UiT The Arctic University of Norway

Faculty of Humanities, Social Sciences, and Education

Dyslexia and Minecraft Education

A qualitative study exploring Minecraft Education as a tool for working with English literature for students with dyslexia

Jørgen Hougen

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Abstract

The following thesis aims to explore the experiences pupils with dyslexia have when using Minecraft Education to work with English literature. The study used a qualitative approach where 10 pupils with dyslexia had to complete different tasks in Minecraft education after reading a chapter from the novel The Absolutely True Diary of a Part-Time Indian. The participants' experiences were captured using screen recording and interviews following the pupil's completion of the tasks related to the reading. Thematic analysis of the collected data revealed three themes with codes: multimodal visualization, creativity, and game literacy.

The findings from the themes showed that pupils benefited from the visual aspects of Minecraft Education, as it is often not present in combination with English literature. Further, the creative aspect combined with feelings of mastery made the experience more motivational for the pupils. The pupils also placed a high value on cooperation and wanted it incorporated into the tasks. However, while this could benefit some pupils, it could also impose difficulties for teachers as they have to prevent unvented gaming behavior.

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List of abbreviations

LK20: Curriculum for Knowledge Promotion 2020 (Læreplanverket for Kunnskapsløftet 2020)

MEE: Minecraft Education Edition

UDIR: The Norwegian Directorate for Education and Training (Utdanningsdirektoratet)

DST: Digital storytelling

DBR: Design-based Research

1 Introduction

1.1 Background

In a digital age where reading books has to some extent been replaced by phones, tablets, and computers, teachers may find it challenging to make reading exciting for pupils. Several books have been adapted to movies and television shows, which the pupils often prioritize. As a result, reading has become an aspect of the English curriculum often viewed negatively by the pupils. Teachers must find new innovative tools to make learning both exciting and educational. One way to incorporate pupils' interest in education has been by implementing video games. Using video games in an educational setting can combine the fun aspect of playing a video game with learning.

According to a study *Barn og Medier 2022*, approximately 76 percent of children aged 9-18 play video games on their computer, PlayStation, iPad, or phone. Despite this, only 8 percent of children answered that they used video games in school (Medietilsynet, 2022, p. 4). This statistic shows that while children are drawn toward video games, teachers and educators are reluctant to use them in school settings. There are several reasons for this, but the main ones are a lack of understanding of how to implement it, the question of who benefits from it, and which games are best to use in the classroom (Utdanningsdirektoratet, 2018). While several video games can be used for learning, it is difficult for a teacher with limited game knowledge to find one to implement into their subject.

In the English subject, video games are sometimes used by teachers as a tool for teaching linguistics and literature. Videogames and the English subject have a natural correlation. According to *Barn og Medier 2022*, 70 percent of children aged 9-18 state that playing video games makes them better at speaking English (Medietilsynet, 2022, p. 17). Linguistic teaching is often the primary use of video games in the English classroom. However, in some instances, video games are also used to promote literature and storytelling. In the cases where video games are used in literature teaching, it is often a core resource, replacing the written text with an immersive story that can be played.

For example, Harvey's (2018) study used games such as *Uncharted 3, Drake's Deception*, and *Wayward Sky* as literature to teach about stories and dramatic events. The

study found that pupils can use video games as literary vehicles for learning (p. 227). However, using videogames as the core resource goes against the recommendation from Utdanningsdirektoratet, which states that when implementing videogames into school, the teachers should not view the game itself as the core resource for new knowledge, but instead be an arena where this new knowledge can be used (Utdanningsdirektoratet, 2018, p, 8)
For students with dyslexia, English is a difficult subject as it combines reading and second language use. While the practice has improved in facilitating students with dyslexia in the English subjects with the implementation of *Lingdys* and other text-to-speech tools, there are still several difficult aspects of the subject. To make the English subject more accessible for all pupils, new teaching practices and tools need to be tested and implemented. One tool which has gained attention among teachers is Minecraft Education Edition. Statped (Statsped is a state driven organization under the ministry of knowledge that focuses on special education) has several recommended lesson plans on its website to incorporate Minecraft Education into the Norwegian classroom. However, these lessons focus only on interdisciplinary topics and do not include how to incorporate them into other parts of the different subjects. Further, Statped writes that since Minecraft is mainly based on visual expressions, students with reading and writing disabilities can participate and show their knowledge and creativity (Statped, 2023). Despite promoting it as a tool that pupils with dyslexia can use, they do not give any recommendations or tips for how teachers or pupils might use it to facilitate learning in different subjects.

When new teacher tools are tested and researched, the focus is often on the teachers' experiences instead of the pupils. The teacher perspective is highlighted since teachers are the driving force for implementing a new game into a classroom, and it is important that teachers know which games work in a classroom setting and which ones do not. Because of this, students' opinions and voices are often overlooked in the discussion of implementing new tools. Because of this, pupils and educators often have different expectations as to how and why video games should be used in a specific teaching setting. It is, therefore, vital to listen to the students' experiences when using new tools to understand how these new tools might be used most effectively to facilitate learning.

1.2 Aim of the study

This study aims to explore the experiences of students with dyslexia when presented with a digital way to work with literature in English. The students' experiences are vital to understanding how implementing Minecraft Education would benefit them and motivate them to work with English literature. This results in the following research question: "How do students with dyslexia experience using Minecraft Education when working with English literature." These experiences were divided into three themes from the thematic analysis: multimodal visualization, characterization, and game literacy.

To answer the research question, I chose to use a qualitative approach. I created a study where ten pupils with dyslexia solved tasks in Minecraft Education after reading a chapter from the novel *The Absolutely True Diary of a Part-Time Indian* by Sherman Alexie (2007). The task the students had to complete was based on their ability to recreate scenes from what they had read in the chapter and afterward retell the story of that specific scene; during the task, I recorded the screen of the students, and afterward, the pupils were interviewed about their experiences.

To discover which experiences pupils with dyslexia have in encounters with Minecraft Education Edition, I chose to use the novel *The Absolutely True Diary of a Part-Time Indian* by Sherman Alexie (2007). The book is based on the author's own life and follows the main character named Junior on his adventure, as he decides to leave the Spokane Indian reservation to join a white school outside the reservation border. His decision leads to a conflict between pursuing his interest or staying loyal to his best friend and the community living inside the reservation (Alexie, 2007). One of the reasons this novel was chosen, was because it focuses on learning disabilities such as dyslexia, which is shown trough the character of Rowdy. Studies have shown that students, and especially boys, prefer to read about characters which are similar to themselves (Carlsen, 2020, p. 212) The book includes several important topics such as growing up in poor conditions, living with disabilities, and racism, which has the potential to teach intercultural competence to students if these topics are worked with, interpreted, and understood. Youth literature is also the one category of literature which is mentioned in the competence aims after year 10.

1.3 Dyslexia

Dyslexia is a complex diagnosis with several different definitions and symptoms. One of these definitions was given by The World Federation of Neurology, which defined dyslexia in 1968 as:

> A disorder manifested by difficulty learning to read, despite conventional Instructions, adequate intelligence, and sociocultural opportunity. It is dependent upon cognitive disabilities which are frequently of constitutional origin (Høien & Lundberg, 2012, p.20)

Since the definition from the World Federation of Neurology does not describe in depth what the symptoms of dyslexia are, Høien & Lundberg have decided to make two categories that detail these symptoms. The first category is the primary symptoms, problems with word decoding and spelling. The secondary symptoms are difficulties with reading comprehension, mathematics, socio-emotional adaption, and eye movement (Høien & Lundberg, 2012, pp. 29-32).

In a school where the ability to write and read is crucial, students that struggle with dyslexia are often at a disadvantage when faced with tasks and situations where they are compared to students without this diagnosis. Approximately 4 percent of the world's population struggles with severe dyslexia, which means that in a class of 30 students, it is statistically likely that the class includes at least one student with severe dyslexia (Rahmani, 2011, p. 781). While there are several difficulties when it comes to learning for dyslexic students, this thesis will focus on reading comprehension and working memory, which are essential aspects of interpreting and understanding longer literary works.

Working memory difficulties is a common struggle which affects reading comprehension for people with dyslexia. Approximately 20-50 percent of people with dyslexia have difficulties with their working memory (The International Dyslexia Association, 2020) Working memory "is the retention of a small amount of information in a readily accessible form. It facilitates planning, comprehension, reasoning, and problem-solving" (Cowan, 2013, p. 197). Several theories state that proficient learning and working memory go hand in hand. One of these theories is from Halford et al. (1998). It states that a person with a sufficient working memory can keep in mind sufficient items and their relations to each other in order to solve

the problem at hand. This process requires a combination of capacity, speed, knowledge, and available strategies (Hartford et al.,1998, p. 829). Reading comprehension is the process of making meaning out of the text. Instead of obtaining meaning from isolated words or sentences, reading comprehension helps to gain an overall understanding of what is described (Woolley, 2011, p. 15)

1.3.1 Teaching and differentiated instruction

As this thesis is concerned with acquiring information about using MEE as differentiated instruction and evaluation, LK20 core curriculum 3.2 needs to be addressed. In subchapter 3.2, teaching and differentiated instruction of the core curriculum, UDIR states, "School shall facilitate for learning for all pupils and stimulate each pupil's motivation, willingness to learn and faith in their mastering" (Utdanningsdirektoratet, 2020). This means that every student should be able to reach all of the competence aims presented by UDIR despite limitations imposed by disabilities, background, or prior knowledge. Further, UDIR states that students must be able to explore and research various areas in the different subjects in depth. In order to facilitate in-depth learning, the school needs to consider that pupils are different and need differentiated instructions and evaluation (Utdanningsdirektoratet, 2020). Schools can adapt the teaching to fit individual students by using various work methods and resources that promote deep learning and assist the students in order for them to reach the competence goals in the curriculum.

1.4 Minecraft Education Edition

1.4.1 Minecraft

Minecraft Education Edition is a digital tool that combines the creative elements of the video game Minecraft with various aspects of traditional learning. The game was created by Markus Persson, who made the game public in 2009. (Nebel et al., 2016, p. 356). Since its release in 2011, the game has sold 122 million copies worldwide. As a result of Minecraft becoming a successful brand, the technology company Microsoft decided to buy the developer company Mojang and the studio Minecraft franchise. The studio and Minecraft franchise were bought for 2.5 billion dollars in 2014. (Peckham, 2014). Together with the two games Fortnite and Roblox, Minecraft is among the three most popular videogames for pupils aged 9-18 (Medietilsynet, 2022, p. 17). Minecraft falls under the category "sandbox," where the player

is placed in a large open creative arena. The game is described as a digital infinite LEGO world where you can build and destroy almost anything (Utdanningsdirektoratet, 2018, p.16).

Minecraft features several different game modes of play, which can be chosen before entering the randomly generated world: these different modes are creative, survival, adventure, and spectator. In creative mode, the player has all the different resources available. This mode is used for creating buildings and projects without worrying about gathering resources and surviving. Survival mode is the mode in which the player needs to gather resources and use these resources to survive different obstacles throughout the game. Unlike when playing in creative mode, the player must work for everything. There are no unlimited blocks, and performing activities drain away from the player's health and hunger bar. Adventure mode is a mode where the players can experience a world and interact with it. However, the player cannot destroy any blocks like in survival or creative mode in adventure mode. The last mode is spectator mode. This mode allows the player to fly around and explore a world. However, the player cannot interact with anything in the game. Spectator mode makes it easier for others to look around at different creations in the player's world without worrying about them destroying or changing the finished product (Minecraft.net, 2022). Survival mode is best utilized in a teaching setting by making the students try to survive obstacles and write a log as the game progresses. Creative mode, on the other hand, works best when students can use their creativity and build buildings or characters as detailed as possible. This mode is used in the premade lessons in MEE, where the lesson's goal is not to create but to experience and interact with different characters. Spectator mode is a valuable tool for students to show their peers what they have created without worrying about other students destroying their creations or projects.

1.4.2 Minecraft Education Edition

Minecraft Education edition was developed with the purpose of implementing educational aspects into the regular game. When Microsoft bought Minecraft in 2014, they had plans to take the successful brand and develop it further. Early in its acquisition, Microsoft noted the increasing interest in using Minecraft in the classroom as a teaching and learning tool. Because of this interest in combining Minecraft and education, the company reached out to educators to learn how to use it in the classroom. With the feedback they acquired, Microsoft decided to develop a new platform where Minecraft could be used as a tool for teaching. This

new platform was named Minecraft Education Edition. Minecraft Education Edition was explicitly made to have the flexibility and large visual interface to be used in any language classroom. The game was also made to play alone and cooperatively depending on the lesson (Kuhn, 2018, p, 215).

Minecraft Education has become more accessible in the classroom because of its developer support and implementation into the office 365 package. By spending 2.5 billion dollars in the acquisition of Mojang, Microsoft made it clear that they were willing to invest a lot of resources into this project of turning Minecraft into an educational platform. With Microsoft investing such a large amount into MEE, the company shows that MEE is a platform they are willing to invest in and spend resources on for further development. This is quite important for digital learning platforms that continuously need updates and patches to fit the goals of the current curriculum. If MEE is to be used as a tool in the classroom over a longer period of time, it needs constant support from Microsoft so that educators are willing to learn this new way of teaching. In 2020 after the covid-19 outbreaks, Microsoft decided to make MEE accessible for all students and teachers with a valid Office 365 Education account (Minecraft.net, 2020). With this move, Microsoft clarified that they want MEE to be the future of remote and digital learning. They plan to continue supporting their platform by adding new lessons and expanding the different ways to make digital learning fun and interactive.

Minecraft Education Edition has several options which are tied to the LK20 curriculum. The game lets players choose between playing different lessons made by the Microsoft education team or creating their own world. The premade lessons are found in a library and divided into eleven subjects. The subjects are science, math, computer science, equality and inclusion, history, and culture, social and emotional, art and design, digital citizenship, literacy, and language, esports, and climate & sustainability. Each subject has several premade lessons, including objectives that the student needs to complete to progress through the lesson.

Several tools are implemented into MEE, which are not found in the regular version of the game. In the premade lessons, the students can speak with different characters known as NPCs, which stand for non-playable characters. During their lessons, the students can also

read notes, signs, and books with instructions and tasks. Whenever a text is presented in the game, the students can listen to it and decide how fast the audio reading is. MEE also includes several different ways to evaluate student work within the game. The game has built-in formative assessment tools, such as the camera, to record creations and gameplay (Education.minecraft.net, 2022).

1.5 Previous research on using Minecraft education in the classroom

Minecraft and Minecraft education are one of the most popular creative arena games among teachers (Utdanningsdirektoratet, 2018, p.16) and is therefore more researched than other games. Despite this, English is a subject that lacks studies around the implementation of Minecraft Education. Several studies have focused on implementing Minecraft into the science subjects, such as Ming (2020) and Bile (2022), who used Minecraft Education as a gamification approach when teaching mathematics. However, in the English subject, Minecraft Education have not been used regularly, and lacks research to support and guide its implementation.

Some studies have analyzed the implementation of Minecraft Education into regular classroom and found that it is a difficult task consisting of several problems. A study by Berg Marklund (2015) found that it is difficult to implement educational games in a heterogeneous classroom. Both proficient and novice students provide their own challenges, and it is difficult to construct exercises that will engage the proficient students while being inclusive to the novice ones. (p. 699).

> While proficient gamers need less supervision in terms of game tutoring, they often require other types of attention and are also prone to display gaming behaviors that can be disruptive in the classroom environment. Proficient gamers are both difficulties engaging with educational goals, but they also place much higher demands on the conditions for their gaming (Berg Marklund, 2015, p. 668)

His research shows that while Minecraft Education has several benefits, the difficulties which arise with its implementation is an aspect which needs to be considered before introducing it into the regular heterogeneous classroom.

1.6 Outline of thesis

In this thesis the remaining chapters which will be presented are the thematic and theoretical field, the methods and materials, the findings and result from the analysis and the discussion and conclusion. In chapter 2 named Thematic and theoretical field, I introduce and provide a comprehensive overview of the thematic field of my thesis. In this chapter I will explore the existing literature, theories, and concepts related to the topic of literature, dyslexia, approaches to increase motivation and visualization and game literacy. In chapter 3 named Methods and Materials, I will describe the research methods and materials used to conduct this study. This includes explaining the design of the research, data collection methods, validity and reliability, lesson structure and the use of thematic analysis. The findings and results obtained from the thematic analysis will be presented in Chapter 4 named findings and results from the analysis. These findings will be separated into three different subchapters which each represent a theme. The last chapter named discussion and conclusion will gather the treads from the analysis and interpret them using the thematic and theoretical field from chapter 2.

2 Thematic and theoretical field

In this chapter the thematic and theoretical field will be presented and discussed. The different topics that will be covered are Literature in the English classroom, dyslexia and English literature, creativity and motivation, visualize and reading comprehension and game literacy.

2.1 Literature in the English Classroom

The discussion of literature learning's relevance in the English classroom has become more prominent after implementing the latest curriculum, LK20. While the previous curriculum LK06 was more reserved in its definition of what types of text should be read in the English classroom, LK20, on the other hand, opens for several different definitions of what is considered a text:

> Language learning takes place in the encounter with texts in English. The concept of text is used in a broad sense: texts can be spoken and written, printed and digital, graphic, and artistic, formal, and informal, fictional and factual, contemporary and historical. The texts can contain writing, pictures, audio, drawings, graphs, numbers, and other forms of expression that are combined to enhance and present a message. (Utdanningsdirektoratet, 2020)

This definition makes several different types of media available as "text" in the English classroom. This raises the question if English literature is still relevant in the current English teaching. The only mention of literature in the new curriculum is under competence aims after year 10 where pupils are expected to: "read, interpret, and reflect on English-language fiction, including young people's literature (Utdanningsdirektoratet, 2020). While the previous curriculum from LK06 had more focus on literature including it in one of the main parts of the curriculum under the category "culture, society and literature" (Utdanningsdirektoratet, 2006).

The curriculum has changed the focus from literature to include more varied types of text, however it is still up to educators to decide which emphasis English literature is given in the classroom. International tests have shown that students who read literature on a weekly basis score better than those who do not read, even though they might read other types of text (Roe, 2013). Working with English literature is also given high priority in some teacher education programs. This is shown in the subject plan for 2022-23 by UiT where it is written that the

lector program in English “offers general introduction to English literature, culture and language and gives the ability to specialize in these topics” further they state that “ English literature, culture, and language today appear both as a common heritage and a shared language, as well as controversial phenomena of civilization and power.” (UiT, 2022, p. 5) This shows that while the curriculum has changed from focusing on just English-speaking literature, the teacher education still regards it as an important aspect of the English subject. Since it is the teachers who chose which types of texts to use in the classroom, this is often decided by personal interest and familiarity with relevant literature (Carlsen, 2020, 211).

Over the years, there has been a shift in literature teaching, moving away from emphasizing the author's message and toward a greater emphasis on reader response. According to Ibsen and Wiland (2000), when Reform 94 was introduced in the Norwegian classroom, there was a shift in literature teaching. The focus was no longer on knowledge about literature; instead, literature was used as a tool in the classroom for language learning and teaching culture (p.82). When LK06/13 became the main curriculum, students were required to discuss literary texts. However, this has changed in LK20, where the curriculum states that interpreting literary texts is the primary focus (Hasselgreen & Ørevik, 2020, p. 368). This is known as the reader response model which gives students’ experiences and expectations of the text more value. (Aspaas, 2005, p. 30). Aspaas (2005) claims that it is the reader who recreates the literary work with the help of their own personality – it is the reader who gives “life” and “picture” to the text on the paper in the decoding process (p.16). It is therefore the readers’ interpretations which are important, as the story is given life in their minds.

2.2 Dyslexia and English literature

Working with English literature is often a difficult part of the English curriculum for pupils with dyslexia. The competence aims for tenth grade states that students should be able to “read, interpret and reflect on English-language fiction, including young people’s literature.” This is much more difficult for students who struggle with dyslexia since struggles with reading comprehension often affect their ability to read, discuss and present the content in various texts. A story in a book is often structured with a central narrative, which is the beginning of the story, a complication that needs to be resolved, and the conclusion. However, stories also include minor details and peripheral elements that do not drive the story forward. Students without dyslexia can separate these two and know which information is

relevant to the story and which are less relevant. For the dyslexic student, on the other hand, studies have shown that they find it difficult to distinguish between what is relevant and what is not when reading literature (Høien & Lundberg, 2012, pp. 136-137). Difficulties separating peripheral and main details make it difficult for students with dyslexia to interpret longer literary texts.

A deficient working memory affects the interpretation and analysis of literature. Because of working memory deficiency, students with dyslexia can have adequate reading skills yet still struggle to comprehend their reading. Working memory plays a significant role when students analyze and interpret literature. This is the case for tasks that require a high demand of processing skills, such as inhibiting conflicting information and updating new and relevant information when presented. (Alloway, 2006, p. 3). Working memory deficits could result in difficulties for dyslexic students in achieving intercultural competence. Intercultural competence is defined by Dypedahl as "the ability to relate constructively to people who have mindsets and or communication styles that are different from one's own" (Dypedahl, 2019, p.102). Intercultural competence is also found in the third core element in the English subject curriculum (LK20), "Encounters with texts". It is stated that:

> Working with texts in English helps to develop the pupils' knowledge and experience of linguistic and cultural diversity, as well as their insight into ways of living, ways of thinking, and traditions of indigenous peoples. By reflecting on, interpreting, and critically assessing different types of texts in English, the pupils shall acquire language and knowledge of culture and society(Utdanningsdirektoratet, 2020)

The combination of longer literary texts and L2 use makes English literature more difficult for pupils who struggle with these aspects. English literature combines both the difficulties imposed by reduced reading comprehension and the struggles students with dyslexia have when it comes to L2 use and acquisition. This problem also stretches out to educators and clinicians. Helland (2019) argues that L2 teachers are often educated on how to teach an L2, but they rarely have knowledge and experience with teaching students with special needs. The same goes for teachers who focus on special education. These teachers have experience with teaching students with dyslexia, however, they are usually not L2 educators. If the teacher is both competent in special education and L2 teaching, it is still difficult for the educator to

distinguish if a mistake results from dyslexia or just a natural second language mistake (Helland, 2019, pp. 188-189). It is, therefore, vital that L2 teachers have tools that can help facilitate learning for students with dyslexia, to make them able to show their competence and not be demotivated when it comes to working with longer literary texts.

2.3 Creativity and motivation

It is difficult for dyslexic students to find motivation when they cannot experience mastery in encounters with literary texts. According to Carlsen, students' motivation to read is directly influenced by their present reading skills and previous experiences with literature (Carlsen, 2020, p.211). This will result in negative experiences for dyslexic students since they struggle with reading and working with longer texts. Therefore, the educator must facilitate creative and motivational ways of working with literature in the classroom. Carlsen has a checklist that can be used as a starting point when setting up a reading project. The last point in this checklist states that the student is tasked to make "a final product in which the student shares their reading experience analytically or creatively, for instance through digital storytelling or book reviews in oral or digital formats." (Carlsen, 2020, p.214). If digital storytelling is combined with a digital platform that promotes creativity, dyslexic students might experience some form of mastery when working with English literature.

2.3.1 Approaches to increase motivation

Tasks where students with dyslexia experience some form of mastery have the potential to increase their motivation. Digital storytelling is an approach that allows students to be both analytical and creative when approaching literature. This student-centered learning activity allows students to use digital tools to create personal and imaginative multimodal texts (Carlsen, 2020, p. 214). Since the tools needed for digital storytelling have become increasingly more affordable and accessible, it has become much easier for teachers to implement digital storytelling in the English classroom. In his study, Bernard (2011) argues that integrating visual images with written text can enhance and accelerate student comprehension. Using digital storytelling is a great tool when collecting, creating, analyzing, and combining visual images with written text (p. 5). Woolley (2011) supports this claim:

> Visualizing story content while reading is a very powerful thinking tool that can if used appropriately, economize on the limited capacity of working memory and free up valuable cognitive space to enable more efficient reading comprehension" (p. 81)

DST can be used in various ways, and it is up to each educator to decide which use fits the specific student or class. One example presented by Carlsen is titled “Changing perspectives.” This DST task involves the student taking on the role of one character from the book and retelling a story or an episode from the novel they have been working on. The student has to retell the story as if it was experienced from the character’s perspective (Røkenes, 2017, as cited in Carlsen, 2020, p. 215). According to Carlsen, DST is an excellent tool for students with dyslexia. He states that “for struggling readers, who often have difficulties visualizing words on a page, the visual components of DST can make this a beneficial approach (Carlsen, 2020, p. 216). Shanahan and Shanahan (1977) support the use of DST. In their study, they found that:

> By requiring the reader to enter the various characters’ minds and consider events from their alternative perspectives, children come to a fuller understanding of story and theme. Character conflict is a central property of a large proportion of stories, novels, and factual narratives, and Character Perspective Charting can help children as early as second grade to develop more mature and complete conceptions of such texts (Shanahan & Shanahan, 1977, p. 677).

This strategy of discussing and interpreting a story from a character’s perspective is known as characterization. Proficient readers use more characterization and focus more on the mental states of characters and the more abstract event features, such as causal connections across story episodes and longer text discourse. On the other hand, children tend to place more importance on the characters’ actions in stories and less on their mental states (Rapp et al., 2007, p. 295).

Multimodality makes it easier for students to not just rely on their reading but instead use more than just their sight and incorporate their other senses. A multimodal text is defined by Lund and Villanueva (2020) as a form of text where information is conveyed using two or more communication modes. Such as spoken language, written language, music, and images. Multimodal texts open the possibilities for various combinations when presenting a text in English. This allows students with different abilities to display their strengths and talents in areas usually not used in English class (Lund & Villanueva, 2020, p.136).

2.4 Visualization and reading comprehension

As mentioned, using visualization while reading is a powerful memory device that can be used to improve reading comprehension (Woolley, 2011, p. 81). However, for students with dyslexia, visualizing simultaneously while reading can be challenging. Borkowski et al. (1989) found in their study that imagery generation was linked to increased working memory capacity. Children with greater short-term memory capacity were better able to visualize scenes from reading than those with less capacity (p. 182). Because of their lower working memory capacity, students with dyslexia find it more difficult to visualize while reading. However, if the students who generally do not visualize begin to practice visualizing while reading, it can increase their reading comprehension (Gambrell et al. 1987, p, 641). In a study from 2002, Romeo demonstrates that text comprehension of less able readers could be enhanced by having them visualize story events and then share their images at relevant stages during the reading. After practicing on visualization tasks less able readers to begin visualizing the content of the text more frequent and without instructions (Romeo, 2002, p. 387)

The focus on training visualization has mainly been neglected in classroom settings since students without dyslexia do not struggle as much with these concepts. For dyslexic pupils who struggle with visualization, the major problem is that teaching reading comprehension has traditionally relied on the development of verbal thinking processes. At the same time, imaginal visual procedures have been largely neglected in classrooms (Woolley, 2011, p. 82). A study by Sadoski et al. (1997) found that abstract sentences are the most difficult to visualize when reading since they take significantly longer to read, are more difficult to imagine, and are easier for the reader to experience comprehension errors as opposed to when reading concrete sentences (Sadoski et al. 1997, p. 7). Since literature often contains several abstract sentences, it becomes difficult for pupils with dyslexia to visualize these sentences and making them more prone to reading comprehension mistakes.

2.5 Game literacy

Digitalization has transformed the concept of literacy, expanding it beyond written text to encompass individuals' comprehension and proficiency in navigating the world of video games. Zagal (2008) divides game literacy into three different categories: having the ability to

play games, having the ability to understand the meaning with respect to games, and having the ability to make games. While these three categories are separate, each part of game literacy relates to and influences the other parts (Zagal, 2008, p. 34). However, while some students may be proficient at playing video games, it does not mean they have proficient game literacy. Zegal (2008) states that "students often confuse being insightful about a game with being successful at playing it" (p. 34). This means that students can be proficient at playing video games without having high game literacy. Because of this, proficient students might not understand why their game is being used as a tool for learning, as they cannot understand the educational aspects of the game.

Implementing video games into the classroom can be difficult since students have different experiences with playing video games. Pupils with knowledge and experience with a videogame can have a different starting point when using a videogame in a school setting. In a study by Orvis et al. (2008), prior videogame experience influenced these learning outcomes significantly, and a three-way interaction was detected between performance, task difficulty condition, and experience (p. 2415). Berg Marklund's findings also suggested that proficient gamers have certain expectations when playing a video game. Berg Marklund (2005) says that "proficient gamers are both difficult to engage with educational goals, but they also place much higher demands on the conditions for their gaming (p. 668). According to UDIR, Students with vast game experience find it easier to learn new games and can therefore gain more game experiences that are relevant for learning faster than those with less experience. These pupils can also experience increased motivation since their interest and hobby is being used as a resource in school. However, some pupils may also experience some frustration since their hobby is being used as a teaching tool (Utdanningsdirektoratet, 2018).

Marc Prensky separates between digital natives and digital immigrants when talking about teachers' and students' relationship with digital tools. He claims that the digital natives representing the students have spent their whole life surrounded by digital tools and are therefore proficient with these tools. On the other hand, the digital immigrants, represented by the teachers, are struggling to teach the digital natives who are more competent (Prensky, 2001, pp. 1-2). However, later studies have criticized Prensky's results and shown that not all students are as competent with digital tools as assumed by Prensky (Skulstad, 2020, p. 279).

Therefore, teachers must track the level of their student's proficiency and use this information for how technology will be used in the classroom. For some dyslexic students with high game literacy, implementing video games might facilitate learning, while for others, it might make an already challenging task even more difficult.

The social aspect of video games is important for several pupils and can have the potential to increase learning if used correctly.mMarcos et al. (2020) found that lessons that implemented cooperation increased creative thinking. Another relevant aspect is cooperation when interpreting text. Studies such as Aspaas (2005) claims that pupils often construct meaning to text in cooperation with other pupils (p. 30). Despite of this, cooperation also includes its own specific difficulties, which could affect students, and decrease the learning output from the tasks.

3 Methods and materials

In this chapter, I will explain the methods and materials that are used in this research project. The different topics that will be covered are the study's design, validity and reliability, the structure of the lesson, methods of data collecting, and the analysis.

3.1 Design of the Study

This project employs a qualitative research method. According to Dalland (2021), qualitative research methods aim to acquire opinions and experiences that are impossible to measure or summarize using numbers (Dalland, 2021, p. 54). I chose to use a qualitative approach in this project because the design is based on working with literature. How students work with literature is challenging to measure without observation and information about their thoughts.

The study was conducted one-on-one with the pupils that participated in the study. Ideally, it would have been optimal to create a classroom-like setting so the students would feel that the study was just a regular lesson, making the environment less stressful. However, with the lack of equipment and myself as the only observer and interviewer present, it would be difficult to conduct the study with several students at once. It could also create interactions between the pupils, creating data that could deviate from this study.

3.1.1 Intervention research

I decided to use intervention research to gain information about the pupil's experiences. According to Øgreid (2021), intervention is a form of research with a planned intervention in the empirical field being analyzed. Within educational research, the intervention aims to analyze and evaluate how new methods can be implemented in the classroom (Øgreid, 2021, pp. 210-211). Since I started this project with limited knowledge of the effect Minecraft education would have on dyslexic students, I decided to conduct the project as design-based research. Design-based research (DBR) is an approach to intervention research that focuses on the development of empirical theories related to learning processes or learning resources. The primary goal of DBR is to create and refine new teaching methods while simultaneously generating theories that can be applied by others in the field (Øgreid, 2021, p. 222).

Since several theories highlight the use of multimodality for dyslexic students, as shown in the previous chapter. Therefore, I have decided to use these as a basis when creating a lesson that implements the use of Minecraft Education to support and facilitate learning for students with dyslexia. Design-based research intervention is used in a cycle of design, testing, analysis, and reflection. A DBS's goal is to understand the learning outcomes that implementing this new learning resource may result in (Øgreid, 2021, p.225).

3.2 The student participants

To find participants who could participate in the study, I emailed several schools in the area to find a place where I could conduct my research and pupils that would like to participate. One principal responded that they would be interested in being part of the study and that I was allowed to use their facility for my research. I asked the principal to forward my information paper to the main teacher of potential classes. The main teachers of the classes sent the information paper out to the legal guardians of potential candidates. They informed the pupils of what the project entailed and that they needed permission from their guardians to participate. Since all the students were under 18, they could not sign the consent form on their own following *Vergemålsloven* (Vergemålsloven, 2010, § 9). The potential candidates' parents or guardians would then contact me by email if the pupil was interested and return the signed version of the consent form if they approved of their child participating. After getting permission from both the pupil and their guardian, I was allowed by the primary teacher to take the students out of the classroom to conduct the project during one of their lessons. The students were informed verbally that the project would not affect their grades and that they had the right to withdraw their consent at any moment.

After I had emailed the information letter to the guardians of potential candidates, ten pupils responded and wanted to participate in the study, which gave me a large and varied selection of pupils. All the pupils that participated in the study were between the ages of 13-16 and a combination of both boys and girls. Everyone had been diagnosed with dyslexia. However, the degree of dyslexia varied from pupil to pupil, which can affect their reading and writing in different degrees. I therefore chose to include all ten students when collecting qualitative data instead of only a few since I wanted a wide spectrum of students with dyslexia because it would give more nuanced data. There were also both male and female participants in the group of pupils with dyslexia. Although the focus was not on dyslexia and gender, I was still

interested to see if there were any major differences between genders and their experiences working with MEE.

3.3 Validity and reliability

When conducting a research project, the question of validity and reliability is important to address. Reliability revolves around the quality of the research process and if the research is trustworthy (Gleiss & Sæther 2021, p, 202). To prevent errors, two reliability questions need to be assessed. The first is: how has the data material been affected by how it was collected? The second question is: Can other researchers reproduce the results? To avoid interferences in the data material, biases that might disturb the data were considered and avoided before, during, and after the data was collected. Validity resolves around finding meaningful results by making sure interpretations are documented and logically consistent (Postholm, 2010, p. 170). Kvale og Brinkmann (2021, s. 292-293) uses the term analytical generalization and communicative validation, which means that a researcher should provide attentive descriptions of the interview process and the analysis. Based on this I have logged the process carefully and focused on the different choices I have made throughout the project. In the presentation of the project, from thematization to analysis and discussion, I have endeavored to maintain a high degree of transparency regarding various choices and assessments I have made, as well as potential sources of error.

The interview was conducted entirely in Norwegian. Firstly, my data did not focus on their oral competence as the relevant experiences were more significant. Secondly, the pupils were more comfortable speaking their first language. Kvale & Brinkman (2021, p. 97) state that the researcher needs to assess the interview situation before conducting the interviews to prevent the participants from experiencing stressful or harmful situations to their self-image. This was another factor that made me conduct the interviews in Norwegian instead of English. Since all the pupils that participated in this study were young and had dyslexia diagnoses, it could create a possibly stressful situation answering the question and talking in a second language. This could result in the pupils being unable to express their experiences fully. Lower secondary students are still developing their vocabulary in English. Instead, using Norwegian during the interview would lead to fewer misunderstandings and less pressure, making it easier for the pupils to voice their experiences without struggles.

3.3.1 Ethical considerations

As a researcher, you are faced with multiple ethical cases that must be considered during each part of the process during a trial. In this part of the chapter, I will provide information and explain the ethical considerations that appeared before, during, and after my research.

Before collecting data, my project was reported and approved by the NSD, The Norwegian Center for Research Data. This was because I would be handling a combination of personal data such as gender, age, and health information. Since the students were not over 16, they could not consent to the consent form on their own. The information letter and consent form can be found in the appendix section.

Since I would be handling sensitive health information, all data collected from the participant must be kept anonymous during the process. In order to achieve this, I followed the protocols given by NSD and UiT when preparing, collecting, and analyzing the data given by the pupils. During the research trial, all the data was stored on a school computer which was lent to me by the principal of the school where I conducted my study. The school computer is connected to the database that the school uses to store sensitive data. The reason for using this computer was that any information would not be stored on any database other than the one that already belonged to that specific school. I was given a file in the database to which only I had access, where the data remained during transcription and analysis. The voice and screen recording were also kept on this computer which was transferred directly from a school iPad used to screen record and voice record. All the recordings were uploaded directly with each pupil at the end of the session and deleted afterward from the iPad. The school computer was password protected and locked away in a secure locker when it was not in use.

3.3.2 Power relationship

When conducting research that involves qualitative methodology, issues of power need to be addressed. The role which the researcher gains give a lot of power to describe the experiences, opinions, and actions of others. This is because the researcher is the one who chooses the categories and terms which is in focus during the research. The researcher also

chooses whom to listen to, which perspectives to use, and what they criticize about their research and the fallacies they are considerate of (Gleiss & Sæther, 2021, pp. 51-52).

When researchers work with children, there is a natural asymmetric power relationship between the researcher and the pupils, since the adult naturally has more power than the pupil because of age and position as a researcher (Gleiss & Sæther, 2021, p. 52). According to Eder and Fingerson (2002, as cited in Kvale & Brinkmann, 2021, p.175), it is important that during an interview with pupils, the researcher should actively avoid being associated with a teacher. Being associated with a teacher could make the pupil believe there is only one correct answer to a question. When the pupil believes that there is only one correct answer, they might look for an answer that fits the narrative the researcher is looking for. Therefore, several of the choices I made before and during the research were made to prevent this fallacy from appearing.

The first choice I made was during the introduction to the study. I introduced myself to the pupil and informed the pupil of the trial structure. In order to lower the stress level of the pupil, I explained to the pupil that this project would have no effect on their English grade and that I would not be judging them for any language mistakes. I also explained that during the tasks and interview that no answer was correct or wrong to prevent them from looking for what they thought would be the right answer. The second choice I made was to ensure the pupils understood the questions in the interview. If the questions contain many professional terms unknown to the pupil, it becomes difficult for the pupils to answer them. This could result in a negative experience for the informant since they must ask the interviewer to explain the term (Gless & Sæther, 2021, p. 82). Therefore, I made sure during the interview to ask questions that a lower-secondary pupil would understand. My last choice was to include mostly open questions since I was interested in their experiences.

3.4 Lesson structure

The lesson was split into three parts: reading, tasks in MEE, and interviews. Only the first two parts of the study were part of the educational design, with the last part being an in-depth interview with the pupils on their experience with the task and Minecraft education.

3.4.1 The reading

In the first part of the lesson, the students were tasked with reading a chapter of the novel *The Absolutely True Diary of a Part-Time Indian* (Alexie, 2007). When choosing a novel for the first part of the study, I had to make sure that the novel would fit the criteria for competence level and teaching value. Since these students were still in lower secondary school, the text could not be too challenging for the students. This could interfere with the data since the pupils would struggle more than usual with the task, affecting their answers during the interview part of the study.

Since I have chosen only to include one piece of literature in the study, I had to pick a novel that fit my criteria regarding language and content. In the chapter "Reading literature," Carlsen includes a list of youth literature suited for pupils aged 8-13. Carlsen recommends the novels on the list because of their suitability for younger pupils in content and language. These novels have also been tested several times by teacher trainees and in-service teachers (Carlsen, 2020, p. 220). One of these novels was *The Absolutely True Diary of a Part-Time Indian*. Since Alexie Sherman writes descriptively when introducing new settings and characters, the novel could be simpler to use as a basis for working with Minecraft Education Edition.

The chapter they read in the first part of the study is chapter two, called "Revenge is my middle name". The chapter is an introduction to the narrator's best friend, Rowdy. Since it was a possibility that most of the pupils had not read the book before the study, I had to choose a chapter that was early on. The first chapter in the novel is quite short and only describes the main character and his family. The second chapter, on the other hand, explains more about the main character's life using the relationship with the people around him. Several scenes between the two characters in this chapter describe the relationship between the two friends, Rowdy and Arnold's families, and life at the reservation. The chapter includes many descriptions of the narrator, Rowdy, the reservation, and other minor

characters. There are several scenes both from their childhood as well as the present day where we get to know how the characters live, their family dynamics, and the difficulties in their life. All these scenes provide a lot of peripheral information, which is not a driving force in the story, but it is important in order to understand the emotion and choices of the characters throughout the book.

3.4.2 The tasks in Minecraft education

After reading the chapter, the students could use their iPad and open Minecraft Education. In this part of the study, the pupils had to complete two different tasks with the help and use of MEE. The tasks were given in English and Norwegian to reduce misunderstanding, which could affect the data collection. The pupils were given an empty world with access to creative mode, the optimal game mode for pupils wanting to build and create. This meant that they had infinite resources in the game.

The first task was as follows: “Use what you have read in the novel and recreate the scenes and characters in MEE”. The students still had access to the novel and could reread chapter segments in case they had forgotten or missed some details. A time limit was set to ten minutes to prevent the pupils from using the time to fool around and to make it more similar to a regular classroom task. The purpose of the first task was to observe the choices students with dyslexia made while solving the task in MEE. This observation of choices is important in order to see how students with dyslexia actively choose to use this new tool in tasked-based learning. Another reason that this first task was implemented was to see differences between the choices of a student with dyslexia that had used MEE or similar tools before, as opposed to those who were completely new to the concept.

The second task given to them was: “Use the characters and scenes you created and retell the story from one of the characters’ perspectives.” This is based on the previously mentioned DST task, which is based on the original idea by Røkenes (Røkenes, 2017, as cited in Carlsen, 2020, p. 215). The reason for implementing this task in the project was to see if the students could use what they had created in Minecraft education in combination with DTS and retell the chapter with their own words from a character’s perspective.

3.5 Collection of data

The data was gathered using a combination of observation and interview. The data from the observation was gathered using screen recording on the iPad during their task. An interview was conducted after the task, which focused on the experiences the pupils had while using Minecraft Education to solve the task.

3.5.1 Observation

The first method of collecting data was done during the first and second tasks performed in the digital platform MEE. The data was collected through observation. When collecting data through qualitative observation, it is common to take notes of the observations made during the clinical trial. This puts a lot of pressure on the observer to be attentive during the trial. As an observer, it is difficult to observe and write accurate and in-depth descriptions simultaneously (Dalland et al., 2021, p. 131). Further, Dalland et al. (2021) highlights that if the observation is conducted over multiple days, it is possible that the observation blends into each other and gives inaccurate data. (p.131).

Because of the nature of the project, I decided that using regular observation as a tool for data collection would be difficult. There were three reasons why I chose not to use regular observation. The first reason was that Minecraft Education Edition, a digital tool, allows students to make several rapid choices, which could be missed since I was the only observer present. The second reason was that the study would take part over several days. With several different pupils, fallacies such as mixing observation and writing undescriptive notes had to be avoided to not get incorrect data. The last reason was that the data were analyzed using thematic analysis, which consisted of rereading and rewatching the data several times to create codes and themes. Therefore, the analysis would be more reliable if I could rewatch the data several times to find and analyze these codes.

3.5.2 Screen recording for observation

A relatively new observation method within classroom research is the use of screen recording on iPad and computers. When the screen recording is active, all the movement on the screen is recorded and saved digitally. It does not record the pupil’s face or take voice recordings, making the data more anonymous during the process. Since the screen recording is saved

digitally, the researcher can rewatch the data multiple times. Screen recording as a tool for data collection gives unique opportunities to observe how pupils actively work with activities and tasks inside and outside the classroom (Beiler et al., 2021, pp. 239-240). The technical and empirical aspects of screen recording make the method resourceful when collecting data from a digital platform such as Minecraft Education Edition. Since screen recordings are of high resolution, it captures several aspects which could be missed during regular observation. Such as the pupil's pauses, switching between resources, and revision of text (Bailer et al., 2021, p.240)

3.5.3 Interview guide

When conducting a qualitative interview, an interview guide must be created to clarify the topic and the questions that will be discussed. An interview guide is created to describe how the interview will be conducted, and it clarifies the topics that will be discussed and creates a basis for the interview. The interview guide requires preparation to conduct an interview that acquires solid data with minimum interference. This preparation process is described by Kvale & Brinkman (2021, p,139) as the thematization of the interview.

The interview was split into four topics, each focusing on a specific aspect of the study. The questions focused on their experiences during the lesson and their previous experiences working with English literature and digital tools.

The first topic was based on the pupils' previous experiences. The questions in this part of the interview were asked to investigate if and how the pupil had previously used the digital tool ME in similar learning-based situations. This question was asked because previous encounters with MEE could affect the experiences students had with using the digital platform during the research lesson. Another part of this topic was to map their game literacy. Since Minecraft education is a digital tool that could feel overwhelming because of all the options you can do, it was essential to see if digital competence was a factor in pupils' experiences with the digital tool.

The second topic in the interview was based on the pupils' previous experiences with literature. In this part of the interview, I wanted to examine the relationship students with dyslexia have when reading and working with English literature. This part of the interview was to see if Carlsen's statement "motivation to read is directly influenced by a combination

of their present reading skills and previous experiences with literature" (Carlsen, 2020, p.211) had any relevance to how motivated students with dyslexia are when reading and working with English literature in the classroom and in their spare time.

The third topic of the interview was related to how the pupils experienced using Minecraft education during this trial and how it was to complete the task. The questions in this part of the interview were asked to gain information about pupils' experiences in this study. Some of the questions in this part of the interview were more open, allowing the students to talk more freely about their experiences.

The last part of the interview was asking the pupils how they would want to implement Minecraft education if they had the choice. This part of the interview was included to see how the pupils would like to work with the digital resource if they were the ones in charge. Since they had just completed the experience, they might have some ideas on how Minecraft Education could be used to create a positive experience with literature.

3.6 Analysis and reporting of data

In this part of the chapter, I will explain the methods and processes used when coding and analyzing the data collected from the screen recording observation and the interviews. This will include analysis methods, transcription, and creating codes and themes.

3.6.1 Thematic analysis

I chose to use a thematic analysis when analyzing the data material collected in this study. Thematic analysis is described by Braun & Clarke (2012) as a "Method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set" (p.57)

There are two main reasons why the thematic analysis was used as opposed to other analysis methods in this project. These reasons were accessibility and flexibility. Accessibility was important since this was my first encounter with qualitative research. Therefore, I needed a method that would be used to analyze the data material without being overly complex. Braun & Clarke (2012) argues that "thematic analysis provides an entry into a way of doing research which often can seem vague, mystifying and conceptually challenging and overly complex"

(p. 58). For much qualitative research, the researcher often needs to be familiar with complex theoretical perspectives within the field; background information and research are vital in qualitative research because they guide what the researcher sees in the data. In contrast to these types of qualitative research, thematic analysis is only a method of analyzing data rather than a full-on approach to conducting qualitative data. According to Braun and Clarke, this is a strength because it ensures the accessibility and flexibility of the approach (Braun & Clarke, 2012, p. 58)

When analyzing the data, I used the six-step guide to the thematic analysis presented by Braun and Clarke (2006). However, while the guide was useful in order to structure the analysis, it is also important to recognize that qualitative analysis guidelines are not rules, and following the basic precepts will need to be applied flexibility to fit the research questions and data (Patton, 1990 as cited in Braun and Clarke, 2006, p. 16). It is also important to note that the analysis did not proceed linearly. While I had a guide that I followed, analysis is not a linear process where you simply move from one phase to the next.

3.6.2 Transcription of the data

The first step of the analysis was getting familiar with the data. Clarke & Braun (2006) says that it is vital that you immerse yourself in the data to the extent that you are familiar with the depth and breadth of the content (p.16). Transcribing vocal data is an excellent way to familiarize oneself with the data (Riessmann, 1993, as cited in Clarke & Braun, 2006, p. 17). Since I had two data sets, one verbal and one visual, I decided to transcribe the interviews first because it was the primary data. Early on, I had to choose a transcription method and a transcription key (Appendix 9.1.3). The interview was transcribed using the intelligent verbatim transcription. As mentioned in Kvale & Brinkman (2021, p.212), strict verbatim transcriptions are only necessary in studies focusing on linguistic analysis. Since my study focused on their experiences, unnecessary information, and pauses were omitted.

Sometimes, longer parts of the transcription have been left out because of practical or ethical considerations. Examples of these considerations are situations where the informant talks

about information that could be used to identify the student, such as school names or unique situations. This is marked in the transcription using a star (*) and a short reason for removing it.

The screen recordings were analyzed in a different way than the voice recordings. Since the screen recordings were not the primary data, I decided not to spend as much time transcribing them as the interview. To extract data from the material, I carefully watched the screen recording and wrote analytic notes, which were later paired with the vocal transcription.

The data was transcribed right after the classroom trials were conducted. Since the interviews were conducted in Norwegian, they were also transcribed in the same language. If I had translated it to English while transcribing, it would have taken a lot of time and could lead to more translation inaccuracies. Therefore, the data presented in this thesis will have been translated into English after being transcribed into Norwegian. The translation process was carefully done to prevent the pupils' opinions or experiences from being lost.

3.6.3 Code creation and searching for themes

The second phase of the analysis was generating initial codes from the data. Codes, as described by Clarke and Braun (2006, p 18) as, a feature of the data that appears interesting to the analyst and is "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998, as cited in Clarke and Braun, 2006, p 18). After transcribing the data, I began rereading the transcription and sorting the different materials into meaningful groups. After coding the data into several groups, I had a long list of codes identified in my data material.

The next step of my analysis involved sorting the different codes into potential themes. While collating the themes, some of the previously created codes were discarded, while others became part of the main theme or sub-themes. In the next part of the process, the different themes were reviewed. During this phase, it became evident that some of the themes I had created did not have enough data or had too much overlap with different themes and became

discarded. Clarke and Braun (2006) say that “data within themes should cohere meaningfully, while there should be clear and identifiable distinction between themes (p. 20). Therefore, when reviewing my themes, I first considered whether they formed a coherent pattern. Once I was sure that my candidate themes adequately captured the contours of the coded data, I moved on to the next phase. In the next part of this phase, I considered the validity of individual themes. In order to do so, I reread the entire data set to see if the themes fit with the data set and to code any additional data that might have been missed in earlier stages of the coding process.

4 Findings and results from the analysis

This chapter presents the findings from the interviews and screen recording. To answer the research question on how students with dyslexia experience using Minecraft education when working with English literature, I have structured this chapter into different subchapters for each of the themes that will be presented. The result of the thematic analysis will be shown in the table below. The table shows which codes are present in each theme. In addition, I have briefly explained what each code means.

Theme	**Code**	**Short description**
Multimodal visualization	Visualization	Using visualization while reading or working with tasks
	Characterization	Using characterization as a form of visualization during the tasks
	Working memory	The use and difficulties of their working memory
Creativity	Thinking outside the box	Solved problems by using creative alternatives
	using own interpretations	Used their own interpretations during the task
	Motivation	Motivation because of creative freedom and sense of mastery
Game literacy	Lack of cooperation	Lacking the use of cooperation to solve the tasks
	Expertise	How expertise affected the task negatively
	Expectations	Mention of expectations pupils had to the game

I separated the quotes extracted from the dataset and my interpretations of these quotes, as it allows the reader to gain a high degree of insight into the data material and accessibility to assess it.

4.1 Multimodal Visualization

In Chapter 2, it is discussed that video games can increase memory, sense of space, and perception through visualization activities. The codes for this theme were divided into three. The first one focuses on visualization. Visualization in this chapter focuses on the mental imagery that appeared for the pupils while reading or solving the task. The second code focused on characterization. In this study, characterization focuses on how the pupils used visualization to recreate the characters in the novel. The last code was memory and working memory. This code focused on whether Minecraft education affected students' working memory.

4.1.1 Visualization

Several of the pupils that participated in the study said that when they were reading the novel, the visualized scenes in their head while reading.

Pupil 4 answered.

> **Pupil 4** Since I knew I was going to make the scene in Minecraft, I tried to create them in my head while I was reading, so that I knew which one I wanted to make after I was done reading.
>
> **Interviewer:** Do you usually imagine scenes in your head while reading?
>
> **Pupil 4** Sometimes I do it, but sometimes it is difficult when I am struggling to read and have to focus on what I am reading instead". (pupil 4)

This pupil's experience might indicate that visualizing while reading is often difficult for students with dyslexia. However, when students finished reading and were building instead both pupils 2 and 5 stated that it became much easier to think about the scenes.

> It was a bit difficult to build in the beginning, but once I began to build it became much easier to do so, because I began to visualized it in my head how it looked, and I only had to go back a few times to see in the book" (pupil 2)

> When I was building, I began to reflect in my head about what I have read so that I could use it to create the scene. When I reflected on it in my head and visualized it I felt it became much easier to remember the scene." (pupil 5)

These experiences show that while the students struggled with visualizing the scenes while reading, it became easier once they began building the scenes in Minecraft education. Being tasked with physically visualizing the scene made it easier to visualize aspects in their own head. When questioned if they used to have visualization tasks after reading literature, one pupil answered:

> We don't really have task where we have to visualize. it is usually tasks about the characters and what happens in the story. (Pupil 10)

4.1.2 Characterization

One form of visualization which was used during this study was color characterization. Pupil 2 decided to use colored blocks to represent the different characters. During the task the pupil created the three characters (figure 1): Rowdy, Rowdy's father and one Rowdy's mother. The dark brown represents Rowdy's father, the red one Rowdy and the white one Rowdy's mother.

Figure 1. Screenshot from pupil 2 recreation of Rowdy's house.

When the pupil was asked the reason for creating characters using colors, the pupil explained:

> I like to use colors when drawing or creating characters in Minecraft. It makes it easier for me to remember who they are and how they are as people. […] Rowdy's father is made of dark colors because he is mean and hits Rowdy. His mother is white because she does nothing and is afraid. And Rowdy is red because he is afraid and sad but trying to hide it. (pupil 2)

Using colors to identify the personality of different characters is a way of characterizing them. By giving the different characters different colors, representing their personality, the student had to enter the minds of the various characters and consider events from their alternative perspectives to sort them into different colors. In this case, the student used DST before being instructed to do so. Further, the pupil said:

> Pupil 2: When I had decided on which color fit with which character it became much easier to understand the meaning of the story."
>
> Interviewer: was it difficult to retell the story using the scenes you had created"
>
> Pupil 2: yes, in the beginning I could not really tell anything, but when we came to the color characters it became easier to retell." (pupil 2)

4.1.3 Working memory

As explained in Chapter 3.1, some students with dyslexia often struggle with working memory while reading. Sometimes this can lead to difficulties in interpreting passages in a text. In my findings, one example that illustrates this point well was when Pupil 1 was recreating the scene where the main character was watching what he calls the "chicken dancers." In the scene, the main character says:

> Let's go watch the chicken dancers, I said. I think the chicken dancers are cool because, well, they dance like chickens. And you already know how much I love chicken. These dancers are not chickens, but Native Americans dancing a dance which makes them look like chickens (Alexie, 2008, p. 15)

In reconstructing the scene, the pupil interpreted this as the main character watching chickens dance instead of humans. This is shown in the screen recording (figure 2), where the pupil created a stage and audience for the chickens.

Figure 2. Screenshot from Pupil 1 creation of the chicken dancers.

When asked about the decision to recreate the scene this way, the pupil replied:

> In the book it said that the person was watching chicken dancers, therefore in my head I had a picture of chickens dancing on a stage while people were watching them dance. (pupil 1)

This supports the theory that some students with dyslexia have working memory deficits when they encounter tasks that require a high demand of processing skills, such as inhibiting conflicting information and updating new and relevant information when presented (Alloway, 2006, p. 3). Because the pupil first read that they were chicken dancers and later in the sentence that they were not actual chickens but human people dancing, the pupil was faced with conflicting information. The pupil then created the first picture from their memory, which did not match the author's message.

However, another pupil also recreated the same scene as pupil 1. This pupil had not experienced the same comprehension error as the other pupil. In their build (figure 3), the pupil created a Native American dancing like a chicken. This pupil had played a lot of

Minecraft previously and was, therefore, less focused on adapting to the program and instead on rereading different sections to avoid mistakes while building.

Figure 3. Screenshot from Pupil 6 creation of the same scene as pupil 1.

This shows that not all students with dyslexia experience the same comprehension mistakes. These mistakes could be avoidable but requires pupils to actively train their reading comprehension.

4.2 Creativity

Minecraft education as a digital sandbox allows pupils to use their creativity while recreating the scenes. Creativity in this theme focuses on the different choices students make during their tasks to solve problems that may arise. The codes in the chapter were *thinking outside the box, using their own interpretations* and *motivation.* Thinking outside the box focuses on the pupil's ability and experiences with solving difficulties, such as creating characters. Using their own interpretation focused on pupils' experiences with using their own ideas while creating the scenes. Motivation focuses on what makes the students more motivated while reading and working.

4.2.1 Thinking outside the box

As my findings show, Minecraft Education edition enables students think outside the box when recreating the scenes. Since Minecraft cannot make characters in the game, the pupils

had to think outside of the box in order to recreate the scenes where characters were involved. The screen recordings showed the pupils had several different ways of solving this problem.

The ten students used three different techniques to create characters in the novel. The first one was creating characters using blocks in different colors, as pupil 2 did in chapter 4.1.2 (figure 1) **.** The second technique used the non-playable characters named villagers to represent the different characters. We see this used by pupil 3 in chapter 4.2.6 (figure 7)**.** The difficulty with this approach is that the villagers move around independently, and it is, therefore, difficult to keep them in the designated place. Pupil 3 experienced this problem and had to use his creativity to find a solution to keep them in place. To solve this problem, the pupil built fences around them, so they could not move away from the scene. The third technique used to solve the problem was using the "armor stand" item to make a figure that looks like a character. In the screen recording (figure 4), we see pupil 9 use the armor stand to recreate the scene where Rowdy hits the white minivan with his fist. The armor stand is supposed to represent Rowdy, and the sword in his hand represents him destroying it.

Figure 4. Screenshot of Pupil 9 using the armor stand to recreate Rowdy destroying the white van.

Afterward, when the pupils were interviewed, several of them mentioned that they experienced being able to use their creativity to solve the different problems they encountered.

4.2.2 Using own interpretations

Pupil 2 mentioned in their interview that they had a positive experience using their own interpretation of a scene to solve the task.

> It was fun to think outside the box, since the scene I chose to create did not really have many descriptions of how it looked. Since it was not that many descriptions in the scene, I was able to decide a bit on my own how I thought I look. Like I chose to make a house with only one room, even if it was not mentioned I feel like it was inspired from the story. (pupil 2)

Pupil 2 had chosen to recreate Rowdy's house, which is mentioned in the chapter but not described. Because of this, the pupil had to be creative to visualize how Rowdy and his family lived. Creating scenes in the novel which are not described takes an extra amount of mental processing since the student has to recreate a scene with less concrete information and more abstract.

4.2.3 Motivation

Several of the students answered that they had difficulties with motivation when it came to reading. Almost all the pupils answered that they had little to no motivation with reading because they found it difficult. One example of this was pupil 10 when a question about reading habits answered:

> I don’t like reading any more, I used to be a big Harry Potter fan, so I tried to read a Harry Potter book, but I felt that it became way to long, and just became boring. [---] I think that its much better to watch movies instead if I am going to read a book. (pupil 10)

Motivation to read longer stories is difficult for students with dyslexia. In this case, the pupil could not finish a book that he was interested in because it became boring. Therefore, making reading motivational is a difficult task.

In my findings, most of the pupils had a positive experience with the task related to the reading, and several of the students answered that they would find reading books much more motivational if they could combine it with Minecraft Education. Pupil 3 answered in the interview that:

> If I could choose, I would use Minecraft in the most things, because I find it much more fun. You get to play at the same time as you work with school. (pupil 3)

These findings show that pupils like the combination of video games and literature. A reason for this could be that having the students experience some sort of mastery when building influenced the reading experience. In relation to this, pupil 9 said;

> It was way better to read when I knew I would play Minecraft afterwards, because I knew that while it was difficult to read, I would use what I read to do something fun afterwards" (pupil 9)

4.3 Game literacy

The theme of game literacy is divided into three different codes, which I used to analyze the data in this theme. The purpose of this subchapter is to view how pupils' expectations from playing video games affect their experiences. The first code is lack of cooperation, which focuses on pupils' opinions regarding implementing multiplayer. The second code will focus on how expertise might lead to challenges when it comes to using the tool. The last code will focus on handling students' expectations concerning the possibilities of the video game.

4.3.1 Lack of cooperation

Familiarity with a digital tool often leads to the students having certain expectations when using a video game in class. In their interviews, all of the students answered that they had previous experience with using Minecraft or Minecraft education. Because of this, the pupils already had their ideas and expectations before using the game. However, these expectations did not always match the boundaries set for this task. One of these expectations was the use of cooperation. Several pupils were disappointed that they could not cooperate with someone during the task. Pupil 5 said:

> I find it boring to play Minecraft alone, it's much more fun when you can play with your friends, because that is what I do when I play it at home. (pupil 5)

Pupil 7 also had a similar answer in their interview:

> I wish that we could work together with someone on this task, for example one person built the scene from text while the other person tried to guess which scene they have created? (pupil 7)

Since the pupils were used to cooperating when playing the game at home, an important aspect was removed from the game, according to the pupils. During the building, the pupils were also curious to know what the others had built and what scenes they had decided to use. One example of this was pupil 9, who said:

> Can you tell me what scenes the other people have built, so I can get some inspiration to what I want to build (pupil 9)

These quotes show that collaboration and sharing ideas and opinions are important for pupils, even when working on a videogame. Integrating collaboration and multiplayer could positively affect pupils and facilitate learning, but it could also become problematic.

4.3.2 Expertise

Some students are more game literate. There is a risk for these students to become more interested in showcasing their expertise instead of using it to facilitate learning (Utdanningsdirektoratet, 2018, p. 12). This was also the case for pupil 5. During the building, pupil 5 became distracted and wanted to show how to summon an "agent" in Minecraft Education. The agent is a non-playable character that looks like a little golem that the players can summon to help players learn coding by getting players to code the actions on it. The agent can be programmed to execute several tasks, like planting and harvesting, mining, chopping trees, and building. In the screenshots (figure 6 and 7), the pupil got distracted while building and began summoning the agent.

Figure 5 and 6. Screenshot of pupil 5 summoning the agent.

In response to being asked the reason for summoning the agent the pupil answered during the interview

> I wanted to show you how you could summon the little golem in Minecraft Education. I learned to do it last time we were playing in school. You can make him follow you around" (pupil 5)

This example shows that high game literacy also has the potential to result in a negative learning experience. The pupil wanted to showcase his expertise which disrupted the original task he was performing. Giving students a lot of freedom and tools to use can boost creativity and motivation but also be a distraction.

4.3.3 Expectations

One of the pupils experienced that MEE did not give him the tools to recreate the scene as he imagined. The scene the pupil was recreating was a snowball fight between Rowdy and some kids, which led to a fistfight because one of the kids threw ice at Rowdy.

Figure 7. Screenshot of pupil 3 recreating the snowball fight between Rowdy and his classmates.

The screenshot (figure 7) shows a recreation of the snowball fight made by pupil 3. The pupil had created a forest with snow on the ground to represent the snowball fight. He used villagers, who are non-playable characters, to represent the people in the scene. The pupil had recreated the scene how he visualized it; however, he could not make them throw snowballs at each other.

During the interview, he expressed some frustration when asked if there were any difficulties he had encountered:

> There were some things that were difficult, for example making the characters throw snowballs at each other. You cannot make characters in Minecraft throw snowballs at each other; it was therefore difficult to retell the scene when I was finished building. (pupil 3)

Since the pupil could not recreate his internal visualization of the scene exactly how he wanted to do it, he found it more difficult to retell the scene as well. This experience shows that while Minecraft education edition has several tools to create and recreate, it also has limitations to what pupils can create. These limitations could, for some pupils, result in some frustration during the recreation process of the scenes.

5 Discussion and conclusion

In this chapter, I will gather the treads from the analysis in Chapter 4 and discuss them from an overall perspective. The overall research question for this project is to shed light on the experiences of dyslexic students when using Minecraft Education to work with English literature. To shed light on these experiences, they were separated into three themes: multimodal visualization, characterization, and game literacy.

For students' experiences with Multimodal visualization, we see that one area in which pupils struggled was visualizing while reading. In their experience, the problem was that they had to focus on reading, and because of this, it became difficult to visualize simultaneously. This problem is often not as significant for skilled readers since skilled readers usually visualize story content during reading as an ongoing process (Woolley, 2011, p. 83). Therefore, school practices usually do not focus on visualization since it is expected that pupils can visualize while reading. Because of this, students with dyslexia who struggle to visualize scenes do not get sufficient training in visualizing. These findings are supported by Woolley (2011), who claims that training visualization among students is a practice that has been largely neglected in classrooms (p. 82).

Without sufficient training in visualization, it becomes more difficult for pupils who struggle with these aspects to achieve the same level of automatic visualization as skilled readers. If teachers assume that pupils automatically visualize while reading, students with dyslexia that struggle with visualization will not be given enough visualization strategies or practice in order for them to achieve automatic visualization. Since LK20 states that "the school should adapt the teaching so that all pupils have the best possible learning outcome from the ordinary teaching," literature learning needs to include more visualization tasks to facilitate students that struggle with visualizing while reading.

The findings clarify that students experience several benefits from using Minecraft Education to visualize and create characters. Using colored blocks to sort characters into different categories allows students to decode and analyze these characters on a deeper level. When the students have to analyze the mental processes of different characters and think from their perspective, it can help children develop more mature and complete conceptions of such texts

(Shanahan & Shanahan, 1977, p. 677). We see this result with pupil 2, who had to think of the relationship between Rowdy and his family from his perspective to sort the characters into their color group. The pupil implemented digital storytelling without instruction by characterizing the characters using colors in Minecraft Education. This experience shows that Minecraft Education has the potential to be used as DST.

While visualization in Minecraft education can help students with dyslexia understand and remember events and details from a story, it is also prone to comprehension errors. When students with dyslexia are reading, they use more of their working memory than regular readers. Since working memory plays a significant role when students analyze and interpret literature (Alloway, 2006, p. 3), comprehension errors are more likely to occur for students with working memory deficits. This was shown by pupil 1 when he chose to recreate the "chicken dancers." This finding shows that comprehension mistakes can affect students' internal visualization of a scene. Sadoski et al. (1997) point to abstract sentences and metaphors as especially difficult for pupils with dyslexia (p.7). In this case, the author used "Chicken dancers" as a metaphor for Native American dancing, leading to the student's comprehension error. This finding showed that using Minecraft Education after reading was insufficient to remove comprehension mistakes. However, it made it possible to observe them.

Visualizing the comprehension error in Minecraft education made it possible to observe that an error had occurred. Since both pupil 1 and pupil 6 created the same scene, we were able to see that comprehension errors are not equal for all students with dyslexia. Because of this, it is difficult for teachers to see if a pupil has experienced a comprehension error while reading. However, when the pupils are tasked with visualizing the scenes in Minecraft Education, it becomes easier to see if a student has understood the author's message based on what they chose to build and how they retell the story from their creations. Therefore, Minecraft as a tool may not prevent reading comprehension mistakes. However, it can make it easier for teachers to observe students' mental images and facilitate them if any error occurs.
With the question of students' experiences with creativity, we see that Minecraft education can promote it through the freedom of choice and the creative affordances which comes with using a digital arena. Several pupils decided to think outside the box to solve problems they

encountered during the building. There were several scenes which they could choose from, and no specific instructions that they had to choose scenes with characters. Despite this, almost all the pupils chose to recreate scenes that included characters, even though it requires more effort since the players cannot place characters similarly to how they place blocks. Instead, when creating characters, pupils need to use their creativity and find other ways to create a visualization of a character. Again, in our findings, we see that characters are central to both visualization and creativity. We see that the pupils are most creative when recreating the characters. Since the characters are not described as specific as, for example, buildings, the pupils need to use their interpretations combined with the information given in the novel to create physical representations of these characters.

The pupils find using Minecraft Education motivational because it makes them feel like they were able to accomplish something. When they could show their mastery, the aspect of reading did not seem demotivated and boring. This supports the theory that using multimodality allows students with different abilities to display their strengths and talents in areas usually not used in English class (Lund & Villanueva, 2020, p.136). Since they were able to use their previous experience with Minecraft and feel mastery while building, they experienced that a subject that they usually find difficult finally had an aspect in which they could show off their strength. These findings also showed that students were positive about using their hobby combined with a boring activity. This goes against Udirs's (2018) statement that some students might find it frustrating that their hobby was used as a teaching tool.
In my findings, the pupils mentioned a lack of cooperation as one negative aspect of the experience. Since all the pupils had played Minecraft or Minecraft education previously, they had expectations as to how it would be used to solve tasks. While Minecraft has both single-player and multiplayer, the social aspect of video games is important to pupils. According to Barn og Medier (Medietilsynet, 2022), six out of ten children say that playing video games is a social activity and a way to keep in touch with their friends (p. 17). We see that children value the social aspect of gaming as it is present in *Fortnite* and *Roblox*, which, combined with *Minecraft*, are the top three games among children aged 9-18. (Medietilsynet, 2022, p. 13).

While incorporating cooperation could help facilitate pupils, it could lead to problems for teachers since incorporating cooperation and multiplayer could lead to what Berg Marklund (2015) describes as “gaming behaviors” (p. 668). Further, Berg Marklund argues that these challenges result from students’ perceptions of games and gaming, which leads to unwanted behavior during collaborations. (p.664) When incorporating multiplayer into these tasks, the separation between spare time activity and school tasks is reduced. As a result, pupils might focus less on the learning aspect of the game and instead bend the game mechanics to show their expertise or to disrupt other players.

Showing their expertise instead of doing the task is one of the ways that “gaming behavior” disrupts learning for the students. As we see with pupil 5, who had high game literacy, showing off their expertise became a distraction. Since the pupil was familiar with the game, doing the regular task became boring after a while, and instead, the pupil wanted to show competence instead of finishing the task. These findings also match the previous study by Berg Marklund (2015), who argued that engaging students with high competence was challenging. This experience shows that pupils that had played a lot of Minecraft did not necessarily use the tool more proficient than those who had used it less.

This study has shown us that Minecraft education has much potential for being used in the classroom as it benefits pupils with dyslexia and teachers who want to scaffold these pupils. Visualization and creativity are aspects that are often overlooked in literature teaching. The affordances of Minecraft Education makes it possible to incorporate these without removing the educational aspect of it. However, teachers must handle pupils’ expectations before and during these lessons, as pupils will often use these expectations while playing video games. These expectations might benefit students if handled correctly or result in frustration and demotivation if not.

While this study has shown the benefits Minecraft Education can have on students with dyslexia, more research is still required. The pupils had several recommendations to make Minecraft Education even more motivational. The main recommendation is the implementation of multiplayer. In a regular class setting, a teacher will rarely have as much time to focus on individual pupils as I had during this study. As a result, teachers could be

forced to use Minecraft Education with several pupils simultaneously. Because of this, using multiplayer in combination with the task needs more research. Cooperative learning combined with Minecraft education could be beneficial for dyslexic pupils. As highlighted by Marcos et al. (2020), incorporating cooperative learning increased creativity scores for pupils (pp. 9-10). However, the effects could also be negative. Video Games require a great deal of guidance from teachers to prevent "gaming behavior," which becomes more difficult with implementing multiplayer. Therefore, future studies need to assess if the benefits of adding multiplayer to this lesson outweigh the negatives.

Another aspect that also would require further research is the effect of implementing Minecraft education for novice pupils. Since all the students that were part of this study had previous experience with the game, none of my findings could focus on the experiences of novice pupils with dyslexia. These experiences could deviate from the experiences of the pupils that knew the game mechanics. These pupils might not experience the same sense of mastery when completing the task, as they could struggle with the mechanical aspect of the game. Therefore, it is interesting to see if novice students would still benefit from this lesson or if the game mechanics would be too advanced and hinder learning.

The last aspect which would be interesting to study further is if Minecraft Education could benefit students without dyslexia. Lack of motivation to read is not a phenomenon that is specific to pupils with dyslexia. Several students lack motivation for reading and working with literature, and Students with dyslexia might not be the only ones that would benefit from more gamified literature teaching. Researching the use of the tool among all students would give us insight into how this could be introduced on a common basis in the English classroom. This could benefit pupils with dyslexia since it would implement more visualization-based tasks for all pupils.

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7 Appendix

7.1 Information letter and consent form

Vil du delta i forskningsprosjektet

"How do students with dyslexia experience using Minecraft Education to work with English literature"

- ☐ Dette er et spørsmål til deg om å delta i et forskningsprosjekt. Fokuset i prosjektet er å fremme motivasjon og læring i engelsk faget for elever med dysleksi. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Hvorfor får du spørsmål om å delta?

Vi spør deg om å delta fordi du er elev på en ungdomsskole og har lese- og skrivevansker (dysleksi).

- ☐ **Formål**

Formålet med prosjektet er å undersøke hvordan Minecraft Education kan brukes i undervisningsopplegg for dyslektiske elever i møtet med engelsk litteratur. Kunnskapsløftet 2020 sier at skolen skal legge til rette for læring for alle elever og stimulere den enkeltes motivasjon, lærelyst og tro på egen mestring. Undervisningsopplegget er laget for å skape motivasjon og interesse for elever som opplever oppgaver om engelsk litteratur som krevende og demotiverende. Ved å bruke Minecraft Education i engelsk undervisningen, kan dette oppfylle kravet om at skolen skal tilrettelegge undervisning for elever med dysleksi.

Dermed ønsker vi å undersøke hvordan dyslektiske elever bruker Minecraft Education for å jobbe med engelsk litteratur. For å gjøre dette vil vi observere og intervjue ti elever med

dysleksi, som er interessert i å være med å teste ut et undervisningsopplegg med Minecraft Education. Problemstillingen som er i fokus vil derfor være: På hvilke måter kan et undervisningsopplegg som bruker Minecraft Education støtte motivasjon og læring i engelsk faget for elever med dysleksi.

Prosjektet utgjør min masteroppgave ved lektorutdanning 8.-13.trinn i engelsk, ved UiT Norges Arktiske Universitet i Tromsø.

Hvem er ansvarlig for forskningsprosjektet?

UiT Norges Arktiske Universitet i Tromsø er ansvarlig for prosjektet.

- ☐ **Hva innebærer det for deg å delta?**

Om du velger å delta i prosjektet, innebærer det at du deltar på et undervisningsopplegg som varer i omtrent 30 minutter. Du vil bli tatt ut av en undervisnings økt eller studietid-time for å delta prosjektet. Dette vil bli gjort med tillatelse av faglærer som har undervisning den timen, og du vil ikke få fravær for denne timen. Prosjektet vil være delt opp i tre forskjellige deler: 1) I den føreste delen skal du lese et utdrag fra boken *The Absolutly True Diary of a Part-time Indian* skrevet av Sherman Alexie. Du vil så 2) gjøre oppgaver i Minecraft Education, knyttet til teksten. Etter dette vil du 3) bli intervjuet, og få spørsmål knyttet til undervisningsopplegget.

Intervjuet vil bli tatt opp på lydopptak, og det vil også bli tatt skjermopptak av nettbrettet under undervisningssekvensen.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg. Du vil ikke bli vurdert under noen omstendighet i prosjektet og det vil ikke ha noen innvirkning på din karater i engelsk faget eller andre fag.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Materialet vil bli samlet inn, bearbeidet, lagret og brukt av undertegnede, og bli oppbevart på UiT Norges Arktiske Universitet. Veilederne mine vil også ha tilgang til opplysningene.

Navnet og kontaktopplysningene dine vil jeg erstatte med en kode som lagres på egen navneliste. Denne vil oppbevares adskilt fra øvrige data. Lydopptakene vil tas med godkjent utstyr, og lagres på forskningsserver. Skjermopptaket vil bli tatt på en av NTG-U sine iPader og ikke bli lagret noen annen plass enn på NTG-U sin database.

Alle deltakerne vil anonymiseres og det vil ikke være mulig å bli gjenkjent i publikasjonen.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Opplysningene anonymiseres når prosjektet avsluttes/oppgaven er godkjent, noe som etter planen er i mai 2023. Materialet vil utgjøre utgangspunktet for en masteroppgave som skal leveres i mai 2023 og presenteres muntlig på en masterkonferanse ved UiT Norges Arktiske Universitet samme måned.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra UiT Norges Arktiske Universitet har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke opplysninger vi behandler om deg, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om deg som er feil eller misvisende
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger

Hvis du har spørsmål til studien, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med: Jørgen Hougen

Epost: jho078@uit.no

Telefon: 90154449

Eller personvernombudet på UiT

Epost: personvernombud@uit.no
Telefon: 776 46 153

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen Jørgen Hougen

Prosjektansvarlig

Laura Castor

Telefon: +47 77 64 65 68

Email: Laura.castor@uit.no

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet ***[How do students with dyslexia experience using Minecraft Education to work with English litterature]***, og har fått anledning til å stille spørsmål. Jeg samtykker til at mitt barn:

- ☐ deltar i et undervisningsopplegg
- ☐ deltar i et intervju

Jeg samtykker til at mine barns opplysninger behandles frem til prosjektet er avsluttet

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(Signert av prosjektdeltaker, dato)

7.1.1 Interview guide

Questions to *"Students with dyslexia's experiences when using Minecraft Education Edition to work with English literature"*

Information

Topic 1: Digital kompetanse

Har du spilt Minecraft eller mincraft education før dette forsøktet?

Har du erfaring med å spille videospill på din fritid, hvis du har, hvilke typer videospill

Topic 2. Litteratur

Liker du å lese litteratur på fritiden. Hvorfor/hvorfor ikke?

Hvordan jobber dere vanligvis med engelsk litteratur i engelsktimene

Topic 3: opplevelser av forsøket

Hvordan var det å bruke minecraft education etter du har lest en tekst? Forklar hvordan

Hvordan var det å gjenskape scenene som du hadde lest om?

Var det vanskelig og huske detaljer, eller enkelt når du skulle bygge dem

Hvordan var det å gjenfortelle det du hadde lest ved bruk av scenene du hadde bygget.

Topic 4: hvordan bruke det i klasserommet

Hadde det vært mere interessant å jobbe med engelsk litteratur hvis du hadde fått mulighet til å lage presanasjoner eller løse oppgaver i minecraft education mens du leste? Forklar hvorfor/hvorfor ikke

Hvordan ville du ha brukt minecraft education i engelsk undervisningen

7.1.2 NSD

23.01.2023, 10:16 Meldeskjema for behandling av personopplysninger

Sikt

Meldeskjema / Minecraft Education as a teaching tool in English literature for student... / Vurdering

Vurdering av behandling av personopplysninger

Referansenummer
883259

Vurderingstype
Standard

Dato
23.01.2023

Prosjekttittel
Minecraft Education as a teaching tool in English literature for students with dyslexia

Behandlingsansvarlig institusjon
UiT Norges Arktiske Universitet / Fakultet for humaniora, samfunnsvitenskap og lærerutdanning / Institutt for språk og kultur

Prosjektansvarlig
Laura Castor

Student
Jørgen Hougen

Prosjektperiode
01.01.2023 - 17.05.2023

Kategorier personopplysninger
Alminnelige
Særlige

Lovlig grunnlag
Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)
Uttrykkelig samtykke (Personvernforordningen art. 9 nr. 2 bokstav a)

Behandlingen av personopplysningene er lovlig så fremt den gjennomføres som oppgitt i meldeskjemaet. Det lovlige grunnlaget gjelder til 17.05.2023.

Meldeskjema

Kommentar
OM VURDERINGEN
Sikt har en avtale med institusjonen du forsker eller studerer ved. Denne avtalen innebærer at vi skal gi deg råd slik at behandlingen av personopplysninger i prosjektet ditt er lovlig etter personvernregelverket.

TYPE OPPLYSNINGER
Prosjektet vil behandle alminnelige personopplysninger, og særlige kategorier av personopplysninger om helseopplysninger.

UTDYPENDE OM LOVLIG GRUNNLAG
Prosjektet vil innhente samtykke fra foresatte til behandlingen av personopplysninger om barna. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte/foresatte kan trekke tilbake.

UTDYPENDE OM LOVLIG GRUNNLAG

Prosjektet vil innhente samtykke fra foresatte til behandlingen av personopplysninger om barna. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte/foresatte kan trekke tilbake.

FØLG DIN INSTITUSJONS RETNINGSLINJER

Vi har vurdert at du har lovlig grunnlag til å behandle personopplysningene, men husk at det er institusjonen du er ansatt/student ved som avgjør hvilke databehandlere du kan bruke og hvordan du må lagre og sikre data i ditt prosjekt. Husk å bruke leverandører som din institusjon har avtale med (f.eks. ved skylagring, nettspørreskjema, videosamtale el.)

Personvernтjenester legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).

MELD VESENTLIGE ENDRINGER

Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til oss ved å oppdatere meldeskjemaet. Se våre nettsider om hvilke endringer du må melde: https://sikt.no/melde-endringar-i-meldeskjema

OPPFØLGING AV PROSJEKTET

Vi vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

7.1.3 Transcription key

Betydning	**Tegn**
Kort pause	[-]
Lang pause (mer enn 3 sek)	[---]
Utydelig	(…)
Avbrutt tale (egenavbrytelse eller av andre)	/
Latter	@
Trykk	*kursiv*
Lavere stemmeleie	{}
Metakommentarer	[]
Utelatt en større del fra transkripsjon, grunnet irrelevans eller etiske hensyn	*