that looks like the number one!”. The mother however seemed to realize that the number would likely be found at the information sign and tried to guide the children to it, eventually getting them to look in the right spot to find it.

The test participants’ then walked up to the grave to count the rocks in the roof for the next task. They sat down on the rocks and seemed to be adding each rock methodically but didn't find the correct answer right away. A short distance on the left of the grave is a few large rocks that may earlier have been part of it, but that have not been accounted for when designing this task. The the test participants’ stood by these for a while and were wondering where to place them on the screen and why their puzzle was not correct. Some time during this task the game was reloaded, but it seemed they could handle going through the windmill part again taking them to their current point. This was noticed by the observers just as they had caught up again, so the reason for this technical difficulty is unconfirmed.

In they end, they asked for help when they couldn't see which rocks should be placed where on the screen or why their solution wasn't the right one, and they were assisted removing a few rocks on the left side to clear the task.

The test then proceeded to the third grave, which starts with the task of sorting objects belonging and not belonging in the grave. The youngest child held the tablet on the walk there and excitedly exclaimed “it's a beach ball!” several times, seeing one of the objects not belonging in the grave. The child ran up past the information sign that held the clue for this task, but it wasn't needed as the parent, by asking them about the different objects, helped the children to figure out what belonged and sort all the object in the correct categories. The next task hints the participants to view the grave from a certain spot, but the children were determined to sit down on the grave and solve it, so it took the parent a little convincing to make them join her in the designated spot. Once there, however, they only focused on the screen and tried to understand how to rotate the grey rectangles in relation to the small map. After a while they were hinted by the observers to look up and look for a clue on the grave in front of them, after which they quickly realised the correct answer. The last task of picking the correct material to fill the grave was quickly solved after this.

At the last grave, the first task of placing the rocks back in the grave went quite smoothly. The 7-year old did no longer participate but climbed around on the grave impatiently. The testers had some difficulty realising which objects were switched in the scene because of the street lamp, and after a while asked for some assistance. At the final task by the rock with the cup marks they were the group finishing it quickest of all.
During the test, the children were repeatedly observed not being very interested in the prototype and especially the 7-year old spent most of the time climbing the graves and openly showing disinterest in participating.

The interviews
After testing the prototype, the test participants were taken to a separate room in the nearby Falbygdens museum, and answered questions about their experiences in group interviews. The questions were loosely divided into segments.

The first few questions was about the participants' previous relation to the grave sites – if they had been there before and if they thought they were interesting to visit. Most of the participants were already from the area around Falköping, where, as mentioned, the megalith graves are very abundant, so they all had at least some knowledge about them. Not all had however visited them before, or had realized what they were, even though they had passed them by many times. Some of them expressed that they thought that the graves were already interesting as they are, but others that it would differ a lot between different kinds of people.

The second part focused on how the prototype worked and if an app designed from the concept was likely to create more interest in the grave sites. Overall, the participants seemed to think that was the case, though some said it might again depend on the type of person, that an application may attract some visitors more, but not others. One child, 10 years old, mentioned that an app could invoke the same feeling as Pokemon Go (https://www.nianticlabs.com/, 2016), a game mentioned earlier as an inspiration in this report, in that it could make people want to travel and visit all of the places represented in the application.

Almost all recipients said that the prototype helped them learn something about the graves, although not all of them could remember examples of what that had been. Several mentioned the fact that there had once stood a windmill atop one of the graves as something that they had not known before.

All of the participants reported some difficulty handling the prototype. Some of them, particularly the parents, said it might have been their own fault not intuitively understanding what to do because of little experience with applications and games generally, but it was clear that the prototype had many problem areas that made it difficult to handle. Some of this was technical bugs and some of it simply instances in which the user was given too little information or clues to understand what to do next.

On the question if any tasks were more difficult than the others, there were different responses and only one task stood out as particularly problematic – the one regarding the rock with cup marks. The same was true for the answers to if any tasks were less fun or interesting, only the cup marks task stood out, and for the parts that were most fun and interesting each group seemed to have different opinions.

The test participants' were asked if there was anything that they would like to add to the experience to make it better. The children in group 2, ages 12 and 11, suggested that there should be some kind of reward for clearing the tasks, something that you could collect and use to build something. Group 1 mentioned something similar, that you should be able to level up or acquire more items or clues and that there should be a map, like in Pokemon Go (https://www.nianticlabs.com/, 2016), that connected the places and could show you were to go.
Next, they were asked if having the graves in front of them helped them solve the tasks, which they said it did, even if one person mentioned that they managed to solve some of them through guessing without looking up at the grave in front of them.

The final questions primarily concerned if the aesthetic of the prototype fit well with the setting and the participants thoughts regarding using it in a group. When asked about the character in the game, Idun, through which the instructions and clues were delivered in text, several mentioned that the prototype would have benefitted from having sound so that you could listen to the instructions instead of having to read them. One of the children, age 7, was vocal about the fact that Idun didn’t move her mouth and said that “it was only text, it wasn’t she that said it”. Otherwise, the test participants’ seemed happy with the look of the graphical design of the prototype and that it fitted the setting and context of the game.

They also said that it was a benefit playing as a group and that they were able to help each other figure out what to do with the tasks presented, although some parents had had some difficulty engaging the younger kids to participate through the whole session.

Through the interviews, there was some difficulty discussing the tasks since there where no easily recognisable names of them and because of the similar themes “the one with the rocks” could always mean several of them. The graves all had different names, but they were not remembered easily enough and through making them clearer or having more distinct features the process of identifying each puzzle might have been made easier for the participants.

**Discussion**

The research question of this report has been:

> How can you simulate an Escape room experience using only a static and unaltered cultural heritage site with the use of digital visual/graphical puzzles?

This has been explored both through the development process of a prototype containing puzzles designed for being played at specific megalith grave sites outside the town Falköping as well as testing of that same prototype performed with the intended target audiences. As discussed previously, some Escape room mechanics were difficult to implement into the prototype but the testing has still provided much data to inform continued development.

As a whole, the testing process worked well for it’s purpose, and it shows things about the prototype that worked as well as things that need to be polished and reworked further. It also gives clues to how the development of the concept could continue beyond the current size to make the experience more engaging. Because each test session took a while to complete and required the testers to have means to travel between the grave sites, the test sample is quite small, only 11 people, but it has still given a lot of data to work with for the continued development of the concept.

When looking for testers the appropriate age group for children were expected to be between 7-12 years old. Of the seven children that participated in the test sessions two of them were 6 and 7 years old, while the others were between 10 and 12. At least from the small sample of these sessions, it seems the two youngest children were not patient enough for this kind of game, and both increasingly lost interest during the course of the sessions. Since Escape Rooms and Escape-the-room games rely to a large extent on the players’ own interest in figuring out how to solve problems, it seems reasonable that with less interest or patience, a
game in this style will quickly become tedious. The older children seemed overall more willing to spend some time thinking about the tasks and were excited when they managed to solve them.

A problem brought up during the whole process was the prototype’s relative lack of clear instructions and communication. At many occasions, the testers were unsure what to do next or unable to understand the task in front of them. This is believed to have several different reasons. Some of these issues might have been resolved if the game more clearly indicated the next action for the player through highlighting objects that could be interacted with with some kind of effect and others with the clues and instructions messaged through Idun, either being more clear, or the additions of another level of clue that could be called on if the first one wasn’t enough. The prototype was built with a software that had limits on the amount of code that could be used, so in some cases there weren’t space enough to add these kinds of functions and in others it simply had to do with time constraints and the developers still being inexperienced with the software.

There is also the fact that, again, the Escape room and Escape-the-room genre often uses the absence of information as one of it’s main mechanics. The point is to make the user explore the environment themselves and to enjoy slowly finding out and realizing how to use objects around them. These conditions may however have been too prominent, since there were many cases of confusion and asking for assistance during the test sessions. It seemed that especially the adults had little patience for trying to perform a task that hadn’t clearly been explained to them and were quick to call for help from the observers when they were not sure what to do next. In the interviews, it seemed that the tasks that were difficult to understand or unclear were the same as the ones that the testers enjoyed the least, which confirms that the current vagueness of the prototype probably is not a positive aspect.

Discussion - Ragnvald’s Hill
The first task was at Ragnvald’s hill and consisted of puzzling together six images of different views of the grave and placing the position from which they could be seen on a map. Overall this was a task that worked well with most groups except for some difficulty in understanding the first action to take. Once the test participants’ understood to tap the quadrants of the image to make them change between the six different images, most didn’t have much difficulty in completing the task and seemed to enjoy the process.

There were differences in whether the participants chose to stay in one spot and figure out the puzzle or if they moved around to look at the grave from different angles as intended. To which degree it is important that each task forces the user to move around the graves and if other mechanics could be used to fill that same purpose will need to be evaluated for further development.

Discussion - Klövagården’s Passage Grave
For the start of this task, the same was true as with the previous one: the participants had difficulty finding the first action to take. The first task needed them to input the year of the windmill's removal into a plaque on the image of it. In order to bring the plaque closer and make it open to input numbers, it had to be tapped by the user. This was in some manner an unnecessary addition to the puzzle, but the idea was that they would look at the windmill and feel excited when they found which part of it that could be interacted with. One group tried to make the windmill spin and many tried tapping different parts of the image but either the
The plaque wasn't obvious enough as an interactable object or the area needed to be tapped was just too small to be easily found.

Illustration 12: The center part where to input numbers on the windmill was difficult for test participants' to find.

The second task at Klövagården's passage grave asked them to observe and input the remaining rocks making up the roof of the grave. Here, a particular problem came to light regarding the importance of the image in the prototype to accurately represent it's real counterpart. In order to make the task clearer, the area on the screen is divided into a square grid where each square represents the position of a stone that appears in response to the area being tapped. The real grave is not entirely symmetrical however, which means that it didn't correspond entirely to the image on screen, slight adjustments had been made to the image to make the grave fit better into the grid making it easier to understand and handle. This meant that some of the testers had difficulty comparing the image with it's real counterpart and it was not obvious which rocks corresponded to which ones in front of them. Because of the difficulty the groups had in solving the task, this segment was adjusted slightly so as to resemble the grave a little bit more closely between tests. However, the problem showed up again, indicating that the task still needs more work.

In response to some comments by one of the groups in test session 1, the task was examined in between sessions and a bug was found that caused one of the correct rocks to be difficult to activate. The bug was subsequently removed, but this may have caused this task to take additional time to solve during this first session.

Discussion - Logården's Passage Grave

Interestingly, between the times this grave had been visited for researching the development of the prototype and the test sessions, the field surrounding this grave had been plowed. The grave was still possible to access for all three test sessions but in less suitable weather conditions or if participants would have been more careful with their shoes, this grave might have had to be left out of the test. This is an interesting example of unforeseen problems when working in spaces one can not completely control or monitor, just as was encountered in the project with the mobile mystery game in Skövde where the environment also changed unexpectedly (Díaz, Toftedahl & Svensson, p. 5, 2014).

The first task at this grave was in sorting object belonging in the grave and objects not belonging in it. This is a task that worked very well for the parents to guide their children through and help them figure out the answers using questions about materials or features of
the objects. “What kind of helmet is this?” “A knights' helmet.” “Were there knights in the stone age?” “No.” As in the example of the mobile experience in the Malaysian Visitor centre (Kher Hui Ng, Hai Huang and Claire O'Malley, p. 747-748, 2018), this is a good example of how an experience like this can be an opportunity for learning and teaching if parents engage in it together with their children. The same would be true for teachers and school children. Among the objects in the task, there were some looking like historical objects, though not from the correct age, as with the helmet, and others more obvious items like a beach ball and a plastic bag. The purpose of this was to allow people of different ages and capacity to all have something to contribute, which on at least one occasion seemed to work well as the 7-year old enthusiastically noticed the beach ball.

The five grey rectangles or stone slabs shown next was also a task that seemingly worked quite well. A few testers needed some assistance realising how to start, but once they found the correct position from which to look at the grave, many seemed to intuitively grasp the relation between the rectangles and the angles of the large rocks in front of them. Finally the task in which to choose the correct material to fill the grave was completed quickly by almost all participants although some still read about it on the information sign. The fact that it was solved quickly might in one way indicate that it was a simple task, but it’s also notable that many testers mentioned the fact that they saw the gravel in the grave in front of them, which could mean that this was a moment that made them take note of and learn something about the monument.

**Discussion - Kyrkerör Passage Grave**

Another slight difficulty arose at the grave Kyrkerör where the testers were tasked with assembling the grave after some of the rocks were in the wrong places by simply dragging and dropping them to their real location in relation to the grave. Since the illustrated stones on the screen resembled their real counterparts when seen from the correct angle, it was assumed that they would be easy to place. Some testers, however, rather than comparing each rock to the ones in front of them, started counting the amount of rocks that where supposed to be in a particular section of the grave, which caused some confusion since the photo that the puzzle was based on did not frame the entire grave, meaning that the numbers did not add up.

There was also some difficulty to realize when progress had been made and to make this fact clearer, the task was updated between tests to make the missing rocks translucent until they were put in their correct place. This made it significantly easier to see how many rocks were left to work with and when they connected with their right place. At one point a rock got stuck outside the play area on the screen and the game had to be reloaded and started over, so this was also adjusted between tests to make sure it would not happen again.
As mentioned several times, the rock with the cup marks proved to be one of the tasks causing the most difficulty for the testers. It seems it was a tricky task from the beginning but, as said, it was further complicated by the existence of the information sign beside it. It was not predicted that all testers would favor using the sign rather than the rock in front of them, so enough time was not reserved to solve the issue. The fact that the sign and the rock are facing different ways does complicate the design of this task, and it might be difficult to find a solution that works well. If during further testing it could be concluded that users will keep using the image on the sign, it might simply be a better solution to let that be the guide from the start and turn the image in the application upside down so to match it. Of course, another solution would be to replace the physical sign with one where the image is turned the right way.

Even knowing that they needed to look at the sign upside down, it still seemed that many testers had difficulty completing the task. It is difficult to know if this could have anything to do with the fact that it always was the last task of the session and that the testers started to get tired, but it is evident that the task is in need of a redesign in some way.

Discussion – Character, Narrative and Theme

Although the subject of aura (Benjamin Walter, 1936) was not delved into during the interviews, the participants were still asked about what they thought about the aesthetic of the game and how it related to the original grave sites. According to the theory presented by Walter Benjamin, the reproduced artwork contained in the prototype shouldn’t have any aura by itself, but when presented together with the authentic cultural heritage and used as a tool for learning more about it, it may still prove to have value. Judging by the fact that almost all participants thought that a similar application could be a positive method of increasing interest in the heritage sites and that the visual style was fitting for the location, it does not seem like such a product would lessen the impression or of the grave sites.

As mentioned earlier, however, the narrative could certainly benefit from being more developed to further increase engagement with the game. In the current state of the prototype there are a limited amount of opportunities for dialogue and most of it is used to explain the tasks to the user. The usage of the items rewarded is in a similar spot. Although Idun’s items show up after the completion of the tasks, they are not given a description of why they are useful or why they belong to her, and there is no separate way to view or use them afterwards. As some of the children mentioned in the interviews, the desirable state would be for the collecting to be something to engage the player and to achieve that, the
prototype needs to be developed further with more mechanics that support such a component.

Several participants also mentioned that it would be better if the prototype had used sound and if the character Idun told the instructions aloud instead of the users' having to read them, as well as one child loudly describing how Idun was not actually the one saying the instructions – she did not move her mouth. It is true that there were no animations created for Idun, she is only represented by a single static image throughout the whole experience, which makes it understandable that she might not give a very strong or personal impression. A few of the respondents did not have much to say about her when asked, which may further indicate that her presence was not the most memorable part of the prototype. When developing the narrative further it would be essential to also give her more expression and importance in the experience as a whole.

**Future research and development**

The concept described in this report concerns a mobile application meant to enhance the experience of visiting the megalith graves around the city of Falköping. Because of the resources, tools and time available it was only possible to prototype and evaluate part of the intended final design, and there is therefore much room for continued work on the subject.

During the group interviews that followed the testing, the respondents were asked about what they thought could be done to improve the application.

One of the children mentioned that with the addition of a map, the application could be made more similar to Pokemon Go (https://www.nianticlabs.com/, 2016), a mobile game mentioned in the background of this report, and that this might make users more motivated to visit all locations (Appendix, interview 1). This is interesting since it responds well to the intentions of the full concept of the application to more prominently connect the grave sites with the use of an overarching narrative and a map of all sites included in the game. It validates that such an idea could be a worthwhile way to improve and complete the design of the final application and should continue to be a goal for future development.

Similarly, another child mentioned that the user should be getting some kind of reward to collect after each task completed, like for example parts to building a character (Appendix, Interview 1). This also responds well with the intent of the concept, to connect the locations in the game by means of a larger puzzle where you collect more and more components. An effort was made to implement a version of this in the prototype – after each task an item appears on the screen and when the final task for a location is solved all the items collected at that particular location show up again and the character Idun's comments on them, implying that the items have been acquired and that they could be useful or interesting. They do not however show up again and the user has no way to browse or use the items they have collected so far and see it as a sign of progress. The fact that the need for such an element to the game was mentioned in the interviews shows that the current implementation of the concept is not enough to evoke the feeling of collecting that was intended and that this kind of response may be worth to continue to strive for.

As both of these comments imply, the prototype lacked an overarching narrative that bound the experience together in a compelling way, which is something that often plays a part in games for cultural heritage as a way to engage the users in the presented tasks (Malegianakki and Daraodoumis, p. 7, 2016). In it's current form, the prototype represents a little game for each location that seemed to be enjoyed by most test participants – but the experience is a
bit scattered and disjointed. This is something that was anticipated because of the limitations for creating the prototype, but it is useful to have it confirmed by the testers and the need for further development is emphasized. The process of designing such a narrative and overarching story to connect and contextualize the grave sites could be the subject of a similar report just by itself.

Using the Escape Room genre as an inspiration has been very interesting, but this particular project faced several difficulties when using it and there is therefore much room to continue exploring the topic. The software and resources used for creating it meant that some mechanics were not available as an option for the prototype. By for example having access to using GPS or camera technology there would be more room for variation in the tasks presented to the user and the possibilities for expanding the concept would increase. GPS technology could be used to give the users tasks that required them to move around the locations without the instruction to “look at the grave from a different angle” and a mobile camera could scan images or codes located at different points in the area, as was done at the visitor centre in Malaysia (Kher Hui Ng, Hai Huang and Claire O’Malley, p. 740, 2018), or cause objects or clues to appear on screen when directed at the grave. Because of the fact that GPS technology or the scanning of a symbol or QR code could not be used to confirm that the user was at the grave site, effort was put into designing tasks that would require or benefit from being at location so that the application would in some manner still motivate the user to visit the grave sites in it’s current form. Time was also dedicated to design tasks that to as small extent as possible were solved by looking for prolonged amounts of time at the screen. Even though the tablet is the tool that provides the game experience, the goal was still to make the user interact with the heritage site and not just to be at the site while playing on a screen. Having access to additional tools and mechanics that made use of the physical space would make it possible to loosen these limitations of the design and provide a more varied game experience while still being able to make sure that the user is at and interacts with the site.

Conclusion

This report has concerned the development of a concept for a mobile application meant to be used when visiting the megalith graves near the city of Falköping and make such an experience more engaging and interactive. The purpose of the concept was to give visitors of the grave sites more purpose to interact with them and find out more about them. As some testers confirmed in the interviews, the grave sites can appear very uninteresting to some people since there is not anything particular to do at them. Because of the limitations of the particular context of making an application for a static cultural heritage site that is not possible to alter, a parallel was explored with using the mechanics of the Escape Room genre and the research question was formulated as follows:

How can you simulate an Escape room experience using only a static and unaltered cultural heritage site with the use of digital visual/graphical puzzles?

The Escape Room genre was explored because it is a type of game that relies largely on the participants’ observation and exploration of the game location. Clues are hidden in the way the area looks or how objects are placed (Nicholson, p. 19, 2015) and through closely watching and studying their surroundings, the players find answers to coded locks and puzzles or new options to explore and take them further through the experience. This genre of games was used as an inspiration since the cultural heritage sites could not be changed in
order to accommodate a gaming experience but one of the stated goals of the project was to make visitors examine and observe them more closely.

From the results of the study, it seems like it is possible to simulate Escape room game mechanics for a purpose such as this, even though this particular project had limitations when using it. Some mechanics and opportunities for designing game mechanics were not available for the prototype, meaning that additional time and resources would likely open up for many additional possibilities to expand the concept. In its current state, the prototype may not have been engaging enough for all users, especially not the children below 8 years old. The inclusion of more animations and sound with which to make the character in the game more relatable, a stronger narrative and more game mechanics connecting the grave sites through collecting or obtaining useful rewards may be a way to reduce this issue.

Despite the constraints, valuable insights have been gained regarding the possibilities of a development of a similar application. Firstly, it is positive to see that many testers enjoyed the prototype and that indicates that these kinds of game mechanics can be suitable for a cultural heritage site of this kind. Secondly, it clearly showed how some of the tasks could and needed to be improved in regards to working well with the particular location, but also to be easy to understand and enjoyable to the users. Thirdly, the interviews gave indications in how to continue the development of this concept to make the experience more cohesive and engaging as it is expanded to include more locations in the area.
References


Construct 2 (Game creation engine), https://en.wikipedia.org/wiki/Construct_(game_engine), [viewed april 12, 2019]

Cup and Rings Marks, https://en.wikipedia.org/wiki/Cup_and_ring_mark, [viewed may 20, 2019]


Falbygdens museum, https://www.falkoping.se/falbygdensmuseum/arkeologi/falbygdensmegalitcentrum.4.61413517121dbd5e0ec800061298.html, [viewed januari 19, 2019]

Hemliga Klubben, http://hemligaklubben.nu/, [viewed april 12, 2019]

Hemliga Klubben-Appen, https://memostories.se/digitala-deckarfall/, [viewed april 12, 2019]


Kher Hui Ng, Hai Huang, Claire O'Malley (2018) Treasure codes: augmenting learning from physical museum exhibits through treasure hunting, Personal and Ubiquitous Computing, Springer

Location-based Games, https://en.wikipedia.org/wiki/Location-based_game [viewed february 12, 2019]

Macfie Susanne (2016) Hemliga Klubben - Fallet med det Mystiska Skenet, Memo förlag, Scandbook, Falun

Malegiannaki Irinni, Daradoumis Thanasis (2016) Analyzing the educational design, use and effect of spatial games for cultural heritage: A literature review, Computers & Education, Elsevier Ltd


Platåbergens Geopark [https://www.platabergensgeopark.se/](https://www.platabergensgeopark.se/) [viewed January 19, 2019]

Prison Island (Escape Room Facility), [https://www.prisonislandorebro.se/](https://www.prisonislandorebro.se/), [viewed April 12, 2019]


Scirra Ltd. (Creators of Construct 2), [https://www.scirra.com/construct2](https://www.scirra.com/construct2), [viewed April 12, 2019]

Appendix

1. Pilot Study Survey

Spelapp om Falbygdens gånggrifter?
Enkät under Familjedag på Falbygdens Museum 3/2 - 2019

Undersökningen genomfors som del av ett examensarbete av Kristofer Vaske, magisterstudent på Högskolan i Skövde. Deltagandet är frivilligt och du kommer vara helt anonym i rapporten.

På Falbygden finns en unik koncentration av megalitgravar och gånggrifter från stenåldern med över 250 kända gravplatser. Denna enkät gäller en möjlig utveckling av ett mobilspelet med koppling till dessa gravplatser.

Känner du till Falbygdens gånggrifter och megalitgravar?

Har du besökt dem/någon av dem?

Tycker du att de i nuläget är/verkar vara ett intressant utflyktsmål?

Tror du att barn uppskattar dem som utflyktsmål?

I detta projekt är syftet att ta fram ett koncept för ett mobilspelet som kan användas på plats då man besöker gravplatserna. Tanken är att spelet ska ge spännande information på ett lättläsigt sätt och uppmuntra till ett mer aktivt intresse för gravarna och deras sammanhang. Genom att lösa uppgifter vid de olika gravplatserna samlar spelaren föremål tillhörande ett stenåldersbarn från tiden då gravarna byggdes.

(Se tillhörande bilder)
Vilka egenskaper tror du skulle vara viktigast för en sådan app?
(Numrera ett eller flera alternativ där 1 är viktigast)

Exempel:
- __ Att den är användarvänlig?
- __ Att den innehåller karta/färdrag till platserna?
- __ Information om platsen för den som vill veta mer om dess sammanhang?
- __ Spel/Mysterium som kan lösas på plats?
- __ Att den innehåller ett visuellt och pedagogiskt utformat material?

Har ni andra idéer på vad som skulle vara bra funktioner i en sådan app?

Vad tror du skulle vara faktorer som påverkar att du faktiskt skulle använda en sådan app?

Har du några tankar om bildmaterialet som hittills är producerat? Finns det något som du upplever fattas?

Tror du att en sådan app/spel skulle göra det mer troligt att ni besöker gånggriften på Falbygden?
2. Survey Prototype test

Frågeformulär Pilottest:

Kände ni till Gånggrifterna sedan innan?

Har ni besökt dem tidigare?

Hur kommer det sig?

Tror ni i allmänhet att folk tycker att gravarna är intressanta?

Tror ni att en app utformad på det här viset skulle göra det mer troligt att ni eller andra besökte megalitgravarna? Skulle den kunna förbättras för att bli mer lockande?

Upplevde ni att spelet hjälpte er att lära er något om gånggrifterna? Om den tid då de byggdes?

I så fall vad?

Fanns det några svårigheter med att använda prototypen?

Var spelet lätt att förstå?

Var det några delar av spelet som var svårare än andra?

Vilka delar av spelet var mest intressanta?

Vilka delar av spelet var mindre intressanta?

Finn det något ni skulle vilja lägga till för att göra spelet bättre?

Hjälpte det att ha gravarna framför er för att lösa uppgifterna?

Hur upplevde ni Idun, karaktären i spelet? Hur kunde hon ha gjorts intressantare eller till en mer tilltalande karaktär?
Skulle spelets grafiska stil kunna förbättras för att passa ämnet bättre?

Övriga tankar?

Hur fungerade det att spela som grupp?

Hade alla i gruppen lika lätt att hantera spelet?

Kunde ni hjälpa varandra att förstå och lösa uppgifterna?
3. Early concept art
Gånggriften i Luttra är en av länets, och även landets, bäst bevarade gånggrifter. Den här bland annat en takhäll i ursprungligt läge. Liksom de flesta gånggrifter är den omgärdad av en hög. Högen har en diameter på 18 meter och en höjd av två meter. Den fyra meter långa gränsen löper ut från vens östra sida.

Idun levde här på tiden då dessa gravar byggdes. Genom att besöka gravarna och leta noga kan du kanske hitta några av hennes leksaker och ägodelar, och lära dig mer om henne.

Hur många megaliter håller upp den stora "takstenen"?

Hitta en ledträd till Iduns föjt gömd under megaliterna.
- Idun brukade leka på kuliens södra sida.

"Vem sida av graven är ingången i anda till solen?"
Leta efter de gömda kistorna med QR-koder för att hitta Iduns ägodelar!
4. Transcribed Group Interviews

Interview 1

Intervjuare - Då ska vi se.. kände ni till de här gånggrifterna sedan innan?

Pojke 1 (10 år) - Eh, bara den vid plantis

Intervjuare - okej, precis......mm.. Men ni känner till gånggrifterna sedan tidigare, ni bor ju här så ni ser dem väl hela tiden?

Förälder - Mm

Intervjuare - Har ni besökt dem tidigare?

Pojke 2 (12 år) - Den vid Plantis

Intervjuare - ah, samma. Uhm, har ni funderat på att titta på fler av dem?

Pojke 2- Nja, alltså vi har ju ákt förbi och sett några, men inte direkt

Förälder - Nej, det blir ju inte så man ser dem varje dag i princip när man... de finns ju över hela samhället så man tänker inte så mycket på det.

Intervjuare - Nej, precis. Jag förstår det när man bor här så är de lite överallt hela tiden såklart.

Förälder - Mm.. Det är ju mest såhär.. ibland. Det finns ju några som faktiskt, i trädgårdar.

Några som faktiskt ligger inne i folks trädgårdar.

Intervjuare - Mm, jag har hört det.

Förälder - lite spännande inslag i sin trädgård.

Intervjuare - Ja, precis, haha. Eehm, tror ni att folk tycker att de är intressanta att lra sig om och så

Pojke 1 - Eh, jag tycker de är intressanta och det är roligt att klättra på dem alla - haha

Pojke 2 - Nej, men det är ganska intressant ........(otydligt)...

Intervjuare - Mm, precis. Tror ni att en app som är ungefär såhär, att den skulle kunna göra det mer troligt att ni skulle besöka gravarna, om det fanns såna här spel på?

Pojke 1 - Eh, ja. Jag tror att folk skulle....

Förälder - Säkert, det beror nog lite på vilken..

Pojke 2 - Att folk kommer få lite pokemon go-känsla att gå runt och ta lite pokestop och sånt och då blir det som att....ja, det var ju väldigt klurigt och lite svårt också, men det var intressant

Pojke 1 - det var lagom, stenen var svår

Förälder - stenen var för svår

Pojke 2 - ja, stenen var svår.

Intervjuare - ja, vi kommer prata lite mer om det snart. Tror ni att spelet hjälpte er att lära er någonting?

Pojke 1 - eh, det...

Pojke 2 - jaa
Pojke 1 - jag visste inte att det var såhär typ en kvarn eller vad det var där
Pojke 2 - nej, det visste inte jag heller
Pojke 1 - ganska mycket om det man fick läsa,
Intervjuare - ja, precis… Fanns det svårigheter med att använda spelet?
Pojkarna - neej
Förälder - Alltså
Intervjuare - saker som inte fungerade eller så, vi har ju till exempel den här stenen som försvann
Förälder - ja, stenen försvann utanför skärmen som jag inte lyckades få tillbaka, det var ju lite besvärligt
Intervjuare - mm
Pojke 2 - det märkte inte vi
Förälder - Ah, nej det var jag som… men det kanske inte ska vara möjligt att den ens..försvinner så
Intervjuare - nej, precis
Pojke 2 - jag tror.. det kanske inte var spelet ,men när jag var vid kvarnen och skulle göra det här åtalet så behövde jag klicka några gånger extra eller vänta lite för att det skulle byta siffra,
Pojke 1 - ja, så var det lite med stenen också att när man klicka så funka det inte så fick man klicka igen.
Intervjuare - ja, precis den är lite seg ibland och så. mm, precis. Var spelet lätt att förstå?
Pojke 1 - ja, när vi väl hade kommit in i det var det det
Pojke 2 - ja, då var det rätt lätt att förstå, det är bara ..
Pojke 1 - fast pusslena var ju olika svåra
Pojke 2 - ja, först så fattade vi ju inte den här där man skulle bygga. Det var lite svårt att fatta vad man skulle göra.
Förälder - ni menar den här borta då?
Pojke 2 - nej, den när man skulle bygga, när man skulle trycka på skärmen och bygga stenar
Intervjuare - den ovanifrån?
Pojke 1 - ja, den var lite svår att förstå.
Förälder - jaha, den
Pojke 1 - först trodde jag bara man skulle trycka på olika ställen så kom en sten upp om den var rätt
Förälder - den med takblocken?
Pojke 1 - ja, den med kvarnen.
Pojke 2- och sen tyckte jag den, det kanske bara var jag, men att den inte såg exakt ut så, för det var den här mittenstenen var ju framför den här raden med stenen.
Intervjuare - ja precis, det kan hända att den inte såg ut precis som på riktigt, så att det var lite otydligt.
Pojke 2 - mm.
Intervjuare - Det är jättebra, för all sån här feedback är ju bra för mig att få, så att det är bara bra med kritik och så att se vad som inte fungerar bra och sådär.
Förälder - Mm.
Intervjuare - Nu har vi pratat om det lite men, om det var delar av spelet som var svårare än andra?
Pojke 1 - stenen, första klassens svårighetsgrad
Pojke 2 - stenen. Sen vad var det mer, det var något mer
Pojke 1 - Den här när man byggde, när man skulle bygga med stenarna när man skulle dra stenarna
Pojke 2 - Nej, det var ju inte så jättesvårt
Pojke 1 - jo, lite
Pojke 2 - men jag tycker inte det var så jättesvårt men den här när man …. (otydligt 05 - 35)... var ju lite klurigt för att . ja, den var svår.
Intervjuare - ja, precis.
Förälder - Men den här borta.. uhm.. ah den första här borta då, när man skulle placera ut stenarna
Pojke 1 - Vilken var det när man skulle placera ut stenarna?
Förälder - Det var den första. Det var inte förrän jag förstod att de klicka fast som jag förstod att jag var på rätt spår och så.
Intervjuare - ja, precis
Förälder - först bara jag placera ut dem, men vissa kunde ju va… det gick ju inte att placera alla framför någon annan eller de hamna liksom bakom andra stenar
Intervjuare - ja, precis
Förälder - men det var först när jag märkte att de klickade fast och inte gick att flytta igenom som jag märkte att jag var på rätt spår.
Intervjuare - ja
Förälder - innan dess var det mest trial and error liksom
Intervjuare - ja
Pojke 2 - ah, det var samma här, när jag märkte att en fastna så bara, ah, och då gjorde jag en till, så jag tyckte inte det var så supersvårt
Förälder - ni är smartare än vad jag är, haha
Pojke 2 - Spelat mer spel
Intervjuare - Uhm, vilka delar av spelet tyckte ni var mest intressanta.. eller roliga?
Pojke 2 - kanske det här med kvarnen och årtalet, för det var ju typ det som man lärde sig mest av.
07:00
Intervjuare - mm precis.
Pojke 2 - det andra var ju pusselspel, det var ju mer lite roligt
Intervjuare - ah, precis
Pojke 1 - ja, den där... de när du var tvungen att gå och läsa, de lärde du dig av för att där fick du läsa
Intervjuare - mm
Pojke 1 - Så fick man, den här när man skulle testa vad det var man fyllde graven med och så var det sten,
Intervjuare - ah, mm. Vilka delar av spelet var mindre intressanta eller roliga, om det var något inte var så kul?
Pojke 2 - alltså...
Förälder - stenen
alla - haha
Pojke 2 - alltså om jag skulle gjort stenen så skulle jag inte ha klarat det för jag har inte så mycket tålamod.
Förälder - ja, jag kände också att tålamodet tog slut.. När jag inte förstod riktigt
08:00
Pojke 1 - och sen var det liksom en liten bit.. och sen bara. jag satte dit en, och så tog jag bort två stycken. och jag tog alltid bort fel. jag bort den förut, och sen när jag tog bort den igen så bara - klart! och jag bara, okej
Intervjuare - ja, precis
Pojke 1 - men när man skulle bygga. Det var ju en helt.. det var ju lite mer exakt.
Pojke 2 - du menar den när man skulle dra
Pojke 1 - ja alltså om man bara skulle bygga. Det var ju lite intressant och det var också rätt roligt. alltså det var ju mest roligt, för då var det liksom, ja, jag vet inte.
Intervjuare - Mm. Finns det något ni skulle vilja lägga till för att spelet skulle bli bättre?
Pojke 2 - Ja, det är typ, om man skulle ha nånting som en
Förälder - zombies
haha
Pojke 2 - ja, det skulle väl vara nånting som liknade typ pokemon go, att man får se en stor karta
Pojke 1 - för att se vart de här
Pojke 2 - är, så kan man liksom typ färdas till dem.
Intervjuare - precis
Pojke 1 - så kan det liksom va typ en vägbeskrivning. // ja// som en gps-karta över allt och så är det markeringar där de här.. nu har jag glömt bort vad de heter
Förälder - gånggrifterna
Pojke 1 - gånggrifterna
Pojke 2 - men liksom, om det fanns något level up system där man kan få lite extrasaker
Pojke 1 - trophies
Pojke 2 - ah precis, och det här tipset, tipset funkade bara några gånger och när man levrade upp fick man nya tips.
Intervjuare - ja, just det.
Förälder - ja något mer ledtråds möjlighet eller så. Någon extra på varje
Intervjuare - precis, för det är inte så kul när man fastnar.
Förälder - nej, då är det ju dumt. eller jag känner så
Intervjuare - ja, men då tappar man ju lätt suget, då hänger det ju ingenting. Hjälpte det att
ni hade gravarna framför er - att ni kunde titta på dem?
10:00
Pojke 2 - ja, fast den där första, den var ju faktiskt, alltså den första vi gjorde, den var ju rätt
lätt utan att titta på den. Sen var det ju väldigt mycket hjälp när vi gjorde de andra att vi fick
titta på dem. Som den här när man skulle bygga uppifrån, den var ju mycket lättare när man
fick titta på den. Annars så skulle man ju kunna, va hemma och söka upp en bild bara men..
ja, de var mycket lättare när man fick titta på dem.
Intervjuare - för en del märkte jag ju att ni kunde lista ut och liksom prova er fram, då
behövde man inte graven så mycket utan då kunde man liksom själv eh, prova de olika
alternativen och hitta vilken som var rätt. Tyckte ni något om Idun, den här karaktären i
spelet?
Pojke 2 - Ah, uhm. Lite mer
Pojke 1 - Ah, för de som inte kan läsa, kanske…
Pojke 2 - Ljud
Pojke 1 - fler som inte kan läsa kanske skulle vilja ha det ifall alla såna här texter läses upp.
11:00
Pojke 2 - och kanske lite mer, för det var lite svårt att klicka vart man skulle för att gå vidare.
Så kanske typ någon next-symbol där nere
Förälder - typ pil?
Pojkarna - pil
Intervjuare - a precis. Vad tyckte ni annars om hur spelet såg ut, tyckte ni att det passade
platsen?
Pojkarna - ja, mm
Intervjuare - eller kan man göra något annat för att det ska vara bättre?
Pojke 1 - Den här där man skulle klicka för att det skulle bli bilder, på den första, och sen
skulle man se från olika vinklar, då såg det väldigt mycket ut som den riktigt gånggriften och
hur det såg ut runt omkring.
Pojke 2 - och kanske, först var jag lite förvirrad för först var de bara vita, som man tryckte på
och sen blev det ju alla färger. Så först trodde jag man skulle ta de färgade
12:00
Pojke 1 - men de var de vita som var oklara
Förälder - ah, precis. Annars tyckte jag väl att själva layouten, designen såg bra ut. bra stil
Intervjuare - ah, m. Och tyckte ni att det fungerade bra att spela ihop som grupp eller så?
Pojke 2 - ja mm.
Pojke 1 - samarbeta och se vad den andre tyckte. Den när man skulle leta och se den där koden på kvarnen, där var det ju bra att vara två stycken. Ena kunde knappa in medan den andra sa vad koden var.

Intervjuare - ja. … Dåså, då tackar jag jättemycket för hjälpen...

Interview 2

Intervjuare - Då ska vi se, kände ni till gånggrifterna sedan innan?

Pojke 1(11 år) - Ja

Pojke 2 (12 år) - ja, jag visste att det fanns många här.

intervjuare - hade ni läst om dem i skolan?

pojkarna - Ja

intervjuare - precis, för ni bodde här i trakten?

alla - ja

pojke 1 - vi har varit där på krumelurjakt.

intervjuare - jaha, precis. Har ni besökt dem tidigare?

pojke 1 - ja

pojke 2 - inte så..

vuxen 2 - jag hade inte varit där, jag visst inte ens om dem. Men jag är inte härifrån heller.

intervjuare - är det någon speciell anledning att ni inte har besökt dem då?

vuxen 2 - jag visste inte om dem. Vi har nog inte vetat om dem eller tänkt på't

vuxen 1 - vi brukar ju åka på krumelurjakt ibland, leta efter såna här fornminnessymboler. Så hittar vi dem och läser lite vad det är.

intervjuare - jaja, det låter ju kul.

vuxen 1 - ja, det är faktiskt jättekul.

vuxen 2 - jag får ta och hänga på...

vuxen 1 - ja, det får du göra. ta med lite fika och så

intervjuare - tror ni att folk tycker att gravarna är intressanta?

pojke 2 - ja.

pojke 1 - ja, vissa kanske

pojke 2 - ja vissa som tcker det är coolt med gamla saker

pojke 1 - jag tycker det är coolt.

vuxen 1 - jo, men det tror jag om man bara, alltså om man är där och läser om det så blir det ju mycket mer intressant än om man bara åker förbi dem liksom. Får man lite mer historia och perspektiv på.

intervjuare - ja. man åker ju förbi ganska många i trakten här

vuxen 2 - ja, man gör ju det.

intervjuare - tror ni att en app eller ett spel som är utformad på det här viset skulle kunna göra det troligare att ni eller andra besöker gravarna?

pojke 2 - jao, kanske
vuxen 2 - ja, det tror jag nog. att det blir mer intressant kanske, lättare att få med och göra det som en rolig grej
vuxen 1 - jo, det tror jag.
intervjuare - är det något som ni tror skulle behöva förbättras för att göra det mer lockande, för att dra folk mer till gravarna?
02:00
vuxen 2 - mer reklam kanske om det eller att på något sätt få ut budskapet.
pojke 2 - ah, som du sa, reklam
pojke 1 - om att veta att, kanske att man kan hitta mycket saker runtom
intervjuare - så att man ökar medvetenheten lite?
vuxen 2 - gör en kul grej av 'et för det där ni pratade om har jag ju ingen aning om vad det är - krumelurjakten
vuxen 1 - det hörde jag på radion en gång bara
pojke 1 - det var någon familj som åkte ut på det
vuxen 2 - aa
pojke 1 - så gjorde vi det också, vi var typ nummer 2 i
vuxen 1 - nja, haha
pojke 1 - nej, jag skoja bara.
intervjuare - upplevde ni att spelet hjälpte er att lära er något om gånggrifterna?
alla - ja, det gjorde vi.
intervjuare - kommer ni ihåg något speciellt som ni lärde er?
vuxen 2 - haha, 1862
vuxen 1 - då försvnn kvarnen, eller vind- väderkvarnen.
intervjuare - precis
03:00
pojke 1 - var man läggde de här när man skulle..ah
vuxen 2 - ah just det, det var ju bra ja.
pojke 1 - grus, man läggde grus efter att man hittat någonting
vuxna - ja,
pojke 2 - så att det skulle hålla upp
vuxen 2 - ja, och även vad man lade i gravarna. mm
intervjuare - precis. fanns det några svårigheter med att använda prototypen eller var det något som kränglade?
vuxen 1 - nej, inte rent tekniskt
pojke 2 - kartan, på sista stenen.
pojke 1 - ja.
vuxen 1 - ja, det var den.
pojke 1- men det var inte så stor grej egentligen.
vuxen 2 - det var mest kanske att, hur man handhava liksom, att man förstår det liksom.
vuxen 1 - ja,
intervjuare - precis, för det är nästa fråga, var spelet lätt att förstå?
pojke 1 - ja, det var det
vuxen 1 - jaa, men det var nog vi som vi sa, vi hade inte läst på ordentligt
vuxen 2 - nej,
vuxen 1 - men vissa uppgifter kände vi att vi inte visste vad vi skulle göra, med uppgiften.
Men så annars
pojke 2 - vi klarade det
vuxen 2 - det var det där med pinnarna där vi hade lite svårt att fatta va vi skulle göra.
04:00
vuxen 1 - aa, precis.
vuxen 2 - vad det stod för liksom.
vuxen 1 - men som sagt, det var nog lite handhavande, nu med facit i hand som vi sa
vuxen 2 - ja, men när man väl förstod vad man skulle göra så var det ju inte, men det var
innan liksom. mm
vuxen 1 - aa. Men som vi sa, det kan nog ha att göra med att man inte spelat så mycket spel
allmänt
vuxen 2 - aa.
vuxen 1 - som, dataapel eller tv-spel. för det blir ett visst tänk när man är inne i det.
intervjuare - ja, precis ibland kan det vara så, att man känner igen saker.
vuxen 1 - ah, hur man ska tänka liksom.
intervjuare - var det några delar av spelet som var svårare än andra?
pojke 2 - jaa, typ att man, vad var det, typ att. där man skulle hitta ledtrådar till vad som
fanns i. Men sen när man fattade lite blev det pisslätt.
vuxen 2 - sen var det väl bara stenarna som vi sa
05:00
vuxen 1 - aa. det var nog lite det.
vuxen 2 - men hade vi läst på sen på vad det var i gravarna, när man skulle sortera
vuxen 1 - ah, där var ju en miss, det var ju inte spelet utan det var ju vi.
vuxen 2 - det var ju vi som försökte ta en genväg.
vuxen 1 - nej, det ska man aldrig göra,
intervjuare - vilka delar av spelet tyckte ni var mest intressanta, eller roliga?
pojke 2 - det med bilderna
pojke 1 - ah, det va (bra?)
pojke 2 - når man skulle stå på stället
intervjuare - det som var i början?
pojkarna - aah
vuxen 1 - jag tyckte det var roligt här när man skulle göra graven
pojke 1 - aah, det var också kul
vuxen 1 - lägga stenarna till rätta, här nu det sista
pojke 2 - ah, det var faktiskt ganska roligt.
pojke 1 - ah
vuxen 1 - ja, det tyckte jag var roligt.
intervjuare - var det några delar av spelet som var mindre intressanta eller inte så roliga?
pojke 2 - typ den här stenen eller så.
intervjuare - den här sista?
pojkarna - aah, mm
vuxen 2 - jaha, du menar med plupperna där? Jaa. Men det kanske var för kartan satt (....?)
pojkarna - aah
06:00
vuxen 1 - lite lurig så. Men det var nog inte mindre intressant skulle jag nog inte vilja påstå
pojke 2 - nej, det var den ju inte.
intervjuare - mindre intressant eller inte så rolig
vuxen 2 - ah, den var inte så rolig. Det är roligare o bygga eller flytta.
pojkarna - aah, mm
pojke 1- spelet var jättebra tyckte jag.
intervjuare - finns det något ni skulle vilja lägga till för att göra spelet bättre? Om ni tänker att
det här skulle bli en app, vad ska man göra då för att det ska bli extra bra?
pojke 2 - Att man typ får olika saker så i slutet kan man bygga en gubbe.
pojke 1 - det skulle faktiskt vara bra, att man får olika delar och så och bygga typ en
vikingaby eller så där
pojke 2 -från stenåldern
vuxen 1 - att varje del ger en belöning för att kunna göra ett slut- mm aa
vuxen 2 - ah, precis. Att man får en belöning för varje, att man tjänar något på varje
intervjuare - så att man binder ihop det lite
vuxen 2 - aah, det var bra (till pojkarna)
pojke 2 - och sen kan man spela som att
vuxen 2 - göra något i det temat
07:00
alla - aa mm
intervjuare - hjälpte det att ni hade gravarna framför er för att lösa uppgifterna?
pojkarna - aah
vuxen 2 - oh ja
vuxen 1 - det, gjorde det.
vuxen 2 - och det är ju bra att kombinera liksom det här moderna med det gamla. Det är ju
det, det var väldigt bra. liksom att man kom ju ut, inte bara kunna sitta hemma och spela utan
vuxen 1 - nej. Nej, det var nog bra att man måste vara på plats, att man inte kan sitta
hemma som du säger, det var bra
pojke 1 - det blir bättre när man är på den platsen där det utspelade sig för då vet man ju lite
mer.
alla - mm
intervjuare - hade ni några tankar om Idu som var den här karaktären i spelet, hur hon såg ut eller så?
pojke 2 - aah, typ att hon var ung.
pojke 1 - hon såg ut som man gjorde på vikingatiden eller typ stenåldern. ungefär, att hon hade (....)
intervjuare - kunde man ha gjort något för att hon skulle vara en intressantare karaktär?
08:00
pojke 2 - jag vet inte…att hon kanske va, att man kunde, jag vet inte
pojke 1 - att man kanske såhär, typ en ljudinspelning så att man kunde fråga hur liksom, och så kunde den liksom svara
vuxen 2 - att det även var ljud med menar du?
pojkarna ah, mm
vuxen 2 - att man kan ställa frågan typ, som Siri liksom, ah mm men det är bra.
pojke 1 - ah, bara såhär
Vuxen 2 - ah, att man kan ställa en motfråga ja, det var ju en bra idé'
intervjuare - vad tyckte ni om hur spelet såg ut, tyckte ni att det passade platserna?
alla - aah, mm.
pojke 1 - tycker det var bra gjort.
intervjuare - tycker ni att man skulle ha en annan stil på det till exempel?
alla - nej
vuxen 1 - nej, tyckte det var bra.
intervjuare - fungerade det bra att spela tillsammans?
alla - aah, mm.
vuxen 2 - ja, vi blev ju inte ovänner, haha
intervjuare - kunde ni liksom hjälpa varandra liksom att förstå vissa saker som var kluriga?
pojkarna - ja
vuxen 2 - ja, det är nog bra att man
pojke 2 - teamwork
vuxen 2 - ja, precis det blir teamwork. det var lite svårt att göra själv, man snöar in sig lite, så det är nog bra att göra
vuxen 1 - jobba men olika vinklar ja, ah
vuxen 2 - ah.
intervjuare - precis… Det var de frågorna jag hade.

Interview 3
Intervjuare - kände ni till gånggrifterna sedan innan?
elinor - det gjorde vi va?
Pojke 1 (9 år) - mm
Elinor - ja, haha. Nu får du svara här på frågorna..
Intervjuare - hade ni varit vid dem tidigare också?
Elinor - ja, men det har vi ju, haha
Intervjuare - Tycker ni att de är roliga att besöka? Vad tycker ni barn, tycker ni att de är roliga att titta på?
Elinor - De här gånggrifternas som vi var och klättra på Simon?
Pojke 2 (7 år) - neej,
Elinor - Du tycker inte det?
Intervjuare - De är inte så roliga?
Pojke 2 - nej
Intervjuare - nej, vad är det som inte är så roligt?
Elinor - Säg bara vad du tycker
Intervjuare - ja, du får säga vad som helst
Elinor - det finns inget rätt och fel.
Intervjuare - ja, det är bara att...
Elinor - Varför är de inte så roliga Simon?..... ja, jag tycker ju att de är roliga.
02:00
Pojke 2 - Det finns inget att göra.
Intervjuare - det finns inget att göra nej, Tror ni, om man gör någon form av app eller spel, tror ni att de kan vara roligare att besöka då?
Pojke 1 - Lite.
Intervjuare - lite, precis. Om man skulle göra det, hur skulle man behöva göra den då? ......
Finns det något du tänker skulle vara roligt?
Elinor - Vad skulle vara kul (...) Det var ju lite kul när vi sprang runt och kolla.
Pojke 2 - trååkigt.
Elinor - ja, men skulle vara roligt, haha
Pojke 2 - trååkigt
Elinor - jag upplevde inte att ni tyckte det var så tråkigt, du hoppa ju omkring och skutta, det tyckte ju du var kul.
03:00
Pojke 2 - ja, men det andra var TRÅKIGT
Intervjuare - haha, man får tycka att det är tråkigt, det är helt okej. Eehm. Tyckte ni att spelet hjälpte er att lära er något?
Elinor - tyckte du det?
Pojke 1 - ja, lite.
Intervjuare - lite. Var det något som du kommer ihåg
Elinor - Kommer du ihåg något som vi lärde oss?
Pojke 1 - uuhhmm.. nej.
Elinor - Inge kommer du ihåg? Men väderkvarnen då?
Pojke 1 - ja, just det
Pojke 2 - vi hitta en väderkvarn som var ful.
Elinor - (typ, så får man inte säga)
Intervjuare - jo, men det är bra för undersökningen så det får man visst säga.
Pojke 2 - jag tycker den är lite ful
Intervjuare - ja, det är helt okej. Tyckte ni att det fanns några svårigheter med att använda
den här prototypen, var det något som inte funka så bra?
04:00
Pojke 2 - Det har du massa av mamma!
Elinor - ska jag svara på den?
Intervjuare - krånglade den eller var svår att hantera?
Elinor - Det var väl lite svårt att förstå ibland
Intervjuare - Mm
Elinor - Men det kan ju ha varit handhavande, haha
Intervjuare - jo, men det ska ju ändå vara
Elinor - lite svårt var det ibland… man behövde trycka på henne, för att förstå. Ibland så
kunde du ju nästan klura ut hur man skulle göra.
Pojke 2 - jag är inte med…
Intervjuare - Var det något i spelet som var svårare än något annat?
Pojke 2 - Den sista!
Elinor - Den sista?
Pojke 2 - Du tyckte ju det!
Elinor - Nej, men den sista var ju här, den var inte du med på.
Pojke 2 - Den däää
Pojke 1 - Den sista var ganska svår
Elinor - Den sista när vi var där borta, eller?
Pojke 1 - jaa, där borta
Elinor - här? Jag tyckte det var en av de bättre, men det är ju ni som ska tycka. Jag tyckte
nog den första var svårast.
Intervjuare - ja, ni får tycka olika
Pojke 2 - den första.?
Elinor - jaa, jag tänkte på den där med pusslet
Pojke 2 - ja, men mamma, du och Hugo. Den tredje, där förstod ni ingenting, ni bara tittade
på den där bara
Elinor - ja, nej den förstod vi inte heller, när vi skulle lägga stenarna. Förstod du tyckte du?
Pojke 2 - Vadå?
Elinor - Förstod du den?
Pojke 2 - eehm. Nej.
Elinor - Nej.
Pojke 2 - (..) själv
Elinor - Nej, den var lite svår att förstå.
Intervjuare - Fanns det någon del som ni tyckte var roligast i spelet?
Pojke 1 - hmm. Det får mamma berätta om.
Elinor - men jag tyckte nog det här. Kyrkerör här
Pojke 1 - ao.
06:00
Pojke 2 - ooh, du drog av min keps (ljud)
Intervjuare - var det delar av spelet som var tråkigare? Som inte var så roliga?
(....) otydligt
Elinor - du får säga
Pojke 1 - hmm. trassla med stenarna.(...otydligt…)
Elinor - Du menar pussla där?
Pojke 1 - mm
Elinor - Det första pusslet där
Intervjuare - ja.
Intervjuare - tyckte ni något om den här karaktären i spelet, som man frågade om hjälp?
Tyckte ni något om henne, om hur hon såg ut eller så?
Elinor - den där tjejen
Pojke 2 - Hon pratade inte.
Elinor - nej, hon sa ju inget, det var text.
Intervjuare - precis.
Pojke 2 - nej, hon sa inte ens, hon hade stängd mun.
Elinor - du menar att hon skulle prata?
Pojke 2 - hon sa inget
Intervjuare - var det lite tråkigt att hon inte
Pojke 2 - det som stod, det sa inte hon.
Elinor - nej, just det. Du tyckte hon skulle rört på munnen?
Pojke 2 - (...) stängd mun.
Intervjuare - precis. Eehm. Tyckte ni att det fungerade bra att spela tillsammans?
Elinor - Mm, det kan man ju diskutera, haha. Ja, men det gjorde det ju, emellanåt. När alla var med liksom. Det var ju bra att kunna tänka ihop för att kunna lösa det.
Pojke 1 - mm
Pojke 2 - (ljud)
Elinor - tyst nu, vi ska svara på frågor
Intervjuare - Men jag har kommit igenom mina frågor här faktiskt.Så vi är färdiga nu.