Teaching about indigenous people with Minecraft Education.

How can Minecraft Education be used as a tool to teach about indigenous people in the English-speaking world in Norwegian lower secondary schools?

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Abstract

This thesis investigates the potential of Minecraft Education (ME) as a tool for teaching Norwegian lower secondary school pupils about indigenous people, with a particular focus on the Māori people of New Zealand. A five-week intervention was carried out in two eighth-grade English classes in the south of Norway, where three weeks were dedicated to playing ME in the "Ngā Motu" world to learn about the Māori people and their culture. The study uses a mixed-methods approach, and the data collected were used to evaluate the effectiveness of ME in addressing the research questions. The findings indicate that under the right circumstances, ME can be a valuable resource for teaching pupils about indigenous peoples, while also offering additional benefits in areas such as language learning, social and emotional development, and increased motivation, interest, and engagement for learning.

Keywords: *Minecraft Education, indigenous people, Māori, gaming, digital tools, language teaching, language learning, ESL classroom*

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1.0 Introduction

In an increasingly digital world, many teachers seek to introduce new teaching methods to engage pupils and enhance their learning experiences. As a teacher in Norwegian lower secondary school, I am interested in finding alternative teaching approaches to engage pupils in their learning. One such approach involves pedagogical integration of computer games into the educational curriculum. This thesis investigates the potential of using Minecraft Education (ME) in the English subject to teach pupils about indigenous people, with a particular focus on the Māori people of New Zealand. A five-week intervention was carried out in two eighth-grade classes in a lower secondary school in the south of Norway, where the pupils played in the pre-made "Ngā Motu" world in ME for three weeks as part of their learning process. Ngā Motu is a world within ME which gives pupils an opportunity to learn about traditional Māori culture, traditions, and practices.

The main goal of this study is to explore how ME can be used to teach pupils about indigenous people in the English-speaking world, with a specific focus on increasing their understanding of the Māori people of New Zealand and their culture. Furthermore, the study explores other potential benefits of integrating computer games into education, such as language learning, increased interest, motivation and engagement, and the development of social and emotional learning. Additionally, the importance of the teacher's role in facilitating and guiding pupils in the use of computer games for learning is emphasised. Moreover, the study investigates the effectiveness of ME as a learning tool for understanding indigenous people but also contributes to the broader discussion on the introduction of computer games in education.

Through the work with my thesis, I have worked with three research questions:

RQ 1: How can ME be used to teach about indigenous people in the English-speaking world?

RQ 2: Which other benefits can the use of ME have in the classroom?

RQ 3: How important is the role of the teacher when integrating computer games in the classroom?

Finally, this thesis aims to contribute to the knowledge on the potential of digital tools such as computer games in education. It is my hope that this research will inspire other teachers to introduce new teaching methods in their classrooms and help create an engaging and motivating learning atmosphere in their classrooms.

The thesis is organized as follows: Chapter 1 serves as the introduction. Chapter 2 presents a review of literature and theory examining the use of computer games in teaching. Chapter 3 outlines the research methodology which was used for this study. Chapter 4 is a presentation of the results. Chapter 5 is a discussion of the theory and the results. Chapter 6 concludes the thesis and includes suggestions for future research.

2.0 Theoretical background

This chapter investigates the theoretical framework for using computer games in education. Sections 2.1, 2.2 and 2.3 present some of the theoretical framework connected to the use of gaming in schools. As this thesis concentrates mainly on the use of ME and how it can be used in teaching about indigenous people in Norwegian lower secondary schools, section 2.4 presents theory connected to the use of ME in education and previous studies of this topic. Section 2.5 presents challenges and issues to using computer games in education.

2.1 What is gaming?

According to the Norwegian Media Authority's report on gaming from 2022, 76% of Norwegian children between the ages of 9-18 engage in gaming on a regular basis, using various platforms such as PCs, PlayStations, mobile phones, and other devices (Norwegian Media Authority, 2022). The results show that 59% of girls in this age group are participating in gaming activities, compared to 92% of boys (Norwegian Media Authority, 2022). These number indicate that the majority of pupils in lower secondary school are familiar with gaming culture and its various forms.

To discuss what gaming is and how it is used in schools, it is necessary to define the term "gaming". For the purposes of this thesis, the definition from Techopedia.com is useful:

> Gaming refers to playing electronic games, whether through consoles, computers, mobile phones or another medium altogether. Gaming is a nuanced term that suggests regular gameplay, possibly as a hobby. Although traditionally a solitary form of relaxation, online multiplayer video games have made gaming a popular group activity as well (Techopedia.com).

Gaming is commonly thought of as a spare time activity, but in this thesis the term will be used in relation to the playing of computer games in education and a form of pedagogical teaching method that can provide new ways of learning in the classroom.

2.2 Gaming in schools

In the article "Computer games in school" the Norwegian Centre for ICT in Education writes that there are several areas where computer games can be used in schools. Computer

games “can be tied to educational frameworks and digital skills, but also the other basic skills (reading, writing, numeracy, and oral skills)” (Skaug et al., 2017, p. 7, my translation). In other words, gaming can be used in a variety of subjects and for many different purposes. In addition, the combination of entertainment, excitement, reflection, challenges, and tasks that must be completed “makes digital games suitable as a tool for reaching the curricular goals in many different ways” (Skaug et al., 2017, p. 7, my translation).

Computer games can be connected to content in lessons in many situations, even though a game is not necessarily linked to the specific subject matter in the first place. An example here can be ME, which for many pupils in lower secondary school is a game used mainly as a spare-time activity. It is not a game that is necessarily used to learn anything. However, a game like ME can also be used pedagogically in school to teach pupils about a variety of topics (Karsenti et al., 2017, p. 3). Skaug et al. (2017) also mention how many of the competence aims open for the use of digital games in lessons and how digital games can be used as a learning tool in subjects to better understand terms, phenomena, and processes. The games “can give pupils meaningful experiences where they can apply subject-specific knowledge and help them make abstract ideas more concrete” (Skaug et al., 2017, p. 7, my translation). Lastly, if games are used correctly, the gaming and learning experiences can offer an increased understanding of the subject curriculum and help the pupils remember the curriculum better (Skaug et al., 2017, p. 7).

Previous research shows that integration of learning content into digital games improves learner motivation, engagement, and performance (Yang et al., 2020). Consequently, the use of games can have a positive influence on pupils, both for those who normally struggle in school, but also for pupils who do not struggle as a part of varied teaching methods. Yang et al. (2020) also write that “digital game-based language learning is considered advantageous in providing immersion experiences, reducing anxiety and emotional obstacles, contextualizing learning, and increasing opportunities for knowledge application in game environments”. All of these elements are beneficial for pupils in classrooms and are elements that sometimes can be difficult to facilitate for in “traditional” teaching.

Although using computer games in school can be a relevant pedagogical tool, it is important that the game itself “is not the core of the pupil’s subject-specific knowledge, but a

place to make use of this knowledge" (Skaug et al., 2017, p. 8, my translation). In addition, it is important to consider that gaming is not something that every pupil likes or finds motivating, just like with any other teaching method. There is no guarantee that using games to motivate or engage pupils will work. If teachers want to use computer games in education, they should facilitate for reflection and discussion outside of the game. What goes on in the computer games must be put into a broader context and it is therefore important that the pupils get the opportunity to transfer terms and skills to contexts close to reality (Skaug et al., 2017, p. 8).

In their book, "Spillpedagogikk", which can be translated to "Gaming Pedagogy", Skaug et al. (2021) argue that there are two main lines of thinking with different perspectives for how we can understand the role of computer games in education. The first line treats games as something that has an effect on players of the game, either through increased motivation, better teaching or other direct effects of playing the game. The assumption here is that the games can be motivating and fun, and therefore can create engagement and the will to learn. The games can be good and effective learning tools in themselves, and the idea is that there is knowledge in the game which is transmitted to the players when they play (Skaug et al., 2021, p. 35).

The authors do not disagree that what is presented in the first line of thinking can be true, but they are wary of treating games in this way. Firstly, because there is an assumption that computer games have the same effect on every pupil, no matter which culture, background, or situation the pupil comes from, or which context the game is played in. Secondly, this line does not necessarily include the teacher as an important part of using games in school. This contradicts a lot of research which has found that the teacher plays an important role if gaming is to be useful in learning (Skaug et al., 2021, p. 38).

The authors therefore argue that the second line of thinking should concentrate more on how the teachers use games as a pedagogical tool. This way of treating games in schools does not look for any direct effects in the same way as the first line, but instead focuses on how pupils and teachers are different, and that games can have different effects depending on circumstances. In this line of thinking, computer games are a part of a teacher's toolbox, and how the games are used, and in which context, is important. The games are meaningful because they can create new possibilities, and it is how the teachers and the pupils create

meaning in and around the games that is most important (Skaug et al., 2021, p. 39). This way of thinking treats games as part of a bigger picture, and the effect or implications the use of games can have vary, depending on other elements in the situation or context. The games do not necessarily have a core of essential qualities, but are given meaning depending on who is playing the games and how and where they are played (Skaug et al., 2021, p. 39).

Skaug et al. (2021) argue that if the right elements are in place, with a teacher who is in control of the process and puts the game in the right educational frame, gaming can have many positive effects. The authors mention elements such as pupils remembering what they have learned through playing games longer than in traditional teaching. In order for this to have an effect, the use of gaming should last over a longer period, not just a short session. Also, if teachers want an effect from the use of games, the teachers should use them in a socio-cultural perspective, where the pupils' game experiences form the starting point for further discussion, reflections and conversations in the classroom (Skaug et al., 2021, p. 48).

In summary, the use of computer games in schools can have many benefits, like enhanced learning, motivation, and engagement across various subjects. Games can also offer meaningful experiences and make abstract concepts more concrete. However, the use of games should complement and not replace subject-specific knowledge. Teachers should focus on using games as part of their pedagogical toolbox, and they must be aware of the need to place games within a meaningful context to get the most out of their teaching.

2.2.1 Gaming and learning language

Research shows that games can be a tool for English language learning in several ways. Some games are developed and designed for specific educational purposes or to teach specific skills or content, for example language learning purposes. These games are often called "learning games" or "educational games" and focus more on learning than entertainment (Skaug et al., 2017, p. 8). The use of such games can for example help increase vocabulary and improve listening comprehension, depending on the design of the game.

Other games are mainly designed to entertain. These games are often called commercial games and have a deeper gaming experience for the player and offer more excitement and engagement than educational games. These games can also be beneficial in

language learning, and can expose learners to new vocabulary, idiomatic expressions, and cultural references in the context of the game. Commercial games can give teachers more flexibility and chance for adaptation into the subjects they are teaching, but also demand more preparation on the teacher's behalf than educational games (Skaug et al., 2017, p. 9).

In the article "Minecraft: Education Edition", Kuhn (2018) uses ME as an example of how a commercial game can be an effective tool for language acquisition and practice because "the game's open-ended nature and collaborative approaches foster pupil communication and context-based language use" (Kuhn, 2018, p. 221). The author also emphasises that the game requires significant planning and design from the teacher to be used effectively in class. "However, should teachers be willing to invest the time and creativity into designing lessons that take advantage of Minecraft's open-world features, it can be a dynamic tool for pupil centered learning" (Kuhn, 2018, p. 221).

In ""What Video Games Have to Teach Us About Learning and Literacy", Gee (2004) argues that computer games can be powerful tools for enhancing language acquisition and literacy skills. The book explores the potential of games as educational tools and gives examples of different areas where computer games can be relevant for learning language. One of the points the author makes is how games can increase and improve the players' literacy. Although literacy in gaming is different from the traditional view of literacy as the ability to read and write, it is possible to use this term more broadly. The argument is that elements like images, symbols, artifacts, and many other visual symbols that are frequent in computer games are as important as regular language, and the "reading" of these elements can be called "visual literacy" (Gee, 2004, p. 13). Computer games are also multimodal texts, and images communicate something else than words. It is necessary to be able to decipher and understand both of these modes to get the full picture and understanding, or to achieve "multimodal literacy" (Gee, 2004, p. 14). This multimodal learning experience can promote the development of language and literacy skills.

Beavis and O'Mara's (2010) article "Computer games — pushing at the boundaries of literacy" also argues that "playing computer games entails the use of a wide range of literacy practices – both 'traditional' and 'new'" (Beavis & O'Mara, 2010, p. 74). They argue that successful gameplay includes many of the characteristics of traditional texts, like "simultaneous attention to a number of elements, including on screen semiotic signalling and

juxtapositioning, contextual understandings of play and plot structures, related narratives and genres, games' affordances" (Beavis & O'Mara, 2010, p. 74). Thus, computer games share many similarities with "traditional" texts and can therefore be used in many of the same ways. They also point out that computer games can shift the classroom attention towards innovation in working with new textual types, and towards "revisioning the English curriculum in the contexts of the digital world, and young people's experience and needs in digital times" (Beavis & O'Mara, 2010, p. 75).

2.2.2 Gaming and social-emotional learning

Social and emotional learning (SEL) is defined by the Collaborative for Academic, Social, and Emotional Learning (CASEL) as

> the process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities, manage emotions and achieve personal and collective goals, feel and show empathy for others, establish and maintain supportive relationships, and make responsible and caring decisions (CASEL, n.d.).

SEL can be divided into five competencies that can be taught in many ways:

- Self-awareness: The ability to be conscious of one's own thoughts and feelings, and how they can affect actions and attitudes.
- Self-management: The ability to successfully regulate one's emotions, thoughts, and behaviours in different situations.
- Social awareness: The ability to take the perspective of and empathize with others, including those from diverse backgrounds and cultures.
- Relationship skills: The ability to communicate clearly, listen well, cooperate with others, resist inappropriate social pressure, and seek and offer help when needed.
- Responsible decision-making: The ability to make constructive choices about personal behaviour and social interactions (DePaoli et al., 2018, p. 11)

In the core curriculum for primary and secondary schools in Norway, there is a focus on social and emotional learning and development. It is stated that learning subject matter cannot be isolated from social learning, and several elements within social learning are mentioned as important qualities a pupil should learn and develop. There is a focus on empathy, listening to others, collaboration and cooperating with fellow pupils (Ministry of Education, 2020, p. 11).

Skaug et al. (2021) argue that computer games can build these social and emotional qualities and that pupils can develop empathy through playing computer games. Games can also be used as a safe testing arena to reflect on other people's existence and life situation. Because computer games can offer an active arena for pupils to participate in, they can also teach the players different things than for example a film or a book. Computer games can create a personal experience which make them well suited to use in working with social and emotional learning. Games can for example more easily create a closer connection to a subject or a case than other media offer. (Skaug et al., 2021, p. 104). Computer games also give pupils the ability to participate in realities that are otherwise unattainable. Games can provide an arena where players can pretend and can therefore stimulate creativity. Through performing different actions in games, it can feel like reality, and thus help create understanding for other people's life and existence (Skaug et al., 2021, p. 103)

According to Skaug et al. (2021), some of the most rewarding learning experiences are those that happen outside of the classroom, either physically or virtually. The experiences pupils get when they are in these settings are excellent opportunities for social and emotional learning. It can be a visit to a court of law to witness a trial and reflect on the experiences the involved people have or it can be a visit to a beach to witness pollution and reflect on how the pollution changes the society. Role playing is also a great tool to teach pupils to reflect on choices they have to make and situations that they are in. However, the main point that the authors are making is that computer games can offer these rewarding experiences, and thereby give the pupils the possibility build their social and emotional competence. They can for example play games which make them practice their collaboration and communication skills, they can play games that make them reflect on the situation other people experience, and they can play games that help them practice their decision-making skills. There is a wide variety of games that can be used in social and emotional learning (Skaug et al., 2021, p. 108-109).

Walker & Venker Weidenbenner (2019) also point to computer games as a way to build social and emotional learning. They argue that virtual worlds and computer games are still a relatively new phenomenon, but that they have roles in facilitating learning through play, imagination and representative experiences. In comparison to other tools which are not as interactive, video games and other virtual worlds can help "children explore representational experiences within an established framework rather than operating solely within the context of imagination" (Walker & Venker Weidenbenner, 2019, p. 118).

However, Walker and Venker Weidenbenner (2019) underline that although children can develop empathy through games, it is important that there is a mediator, like a teacher, who mediates the understanding and applicability of the game. Also, they point out that "the interaction (human-to-human, human-to-avatar, avatar-to-avatar) in the virtual world and about the virtual world is most important, not the participation in a virtual realm itself", which underlies the need for communication and human interaction in order to develop "abstract thinking skills, emotional regulation and prosocial behaviors" (Walker & Venker Weidenbenner, 2019, p. 127).

To summarise, computer games can be valuable tools in promoting social and emotional learning, provided they are employed thoughtfully and supported by meaningful interactions and guidance from educators. This approach aligns well with the Norwegian curriculum which underlines the importance of social and emotional learning and development for pupils when they are in school.

2.2.3 Social and emotional learning in the English subject curriculum

Elements connected to social and emotional competence are also mentioned several times in the curriculum for the English subject. In the section "Relevance and cultural values", it is stated that English is an important subject when it comes to for example cultural understanding, communication, all-round education, and identity development. In addition, English "shall give the pupils the foundation for communicating with others, both locally and globally, regardless of cultural or linguistic background" and "English shall help the pupils to develop an intercultural understanding of different ways of living, ways of thinking and communication patterns" (The Norwegian Directorate for Education and Training, 2020, p. 2). Also, in the section "Working with texts in English", it is stated that when working with texts in English, where "texts" in this instance can include "computer games", "the pupils will develop intercultural competence enabling them to deal with different ways of living, ways of thinking and communication patterns. They shall build the foundation for seeing their own identity and others' identities in a multilingual and multicultural context" (The Norwegian Directorate for Education and Training, 2020, p. 3)

Moreover, under "Interdisciplinary topics" the sections "Health and life skills" and "Democracy and citizenship" mention elements connected to social and emotional learning.

The interdisciplinary topic of health and life skills should for example develop the ability for the pupils to express themselves. “This forms the basis for being able to express their feelings, thoughts, experiences and opinions and can provide new perspectives on different ways of thinking and communication patterns, as well as on the pupils’ own way of life and that of others” (The Norwegian Directorate for Education and Training, 2020, p. 3). The interdisciplinary topic “Democracy and citizenship” can help the pupils to develop their worldview and “by learning English, the pupils can experience different societies and cultures […] This can open for new ways to interpret the world, and promote curiosity and engagement and help to prevent prejudices” (The Norwegian Directorate for Education and Training, 2020, p. 3).

Lastly, all of these social and emotional competences are also linked to the competence aims that are most central in this study. In the competence aims after year 10, the pupils should be able to “explore and reflect on the situation of indigenous people in the English-speaking world, and in Norway”, and “explore and describe ways of living, ways of thinking, communication patterns and diversity in the English-speaking world” (The Norwegian Directorate for Education and Training, 2020, p. 9).

2.2.4 Games and motivation

The use of games in education is often connected to an increased motivation among pupils, in addition to having other benefits, like engagement, creativity, increased interest, and collaboration (Baek et al., 2020, p. 9; Callaghan, 2016). Motivation is an important factor in the educational process, as it can drive pupils to be engaged in the learning process. According to Ryan and Deci (2000), to be motivated means to be moved to do something. “A person who feels no impetus or inspiration to act is thus characterized as unmotivated, whereas someone who is energized or activated toward an end is considered motivated” (Ryan & Deci, 2000).

In 2019 the Norwegian Ministry of Culture created a strategy for the use of computer games in the period 2020 – 2022, called “Spillerom”. According to the “Spillerom” strategy there are immense opportunities in the use of computer games as a teaching resource. Games can for example contribute to critical reflection on the choices one makes, improved language knowledge, and a deeper understanding of the subjects. The strategy also mentions that many

pupils find gaming more motivating than other ways of teaching and, because of this, can concentrate over a longer period of time when playing games. These pupils can experience a feeling of accomplishment through gaming, which they may struggle to find through other traditional teaching methods (Ministry of Culture, 2019). A successful example of using computer games to increase motivation and engagement is how Charteris and Thomas (2021) used Minecraft to teach about Greek mythology. In their project on how Minecraft could affect the pupils' engagement, they experienced mostly motivated and engaged pupils. Their results showed that problem-based learning with Minecraft could be "engaging and useful towards cultivating individuality. Most pupils found the experience enjoyable and valuable. It enabled them to make and actualize decisions about their learning and to solve problems creatively and independently" (Charteris & Thomas, 2021, p. 89).

Another example is how Plump and LaRosa (2017) use the quiz tool Kahoot! to engage pupils and promote an active learning environment, even though this is not a traditional computer game. They found that "perhaps most significantly, the 'gamification' of learning increases pupil engagement by appealing to all pupils, even the most introverted, combining both a cooperative fast-paced learning environment and friendly competition" (Plump & LaRosa, 2017). Callaghan (2016) also notes on how computer games can engage pupils and help them develop collaboration skills. "Collectively the factors of the pupils experience with the game, the capacity to collaborate as well as the role of the teacher contributed to a learning environment where pupils can be more engaged and more committed to their own learning whilst attaining learning outcomes (Callaghan, 2016, p. 258). Gros (2007) writes that engagement and motivation are benefits of playing games in education, but underlines that games need to be used pedagogically. If games are used appropriately, they can also "promote challenges, co-operation, engagement, and the development of problem-solving strategies" (Gros, 2007).

Another point in relation to computer games and motivation is the element of "active learning". The Center for Teaching Innovation explains that "active learning methods ask pupils to engage in their learning by thinking, discussing, investigating, and creating. In class, pupils practice skills, solve problems, struggle with complex questions, make decisions, propose solutions, and explain ideas in their own words through writing and discussion" (Center for Teaching Innovation, n.d.). Active learning stands in contrast to more traditional teaching methods. Previous research has indicated that for example lecture-based instruction

is less effective than more interactive approaches which active learning promotes (Grimley et al., 2011, p. 46). Grimley et al. (2011) argue that "the use of computer games as an instructional technique enhances pupil experiences through active participation." Therefore, there can be much to gain from the use of computer games as an instructional tool. However, the authors underline that computer games cannot and should not be the only tool a teacher uses, but can perhaps "best function as a supplementary tool blended with other interactive and didactic techniques" (Grimley et al., 2011, p. 54).

Gee (2004) also points to several elements that can benefit pupils through active learning with computer games. Firstly, pupils can learn to experience (see, feel, and operate on) the world in new ways through games, compared to passive teaching. Secondly, what pupils can learn through computer games is usually shared by other people. Players can therefore become a part of a social group or affiliation, even though everything happens digitally, and players may never see each other face to face. This can for example increase understanding of other people, and give players a sense of belonging with others. Thirdly, players can gain resources that prepare them for future learning and problem solving in the domain and perhaps more important, in related domains. (Gee, 2004, p. 23) What players learn in a game can be used in other relevant areas of education or other parts of life as well. In summary, active learning involves "experiencing the world in new ways, forming new affiliations, and preparation for future learning" (Gee, 2004, p. 23), and this form of learning can both increase the motivation of the learners and improve retention of knowledge.

2.2.5 The teacher's role when using gaming in education.

In 2006, Mishra and Koehler released a conceptual framework for educational technology. In their research, they argue that pedagogical use of technology requires a complex, situated form of knowledge that they call Technological Pedagogical Content Knowledge (TPCK) (Mishra & Koehler, 2006, p. 1017). TPCK builds on Shulman's Pedagogical Content Knowledge (PCK) from 1987 but adds technology as a component in the interplay between pedagogy and content knowledge. Mishra and Koehler (2006) define TCPK as:

> TPCK is the basis of good teaching with technology and requires an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts

> difficult or easy to learn and how technology can help redress some of the problems that pupils face; knowledge of pupils' prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge and to develop new epistemologies or strengthen old ones
> (Mishra & Koehler, 2006, p. 1029).

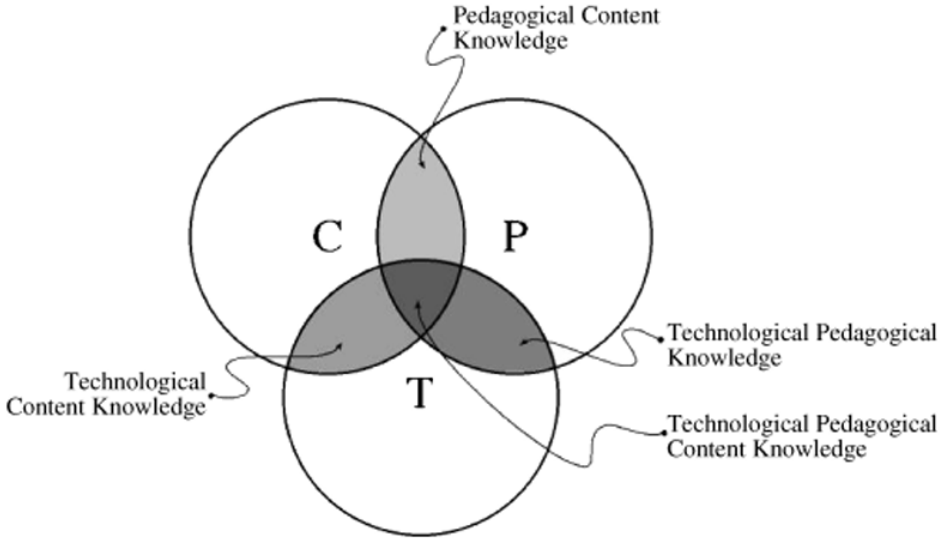
When using the term "technology", Mishra and Koehler (2006) refer to computers and software. Since these new technologies have become so central in today's society, the argument is that "knowledge of technology becomes an important aspect of overall teacher knowledge" (Mishra & Koehler, 2006, p. 1024).

Applying the TPCK framework to pedagogy is not necessarily a straight-forward process. Teachers need knowledge about technology, but they also need to know how to use it in a pedagogical way. Mishra and Koehler (2006) argue that teachers need to be involved in authentic problem solving with technology to master the use of it. Therefore they developed an approach that is called "learning technology by design". The main idea in this approach is that the teacher needs to be involved in an "authentic context for teachers to learn about educational technology" (Mishra & Koehler, 2006, p. 1035). The approach focuses on learning-by-doing, instead of traditional teaching and overt lecturing. In this way, teachers can find solutions for their problems or ideas themselves, and in turn can become active learners that can take control of their own teaching. "Learning in this context involves becoming a practitioner, not just learning about practice" (Mishra & Koehler, 2006, p. 1035).

In summary, TPCK is about the teachers understanding of how technological tools can enhance and support education and support the pupils' learning more effectively. The model integrates technology in teaching and learning and argues that quality teaching

> requires developing a nuanced understanding of the complex relationships between technology, content, and pedagogy, and using this understanding to develop appropriate, context-specific strategies and representations. Productive technology integration in teaching needs to consider all three issues not in isolation, but rather within the complex relationships in the system defined by the three key elements
> (Mishra & Koehler, 2006, p. 1029).

Figure 1: Pedagogical Technological Content Knowledge. The Three Circles, Content, Pedagogy, and Technology, Overlap to Lead to Four More Kinds of Interrelated Knowledge.



In addition to Mishra and Koehler's (2006) research on the TPCK model, there is also other previous research on the teacher's importance when using technology in schools. A lot of research points to the fact that the teacher plays a crucial role in the use of gaming in education. In their book "Gaming pedagogy", Skaug et al. (2021) use the term "game literacy" as an important area the teacher has to be aware of. The term includes the ability for the teacher to "interpret, communicate, create, express and manoeuvre" in the field of gaming. The book divides game literacy into three parts: "operational literacy", "cultural literacy", and "critical literacy" (Skaug et al., 2021, p. 30).

Firstly, operational literacy are basic skills and qualities that are necessary to play games. This can be qualities like knowing and playing different genres of games, as well as knowing about different physical skills, like controllers, keypads and cursors. Secondly, cultural literacy means that a teacher can see the games they use in relation to the different social and cultural situations they are a part of. It also means being able to see the difference between representation and reality, between the game as it is designed, and how the game is played in the classroom. Finally, critical literacy includes consciousness about computer games being social and culturally created artefacts, which carry both explicit and implicit value, attitudes, and perspectives on the world. This also includes being able to ask critical questions to all of these factors (Skaug et al., 2021, p. 30). All together, these three dimensions, or literacies, are important components in a teacher's game literacy. This does

not mean that the teacher must be an expert in all of them, but it is important to think about them and keep them in mind when using games in classrooms. In summary, the authors write that "as teachers, our ability to connect computer games and subjects are dependent on knowing the different elements well enough to make the necessary connections" (Skaug et al., 2021, p. 30, my translation)

In their report on "Computer games in school", Skaug et al. (2017) write that the use of games in school subjects can be a challenge for teachers, but it can also take advantage of the competence and informal learning that pupils have acquired in their spare time. However, the teacher is an important factor in order to make this a success. Gaming in schools demands a proficient pedagogue that can see what opportunities games provide in terms of subject-specific knowledge (Skaug et al., 2017, p. 8). Baek et al. (2020) also write that if the use of games like Minecraft is to be successful in teaching and learning, the teachers' roles are significant in such environments. Teachers should be "the guiding figures in integrating Minecraft into pupil learning" (Baek et al., 2020, p. 13). Callaghan (2006) also argues that the the teacher plays a considerable role in pupils attaining twenty-first-century teaching and learning capabilities (Callaghan, 2016, p. 255). Lastly, Charteris and Thomas (2021) write that "the unity between theory, pedagogy, and technology provides a foundation that drives pupils' learning experiences" (Charteris & Thomas, 2021, p. 88).

2.3 The subject renewal from 2020

In 2020, Norwegian schools went through a renewal the curricula called "Fagfornyelsen 2020", which can be translated into "The subject renewal 2020". In this renewal the core curriculum of all subjects was changed to make the curriculum more relevant for pupils in Norwegian schools. The renewal aimed to facilitate in-depth-learning, and to provide a greater context between the subjects and other parts of the subject curriculum. All subjects were given a new structure and included new competence aims. The subject renewal also tried to simplify the curriculum, and included fewer competence aims, compared to the previous curriculum. The intention was to give the teachers greater freedom in what to include in their lessons and how to teach their subjects.

Another new element in the renewal of subjects was "interdisciplinary subjects". In the new curriculum, schools must facilitate learning in three interdisciplinary topics: "health and life skills", "democracy and citizenship", and "sustainable development" (Ministry of

Education, 2020, p. 15). The pupils should develop competence in these interdisciplinary topics by working with them in various subjects. The goal for what the pupils should learn in the topics is stated in the competence aims for the individual subjects where this is relevant (Ministry of Education, 2020, p. 15). The teachers in Norwegian schools must include the interdisciplinary topics in their teaching, as well as the competence aims in the other subjects. The interdisciplinary topics "health and life skills" and "democracy and citizenship" are specifically mentioned as relevant for the English subject in the subject description (The Norwegian Directorate for Education and Training, 2020, p. 9). As mentioned earlier, the use of computer games in schools can facilitate this.

The core curriculum for the primary and secondary education in Norway mentions basic skills that "school shall facilitate for and support the pupils' development in … throughout the entire learning path" (Ministry of Education, 2020, p. 14). These basic skills are "reading", "writing", "oral skills", "numeracy" and "digital skills" and are a necessary part of building competence in the subjects (Ministry of Education, 2020, p. 14). In the curriculum for the English subject, the numeracy skill has been removed.

2.3.1 Curriculum in English

The basic skills in the core curriculum do not specifically mention the use of computer games or gaming in education, but the use of digital resources is mentioned in the explanation of what digital skills are. According to the curriculum in the English subject (ENG01-04), digital skills involve:

> being able to use digital media and resources to strengthen language learning, to encounter authentic language models and interlocutors in English, and to acquire relevant knowledge in English. This requires critical and reflected behaviour using digital forms of expression in English and in communication with others. The development of digital skills in English progresses from exploring the language to interacting with others, creating texts and acquiring knowledge by obtaining, exploring and critically assessing information from different English-language sources (The Norwegian Directorate for Education and Training, 2020, p. 4).

In addition, a few of the competence aims in the English subject are also linked to using digital resources. After year 10, for example, two of the competence aims state that pupils should:

> • Use different digital resources and other aids in language learning, text creation, and interaction.
> • Explore and present the content of cultural forms of expression from various media in the English-speaking world that are related to one's own interests.
> (The Norwegian Directorate for Education and Training, 2020, p. 9)

In the last competence aim, digital tools are a natural element in the term "various media", although it is not mentioned specifically. It is therefore up to the teachers to decide to use digital resources, like computer games, in their teaching methods.

Moreover, computer games and gaming can naturally also be linked to the other basic skills in the core curriculum. When playing computer games, reading, listening, writing, and oral skills are often relevant and natural elements. In ME, for example, the pupils have to be able to read instructions in English, they have to listen to English in the game and very often they play with others online and use their English oral skills.

Lastly, the description of the interdisciplinary subject "democracy and citizenship" in the English subject curriculum can also be linked to digital skills or playing computer games as a teaching method. It is stated that

> by learning English, the pupils can experience different societies and cultures by communicating with others around the world, regardless of linguistic or cultural background. This can open for new ways to interpret the world, and promote curiosity and engagement and help to prevent prejudices (The Norwegian Directorate for Education and Training, 2020, p. 3)

2.3.2 Computer games and the core curriculum

In the core curriculum for Norwegian primary and secondary education, many goals outline what pupils should learn while attending Norwegian schools. Although the core curriculum does not say anything specifically about the use of computer games, several objectives in the curriculum can be tied to the use of computer games in education. In the section titled "The Purpose of Education," for example, several objectives are listed which can be connected to elements that computer games can offer. It states that education and training in Norwegian schools should give pupils the ability to "open doors to the world and provide pupils and apprentices with historical and cultural insight and anchorage."

Additionally, education should “foster an understanding of cultural diversity” and ensure that pupils have the opportunity to be “creative, committed, and inquisitive” (Ministry of Education, 2020, p. 5).

In the “Core values” section, point 1.4 states that “School shall allow the pupils to experience the joy of creating, engagement and the urge to explore, and allow them to experience seeing opportunities and transforming ideas into practical actions” (Ministry of Education, 2020, p. 9). In the explanation of this point, there is a focus on arts and culture and the ability for pupils to be creative and that “the school must appreciate and stimulate the curiosity and creative power of the pupils, and the pupils must be allowed to use their creative energy throughout their entire schooling” (Ministry of Education, 2020, p. 9). Furthermore, it is essential to create a supportive learning environment where pupils feel encouraged to express themselves and take risks in their learning process (Ministry of Education, 2020, p. 9).

One way to achieve these goals is through the integration of computer games in the educational setting. Computer games can be used as a platform for creativity among pupils. Many games encourage problem-solving, critical thinking, and innovative approaches to overcoming challenges. By incorporating computer games into the curriculum, schools can provide pupils with interactive, hands-on learning experiences that stimulate their curiosity and creative power, as mentioned in the “Core Values” section of the curriculum (Ministry of Education, 2020, p. 9).

In addition, computer games can offer insights into cultural diversity and help develop historical and cultural understanding, as mentioned in the "Purpose of Education" section (Ministry of Education, 2020, p. 5). For example, several computer games feature different historical periods or cultural contexts which can expose pupils to various perspectives and can help them to explore the customs, traditions, and values of different societies. This can help broaden their worldview and promote empathy and tolerance towards cultural differences.

2.4 What is Minecraft?

Minecraft is a video game that was created by Markus "Notch" Persson and was first released in 2011. Minecraft is a “sandbox game”, which means “a style of game in which

minimal character limitations are placed on the gamer, allowing the gamer to roam and change a virtual world at will" (Techopedia.com, 2022). In Minecraft, players can explore a 3D-world made up of blocks of different materials such as dirt, stone, and wood. The game allows players to gather resources, build structures, craft tools and weapons, and survive against elements like monsters and hunger. Minecraft has both a "creative" and a "survival" mode. The survival mode challenges players to gather resources, fend off monsters and basically survive through doing different tasks that keep the player alive. In the creative mode on the other hand, the player is provided with unlimited resources and it is possible to build anything the player can imagine without limitations.

2.4.1 What is Minecraft Education?

Minecraft education (ME) was released in 2016 and is an educational version of the game Minecraft that is specifically designed for educational purposes. To design the new educational version, the developers sought the input of experienced teachers so that it would help pupils acquire and develop key learning aptitudes (Karsenti et al., 2017). According to their website, ME prepares pupils for the future, building future-ready skills like creativity, problem solving, and systems thinking, and nurturing a passion for play (Minecraft Education, n.d.). They list three points that players can experience when playing the game. They are:

- DRIVE MEANINGFUL LEARNING
  Explore real-world issues in immersive, imaginative worlds.
- PREPARE FOR DIGITAL FUTURE
  Computational thinking with in-game coding and curriculum.
- SOCIAL-EMOTIONAL SKILLS
  Build empathy and learn digital citizenship (Minecraft Education, n.d.).

ME can also provide pupils and teachers with a platform to explore, create, and learn collaboratively in a virtual environment. It includes features such as lesson plans, classroom management tools, and specialised Minecraft blocks and items that can be used to teach a wide variety of subjects. In ME, pupils can work together to solve problems, build structures, and explore historical and scientific concepts. Teachers can use the game to create immersive learning experiences that help pupils develop critical thinking skills, creativity, and teamwork abilities.

2.4.2 Integrating ME into curricula

Previous studies have documented that ME can be used pedagogically in several subjects. In their article "Mining Educational Implications of Minecraft", Baek et al. (2020) found that ME can be a useful pedagogical tool in for example science, math, social science, and language arts applications (Baek et al., 2020, p. 5). The English subject includes both social studies and language learning, and ME can be used as a relevant tool in both parts of the subject. In their study of the pedagogical use of Minecraft, Baek et al. (2020) found that the game has a pedagogical potential in social studies for many reasons. According to their study, "detailed depictions of history in a game that models real-life historical and present conditions are an appealing alternative to static pictures and descriptions used in traditional materials" (Baek et al., 2020, p. 7). In Minecraft, pupils can navigate through and "visit" the virtual game space and observe scenes that simulate real-life situations, promoting pupil interest and engagement. Also, pupils can play in pre-made worlds that are meant to give information and teach pupils about culture and society. In these worlds, the pupils build virtual constructions and this "requires reasoned and detailed planning and prior knowledge, it leads to deeper understanding of the details and refinements of the structures and civilizations that pupils are studying" (Baek et al., 2020, p. 7-8).

In addition, Minecraft can be used as an effective tool to learn languages. Baek et al. (2020) mention examples of projects where pupils have been given written assignments based on what they have experienced. They were for example asked to write journals based on what they experienced in the game (Baek et al., 2020, p. 7). Other potential assignments can be to write short stories, articles, or other texts about what the players experience and learn in the game. Only a teachers imagination sets boundaries for writing assignments related to playing Minecraft. Other basic skills like listening and speaking are also a natural part of the gaming experience in Minecraft, and it is easy to see the pedagogical potential in the game, for example through giving pupils assignments where they have to collaborate and discuss orally what they experienced in the game. These are just a few examples of how Minecraft can be a useful game for language learning languages.

2.4.2.1 ME and motivation

Studies show that Minecraft can lead to increased motivation, enthusiasm, and interest for pupils. Baek et al. (2020) mention several areas where Minecraft can be a positive factor,

like increased engagement, increased assignment completion, a reduced barrier for learning, decreased apprehension and increased collaboration and communication. Minecraft "appears to effectively boost pupil interest and drive to learn, all while participating in regular classroom activities" (Baek et al., 2020, p. 9). The study mentions the use of Minecraft in new situations and how the pupils find it motivating to do something different. Adding a new component like computer games to the teaching in subjects can be an effective way to engage pupils, even in subjects that they do not necessarily find interesting from the start. Learning through games like Minecraft has also been found to enhance learning as well as allow pupils to attain overall learning outcomes like "an enhancement of engagement, collaboration, the creation of authentic learning activities as well as the attainment of learning outcomes" (Callaghan, 2016).

In addition, studies have found that pupils who normally do "not actively take leading roles in class were able to act as leaders within the game" (Baek et al., 2020, p. 9). Sometimes, pupils who struggle in "regular" classroom activities can blossom in other activities, like gaming. Many pupils in this age-group who struggle in school use time outside of school on gaming, and because of the competence and knowledge they have acquired through gaming they can become "experts" in situations that they normally struggle in, like school. This can of course lead to increased motivation and a sense of mastery.

Lastly, Minecraft is a game that encourages creativity, which again can increase interest and enthusiasm for learning. In the creative mode of the game, players can build anything they put their mind to. In their action research project where pupils worked with problem-based learning, Charteris and Thomas (2021) found Minecraft to give pupils an environment where they could be creative and demonstrate understanding in ways that is difficult to manage in traditional classrooms and teaching (Charteris & Thomas, 2021). They also found that Minecraft in several ways is an unusual video game "as there are no set goals or predetermined storylines for the player to follow" (Charteris & Thomas, 2021). In their report, the authors mention several times were the pupils met difficulties when they were playing, and had to use their imagination and creativity to solve the problems. In this way Minecraft's open-world environment "supports sandbox style gameplay, where the player constructs the game by following their curiosity, setting their own goals, and through manipulating the highly malleable environment towards those ends" (Charteris & Thomas, 2021). Encountering problems gave room for pupils to use their creativity and fixing the

problems gave the pupils a sense of achievement and made them feel good about their learning.

2.4.2.2 ME and knowledge and skills acquisition

Language learning activities centred around Minecraft hold significant potential for engagement and skills development. One of the skills pupils can learn is communication. Baek et al. (2020) mention that when playing the game, pupils often have to search for information online and that they have to communicate with each other to find out things in the game. The point here is that the pupils then often use English. An example from the study shows that pupils often switch between their native language and English in communication, both when playing in the game and outside the game to give each other messages. This kind of casual communication among Minecraft players can "promote informal learning processes, as ideas, understandings, and linguistic skills develop through collaboration and information searches" (Baek et al., 2020).

Additionally, Minecraft is a game where players with different skill sets often cooperate. Callaghan writes that when participants with a variety of different competencies work in a structured environment "they utilise each other's unique skill sets to solve a problem or complete an assignment. Thus, digital games can promote genuine collaboration between users, and are, to some extent, similar to collaborative learning environments or collaborative working environments, where participants share information and learn from each other" (Callaghan, 2016).

Furthermore, Callaghan mentions several other skills that Minecraft can help develop in pupils who play the game. Firstly, pupils have "the capacity to develop cognitive, spatial and motor skills and help improve ICT skills" (Callaghan, 2016). In addition, Minecraft can "be used to teach facts, knowledge, principles and complex problem-solving. What the pupils learn is dependent on which tasks the pupils are given and of course how they choose to work with the tasks. Lastly, Minecraft can "increase creativity or … provide practical examples of concepts and rules that would be difficult to illustrate in the real world" (Callaghan, 2016).

2.4.2.3 ME's possibilities for immersive environments and authentic tasks

Several studies point to Minecraft as a game that gives pupils possibilities for immersive environments and authentic tasks. ME offers a wide variety of pre-made,

immersive worlds where players can enter and explore authentic environments in different subjects. Baek et al. (2020) mention that when "simulating the real world in Minecraft, simulation activities are appealing, attractive, enjoyable, and motivating. Moreover, they encourage pupil interest and engagement" (Baek et al., 2020, p. 13).

In "Rebuilding an Empire with Minecraft: Bringing the Classics into the Digital Space", Craft used Minecraft as a tool where pupils were "assuming the persona of an ancient architect, pupils select a building, research it in primary and secondary sources and recreate it in its original Roman location" (Craft, 2016). In this way they were given a different experience than if they were subjected to more traditional ways of teaching, like watching films or reading texts. Craft argues that while traditional ways of teaching, like lectures and note-taking, can still be relevant and useful, they can also alienate pupils, because pupils are so immersed in today's technology. Craft found that working in virtual environments and 3D-modeling "appeals to our pupils' life experience of losing themselves in such a digitally immersive world, which is where they have learned to learn" (Craft, 2016).

Garcia-Fernandez and Medeiros (2019) also argue that Minecraft can be used for more than entertainment and is a useful tool to convey and learn about several subjects, including cultural heritage. According to the authors, Minecraft can be a suitable tool for a wide range of different areas, such as education, urban planning, computer arts, or chemistry. They point to the immersive qualities of Minecraft as a way to engage pupils. Firstly, immersion is achieved primarily "by a balanced relationship in the freedom of decision-making, the openness of path finding, and the autonomy in motion control" (Garcia-Fernandez & Medeiros, 2019). As Minecraft Education is a sandbox game with few limitations, "the freedom experienced in Minecraft has proved to be one of the key elements fostering both immersion and creativity" (Garcia-Fernandez & Medeiros, 2019). Lastly, although Minecraft is a game with simple and low-resolution, the "natural" laws that are in place in the Minecraft world fit the logic of the real-world. "Concepts such as day/night, gravity, photosynthesis, hardness of material, among others, allow players to recognize and use Minecraft's functional characteristics for a more faithful gaming experience" (Garcia-Fernandez & Medeiros, 2019). This enhances the authenticity of the gaming experience.

In their project "Rebuilding the Industrial Revolution: Using Minecraft in Teacher Education in Social Studies", Andersen et al. (2021) used ME to give pupils authentic tasks

and assignments to learn about the industrial revolution in Norway. The pupils had to use ME to "reconstruct buildings and events of the industrialization period as part of the in-depth study of the industrial breakthrough around 1840-1890, with emphasis on global history and location-specific knowledge of the Aker river area" (Andersen et al., 2021). First in the project, the pupils were subjected to more traditional teaching and pedagogical methods, while they were given the task to reconstruct the industrial revolution world in ME afterwards. The use of ME in this way "facilitated the development of generic competencies, such as creativity, problem solving, collaboration, and division of labor". The pupils were able to immerse themselves into the topic and recreate authentic worlds, based on what they had learned. In the conclusion of their report the authors write

> The implication of this paper is that Minecraft may be explored in an educational setting as a digital learning resource that facilitates active learning processes by making history more engaging. Learners are given the opportunity to contextualize the past and imagine how historical actors lived, often under very different conditions than those under which we live today (Andersen et al., 2021).

In summary, by integrating ME into curricula, it can be used as a pedagogical tool for various subjects, increasing student motivation, creativity, and knowledge acquisition. The game's immersive environments and authentic tasks can help students develop skills like communication, problem-solving, and collaboration in an engaging way.

2.5 Challenges and issues to using computer games

Although many researchers are positive when looking at how gaming can have a positive impact on several areas in education, there are still challenges and issues to be aware of when using games in education. Baek et al. (2020) mention several challenges and issues when using computer games in the classroom. Firstly, the possibility for concentration and the ideal learning environment is not always easy to accomplish in classrooms. Distractions from pupils, lack of time, and difficulties in maintaining concentration are elements that can hurt the learning outcome. How these elements affect what the pupils learn can be connected to the levels of teacher regulation, how old the pupils are, and which methods a teacher uses in class (Baek et al., 2020, p. 11).

Another point the authors make is that many teachers are wary of using games in the classrooms. The gap between the pupils' and the teachers' video game literacy, and the steep learning curve for some teachers before starting using games in classrooms, may be a hindrance. Furthermore, a point to consider is any eventual discrepancies in digital literacy skills among pupils. It is therefore important that teachers keep this in mind and that they modify the tasks so that they are suitable for all pupils, regardless of previous knowledge (Baek et al., 2020, p. 11). In relation to this, Kuhn (2018) also argues that a challenge for teachers when using games in the classroom is how to design the classroom activities to generate opportunities for learning. Teachers need to use time to plan and design these activities before using games in class (Kuhn, 2018, p. 220).

Lastly, another issue can be that experienced players sometimes show a lack of engagement when they have played the game before and therefore skip or pay little attention to the purpose of the lessons. An example is that pupils "rush through" the game because they know how to, instead of following the teacher's assignments. In ME, one solution can be to play the game in adventure mode, which is more restricted than creative mode, and gives less room for freedom and shortcuts (Baek et al., 2020, p. 12). In summary, it is important that the teacher is aware of these challenges and takes necessary decisions to avoid them affecting the lessons.

In addition to the challenges presented above, Skaug et al. (2021) address what they call three common myths in the use of gaming in education:

1. "Computer games motivate for learning": According to the authors, the problem in this myth is that "motivation" is confused with "fun". The main point is that teachers must be wary of treating motivation as the same as entertainment. Motivation is not a problem in itself, and it can often be motivating for pupils to do something new and varied, but motivation in gaming is not guaranteed and should not be the main reason for using games in education (Skaug et al., 2021, p. 44-45).
2. "Computer games are educational": The authors argue that one cannot expect that a computer game itself will teach pupils anything other than the skills needed to succeed in the game. Some games can of course teach pupils something useful, but it is crucial to use conversations with teachers, co-pupils and other sources in order to achieve learning. The teacher needs to be in charge of the didactical and pedagogical designs of lessons (Skaug et al., 2021, p. 45-46)

3. “Teachers have to be gaming experts”: Although the authors underline the importance of the teacher if the use of gaming is to be successful, it is not necessary that teachers have to be experts on everything. The most important point is that the teachers are aware of their own competence and must have sufficient pedagogical skills which can be combined with the use of games in the classrooms. This is compared to how teachers have to be able to use books, films and other pedagogical tools in their teaching – computer games are a part of the toolbox just like these other elements (Skaug et al., 2021, p. 47-48).

In summary, teachers should be aware of the challenges and issues related to using computer games in education and take necessary steps to address them. By carefully selecting and integrating games into the classroom, educators can maximize the potential benefits of gaming for pupil learning.

3.0 Methodology

This chapter presents the methods used in the intervention. Section 3.1 describes the background for the intervention and gives an overview of the Māori world "Ngā Motu" and the purpose of using this world to teach about the Māori people. Section 3.2 describes the choice of the research method that is used. Sections 3.3 and 3.4 provide a description of the data collection procedures. Section 3.5 is a discussion of the reliability and validity of the project and, finally, section 3.6 describes the ethical considerations of the study.

3.1 Background for the intervention

This study aims to explore how ME can be used in teaching about indigenous people in the English-speaking world in Norwegian lower secondary school. As I am working as an English teacher in lower secondary school, it was possible to use my workplace and the pupils from two English classes that I teach in the research. Our school uses two teachers in all written subjects, including the English subject, which means a colleague was in the classroom with me during the whole intervention. There were 24 pupils in each class, 48 altogether. Both classes went through the same data collection processes and lesson plans.

The five-week lesson program consisted of two weeks of "traditional" teaching, and three weeks of playing ME. In the two first weeks, the pupils were introduced to indigenous people in the English-speaking world, with a specific focus on the Māori and their culture in the second week. The lessons consisted of traditional teaching methods like lectures, watching film clips, discussions in pairs and groups, and doing written assignments. The three last weeks of the intervention were spent playing ME in the Māori world "Ngā Motu". The lesson plans when the pupils were playing in the Ngā Motu world had two main parts (see Appendix 1 for more detailed lesson plans from the intervention):

- Firstly, the pupils would spend some time in the Ngā Motu world to learn about the traditional Māori culture and lifestyle through different activities and by exploring the world.
- Secondly, they were challenged to apply their knowledge in a group project, where the task was to build Māori-style houses in designated plots, inspired by what they had learned about the Māori people and their culture.

In addition to learning about indigenous people, there were other aims connected to the project. An important aim was increased language learning. The pupils were informed that they were expected to use English as their working language in class. Through this, the idea was that they would learn language by communicating with their classmates. In addition, by playing the game itself they would use their English listening, writing and reading skills, which would also improve their English. Another aim was that the pupils would experience social and emotional learning through collaboration and teamwork, and through active learning in an immersive world like Ngā Motu.

3.1.1 The "Ngā Motu" world in ME

The intervention included playing ME in the Māori world called "Ngā Motu", which in English translates to "The Islands". This world was designed and created by New Zealand game designer and founder of Piki Studios, Whetu Paitai, in 2019. His project aimed to teach young people more Māori culture and to "show how the immersive and interdisciplinary world of Minecraft can bring to life indigenous culture and build social-emotional skills, as pupils work together to explore the Māori peoples culture language and history" (Minecraft Education, 2019).

Ngā Motu is an immersive learning experience where the pupils, for example, can learn collaboration and interpersonal communication skills (Minecraft Education, 2022). The islands have a traditional Māori settlement, called a "Pa", where the pupils can learn about the Māori people and their culture by exploring the world, and having conversations with the people that live there. These people are "non-playing characters" (NPCs) who share information with the players of the game about traditional Māori lifestyle and culture. Players can also participate in various activities, such as farming in designated areas, using boats to explore the surroundings, and building structures, while discovering traditional Māori stories and legends by communicating with the NPCs. Moreover, pupils can learn about "various areas of Māori life including the kind of water-vessel they used for travelling the Pacific Ocean, the kinds of settlements and structures that were used, and the utilities within those settlements" (Minecraft Education, 2022).

The Ngā Motu world was used in this study as a resource to supplement the more "traditional" teaching on indigenous people. As there was a pre-made ME world that included

information on Māori culture and history, the idea was that playing in this world could be a good exercise for the pupils to learn about one of the indigenous peoples of the English-speaking world. The main aim was to allow the pupils to actively participate in the learning process through playing the game, and the hope was that this would be beneficial for their learning and give them a more personal relevance and connection to the subject matter. In the ME-world, the pupils can learn through collaboration and problem-solving, and the hopefully the experience could help the pupils in their understanding of different cultural perspectives.

3.2 Choice of method

To explore the main aim, action research was considered as a natural form of research approach. Action research is defined by Gregory Mills (2018) as "any systematic inquiry conducted by teacher researchers, principals, school counsellors, or other stakeholders in the teaching/learning environment to gather information about how their particular schools operate, how they teach, and how well the pupils learn" (Mills, 2018).

Action research has become increasingly popular around the world in professional learning contexts, especially in the teaching profession (McNiff, 2005, p. 1). This form of research can be used when there is a specific educational problem, or in this case, a specific area of teaching that needs to be analysed and improved. Action research can provide an opportunity for educators to reflect on and improve practices, which is a relevant part of this study (Cresswell & Guetterman, 2021, p. 639). By using action research, teachers are able to systematically investigate what they are doing, individually and collectively, in order to make sure that their work is as they want it to be (McNiff, 2005). According to McNiff, the main reasons for doing action research is to improve practices and to generate new theory, which is closely connected to the main aim of this study.

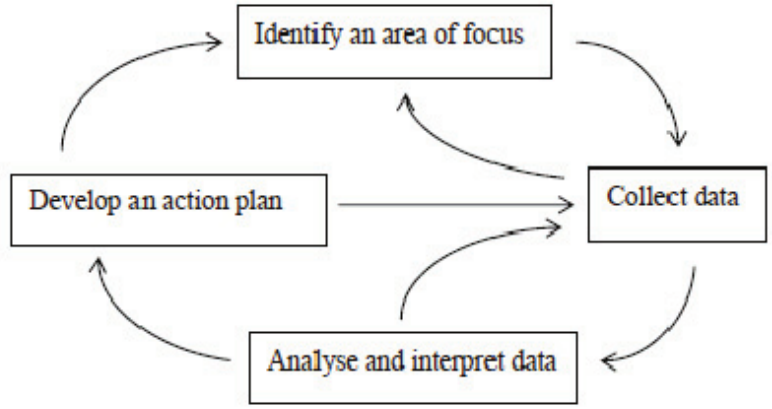
Within the field of action research, there are different research designs. Two of the most basic and typically used designs are "participatory action research" and "practical action research" (Cresswell & Guetterman, 2021, p. 641). Participatory action research (PAR) has a social and community orientation and an emphasis on research that contributes to emancipation or change in our society. The purpose of PAR is to improve the quality of people's organisations, communities, and family lives. PAR shares many similar ideas to practical action research, but, applied in education, has a stronger focus on improving and

empowering individuals in schools, systems of education, and school communities (Cresswell & Guetterman, 2021, p. 644). On the other hand, practical action research focuses on topics related to teacher development and pupil learning. The purpose of this form of action research is to research a specific situation, for example in schools or classrooms, where the goal is to improve practices. Practical action research often involves a small-scale research project and focuses on a particular issue, undertaken by education professionals, and seeks to improve specific, local issues (Cresswell & Guetterman, 2021, p. 642). Practical action research also places more emphasis on the "how-to" approach to the processes of action research than for example participatory action research (Mills, 2018). These two last points are relevant in relation to this study's practical approach, where the main aim is to explore by small-scale research, how using a computer game like ME can be a part of teaching pupils about indigenous people.

Within practical action research, Mills (2018) focuses on three important points in relation to the teachers conducting the research. Firstly, action research assumes that individual teachers are autonomous and can determine the nature of the investigation to be undertaken. Secondly, action research assumes that the researchers are committed to continual professional development and improvement, and that the teachers want to systematically reflect on their practices. Finally, this kind of research assumes that teacher researchers will choose their own area of focus, determine their data collection techniques, analyse and interpret their own data and develop action plans based on their findings (Mills, 2018).

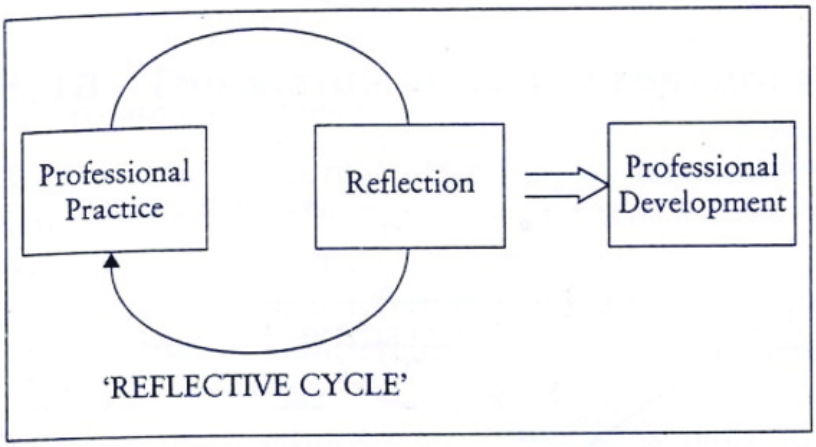
There are different models a researcher can use when conducting practical action research. What they all have in common is that they include some version of a cycle where one identifies and studies a specific problem, proposes a solution which is tested and then the results are evaluated before a new solution is proposed if needed. One of the models which has inspired and been a tool for this project is what Mills calls "dialectic action research". In dialectic action research, the researcher follows a four-step process which provides the teacher with a practical guide to conduct the research. The four steps are to identify an area of focus, collect data, analyse and interpret the data and then to write an action plan (Mills, 2018). This four-step process is illustrated in figure 2 below. The action researcher collects data both by qualitative and quantitative approaches, before the analysis and interpretation of the results concludes the research cycle (Cresswell & Guetterman, 2021, p. 654).

Figure 2: Dialectic Action Research Spiral. (Mills, 2018, p. 26)



Another model that is relevant in connection with this study is what Michael J. Wallace (1998) calls "the reflective cycle". This is a model where the core is "a process of reflection on professional action" (Wallace, 1998, p. 12). Wallace argues that there is a need for structured reflection in the teacher profession. Structured reflection means "having available as a source for reflection certain systematic approaches and techniques which will help us to make sense of our experiences and perhaps through such structured reflection come to a solution" (Wallace, 1998, p. 14). A solution here does not necessarily mean the same as "fixing" every professional problem, but can for example mean changing practices, or deciding to live with a certain problem. The most important element is to deal with any given problem and try to find a way forward in the teaching practice. According to Wallace, action research can be a form of structured reflection and a way to deal with specific and practical problems in a workplace (Wallace, 1998, p. 14-15).

Figure 3: The reflective cycle (Wallace, 1998)



My study uses a form of practical action research and contains elements from both Mills' "dialectic action research" and Wallace's "reflective cycle". In this case, the professional problem or specific area of focus which I wanted to analyse and improve is the methods used in teaching about indigenous people in lower secondary schools in Norway, to make the learning experience more engaging and active for the pupils.

In action research, planning and implementing an action plan is essential. McNiff (2005) proposes using several questions as a basis for the research. By asking these questions before carrying out the action research, teachers can develop a deeper understanding of their practice, consider practical solutions to problems, and try to improve their work. The questions include identifying what the teacher's concern is, understanding why it matters, gathering evidence to show the situation, exploring available options and ways to improve the teaching, collecting data to show the evolving action, justifying claims, and modifying practice in light of evaluation (McNiff, 2005, p. 44-45). The questions have been used in the process of working with this study, and as a basis for exploring my own practices in teaching about indigenous people

Although action research mainly considers and deals with local issues, this study can be beneficial and helpful for other English teachers as well. The main aim of the study can be relevant for the practices of other teachers, and a side-goal of this project is to give other teachers an insight into how gaming, and ME in particular, can be considered to be a part of varied teaching methods in the classroom.

While the overall methodology in this project can be characterized as action research, different research designs were used to evaluate the effect of the intervention. This study incorporates both qualitative and quantitative research characteristics and can therefore be called a mixed-method research design. According to Mills, "the purpose of mixed methods research is to build on the synergy and strength that exist between quantitative and qualitative research methods to understand a phenomenon more fully than is possible using either method alone" (Mills, 2018, p. 7).

3.3 Quantitative approach – Word clouds and word bubbles

A quantitative approach can be very effective when asking many people about the same topic. Some characteristics of the quantitative research method are the collection of data from a large number of people, analysing trends and comparing groups (Cresswell & Guetterman, 2021, p. 37). The quantitative research in this study takes the form of an online questionnaire which was made using the website Mentimeter.com. This is an online tool where it is possible to ask questions and view the responses in several different ways. For the purposes of this study, it was decided to use word clouds and word bubbles to visualize and present the findings in the questionnaire. The quantitative data were gathered by asking the pupils the same questions at three different times in the intervention:

- Pre-test: before the intervention started.
- Post-test: at the end of the intervention, immediately after the pupils had finished playing ME.
- Delayed post-test: a month after the whole intervention was concluded.

The group I collected data from consisted of 48 pupils. This is not a very large group, but the data are still quantitative because they are quantifiable, and it is possible to compare the data across classes and across tests. I have for example looked at how many unique words could be found across the classes; how many responses were given as word bubbles and any development in the word clouds and word bubbles at different times in the data collection process. All the data in the word clouds and in the word bubbles were collected anonymously.

3.3.1 Word clouds and word bubbles

This study uses word clouds and word bubbles to identify and present the pupils' knowledge about indigenous people at different times in the intervention. A word cloud is "an image composed of words used in a particular text, in which the size of each word indicates its frequency or importance" (Korab, 2021). Using word clouds can be a simple and efficient way to find out what a group knows about a topic, and when the pupils were given a question, their anonymous responses were immediately collected and presented in the online word cloud on the website Mentimeter.com. It was for example possible to see all the unique words the pupils connected to the term "indigenous people" being written in real time (See figure 4 below). In word clouds, if more than one person writes the exact same thing, the word or sequence of words grows and is moved into the centre. This makes it possible to determine if

any of the pupils have given identical answers. By using word clouds, one can therefore get a simple and quick overview of the pupils' knowledge about indigenous people.

Word bubbles are a little different to word clouds in the way that all the answers are not collected into one word cloud, but rather collected into separate word bubbles showing the pupils' individual responses while staying anonymous. Using word bubbles makes it possible to collect responses that go a little more in-depth on a topic as the respondents can write longer answers to the questions given. Word bubbles are therefore a relevant aid, especially when looking at development in what the pupils have learned.

The point of using word clouds and word bubbles was to map and follow the development in the pupils' learning and to be able to explore how playing ME possibly made a difference in what the pupils learned about indigenous people. The questions given to the pupils were:

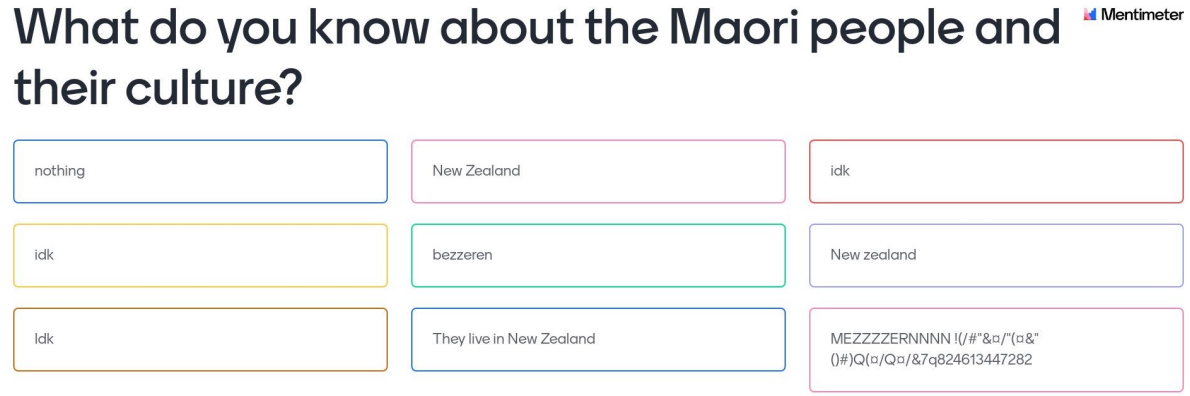
1. "Indigenous people" - what do you think about?
   (When I gave this question to the pupils, I explained that I wanted them to write down everything they connected to the term "indigenous people").
2. What do you know about the Māori people and their culture?
3. What did you learn from playing Minecraft?
   (Question 3 was naturally given only in the post-test and delayed post-test, as the pupils had not been playing ME before that).

The responses to question 1 were collected in a word cloud. The main purpose of this question was to see if there was any development in what the pupils connected to the term "indigenous people" before and after the teaching cycle. Each pupil was given the possibility to write a maximum of ten words each. In the first instance of asking this question, the idea was to look for any prior knowledge the pupils had on the subject. It would be interesting to see what the pupils connected to the term "indigenous people" before they started learning about the subject. Figure 4 below gives an example from one of the classes after they had answered the question for the first time.

Figure 4: Word cloud from pre-test in class 1.

The responses to question 2 were collected in word bubbles. Every pupil could submit multiple answers and each answer was put into a separate word bubble. Figure 5 below shows some responses from one of the classes after the first time the question was given.

Figure 5: Examples of word bubbles from question 2 in pre-test in class 2.



Question 3 was naturally only given to the pupils in the post-test and delayed post-tests. The main idea behind this question was to see what the pupils learned from the experience of playing ME. These answers were also collected in word bubbles, which meant each response was presented individually. Figure 6 below shows some of the responses from one of the classes after the first time of answering question 3.

Figure 6: Examples of word bubbles from question 3 in pre-test in class 2.

Although using word clouds and word bubbles can be an effective way to get an overview of the pupils' knowledge about a topic like indigenous people, there are some challenges to using this method. One challenge to using word clouds from Mentimeter.com is that it is impossible to determine exactly how many pupils wrote the same words or a sequence of words. Only unique words are given a separate place in the word cloud and although it is easy to see which word has been answered the highest number of times by looking at its size, it is not possible to see how many identical responses were given. In figure 4 above, for example, it is not possible to determine exactly how many pupils wrote "indians", "norway" or "africa". All that is possible to know is that "indians", "norway" and "africa" are the largest and most centrally placed words, which means that they are the words that have been answered the highest number of times. Although some details are not available in the word clouds, the use of word clouds can still be a relevant and useful way to map and explore the pupils' overall knowledge about a topic like indigenous people.

Another challenge when using word clouds from Mentimeter.com is that many answers can be connected to each other or have almost the same meaning, but if one answer is not identical to another one, the different words or sequences of words are presented as unique. In the words cloud in figure 4 above, for example, several pupils have written words like "samer", "same", "Sami people" or "sampi". Although these words are very closely connected and carry the same meaning, they are presented as unique. For the purposes of this study, I have decided to look at these results in two different ways. Firstly, in the first part of the analysis when I have looked at the amount of unique answers, I have counted all of these almost similar responses separately, so "same" and "sami" are counted as two different answers, although they are in essence the same. However, in the analysis of the development

in the pupils' responses I have decided to pool these answers together, as it makes more sense in the discussion of how the pupils' answers have changed during the intervention.

3.4 Qualitative approach - observation

As this study uses a mixed-method design, qualitative data collection was used to support, give depth to, and enrich the results from the quantitative research. Combining these methods can give a more comprehensive picture of what is going on in the classroom. The qualitative method is more experience based (Mills, 2018, p. 110), and in this study takes the form of observation.

3.4.1 Observation

In action research, teachers are natural observers of their own practices and have "countless opportunities to observe their own classroom" (Mills, 2018, p. 112). A teacher researcher that is a genuine participant in the activity being studied is called a "participant observer" (Mills, 2018, p. 112). There are many ways to be a participant observer in a classroom, and the different observation methods each carry different elements.

The active participant observer

The active participant observer is actively engaging in their own teaching. Most teachers are naturally observing and assessing their own teaching practices and what is going on in the classroom, but do not necessarily record their observations. To be an active participant observer, it is necessary to systematically record the observations made. Active participant observation is one of the most common experiencing data collection techniques that teachers use (Mills, 2018, p. 113).

The privileged, active observer

The privileged active observer uses opportunities to observe when they are not directly responsible for the teaching of a lesson. In this role the researcher has more opportunities than the active participant observer to take a more privileged, active role. This can for example be opportunities for teachers to work as a "teacher's aide" (Mills, 2018, p. 114). According to Mills, for many teachers this is a valuable way "to observe the social interactions of pupils and the impact of a particular instructional strategy on those interactions" (Mills 2018, p. 114).

The passive observer

"A passive observer no longer assumes the responsibilities of the teacher, but focuses only on data collection" (Mills, 2018, p. 114). It is unusual for teachers to be able to take on this observer role, as most teachers are alone in the classroom and therefore have to take on teacher responsibilities. However, teacher researchers can sometimes also be passive observers in a classroom, but then take no part in the teaching, instead concentrating on observing and gathering information.

In the active observer role, the teacher has the main responsibility for teaching, and in these instances, the notes on what is observed are most often made after the classes are finished. This can be a challenging thing to do well, because it can be difficult to combine the observer-role and the teacher-role at the same time. It can be difficult to get a complete picture of what the pupils are doing, and it can be challenging to remember everything that has happened in the lessons, when making the field notes afterwards.

Moreover, in the active observer role, there are many responsibilities that affect the possibility to do good research. One example is that the actual teaching of the content in the lesson takes both time and concentration, and leaves little room to observe in a substantial way. For example, walking around and helping pupils makes it possible to get an in-depth look into the individual pupils that are being helped, but it can be challenging to maintain an overview of the class as a whole – the teacher loses many chances to observe a larger number of pupils at the same time. In addition, in the classroom teachers can spend a lot of time and effort on securing a good working environment in the classroom, giving messages to pupils, following up different questions and having an overall responsibility for the class as a whole. Therefore, the active researcher role was not the most used way of observing in this study.

As there were two teachers in place in all the classes during the intervention, it was possible to actively take on the role of the privileged, active observer and sometimes the passive observer, which was a valuable and interesting experience, and very helpful for the purposes of this study. Most of the in-depth observations were made when it was possible to take on either of these roles. In these cases, it was easier to make notes and observations in real-time. These two roles make it easier to get a bigger picture of what is happening in the classroom, and the observations can be fuller and more in-depth than when in the active observer role. Even though it is sometimes necessary for teachers also in a two-teacher system

to step away from only observing, the roles of the privileged active observer and the passive observer can make it easier to get an overview of what is going on and to make relevant notes immediately.

In addition to this, it must be added that some observations in this study are made by my colleague who also participated in the intervention. As the project was ongoing, we shared observations in collaborative documents and in conversations after classes. Some of these observations have been included to support and elaborate on my own observations in this study.

3.5 Reliability and validity

Using mixed methods in this thesis strengthens the validity of the research. The findings from both the quantitative and qualitative research can help make more generalized and relevant interpretations of the data. If the results in the word clouds and word bubbles correspond with the data from the observations, it improves the validity and reliability of the research. The principle of the mixed methods approach is that it uses the strengths of both types of research. The goal in this study is to use the results from the word clouds and word bubbles and then discuss the findings from the observations to determine what might improve the teaching methods in the classroom. Using only one method to do this would not be sufficient.

Since this study is narrow with few participants, the findings will not provide enough information to generalize the results. Therefore, one cannot apply the results from the intervention in the classes in this study to the whole population of eighth-grade pupils in Norway simply based on this study. However, in action research, generalisability of data is not that important, because action researchers "are not seeking to define ultimate truths" (Mills, 2018, p. 161). The goal of action research is rather "to understand what is happening in your school or classroom and to determine what might improve things in that context" (Mills, 2018, p. 161). As such, the findings in this study are relevant to the researcher and can help in improving the teaching methods in the future.

Finally, it is important to be aware of the issue of personal bias. In action research, the teacher and the participants are close to each other, both physically and often personally, and

it can be a challenge to remain objective and reflect openly on what the teacher researcher sees (Mills, 2018, p. 163). To minimize the personal bias in this study, it was important to collect the quantitative data anonymously, so it was impossible to link the responses given to any individual pupils. When it comes to the observations made, it was important to conduct the research in a disciplined, systematic way and to always discuss the observations with other teachers. Therefore, when it was possible to be a passive observer or a privileged active observer, the observations were recorded as the classes were ongoing. If in the active observer role, observations were recorded immediately after classes, to accurately capture the essence of what happened in the classroom.

3.6 Ethical considerations

Within action research, potential ethical issues can be the close relationship between the researcher and the participants in the study, in addition the dual role of the teacher and the researcher (Cresswell & Guetterman, 2021). In relation to this, Mills (2018) points to one of the most basic ethical issues as the participants' informed consent to their participation in the studies. Informed consent means that the participants are part of the research of their free will and that a dialogue with the participants before the research begins is ensured. The use of anonymity and confidentiality is also important for keep the participants free from harm. Another important point in this is that teacher researchers should "to the best of their ability, recognize their own personal biases and develop an ethical perspective that ensures they will do the right thing when confronted with an ethical dilemma" (Mills, 2018, p. 51).

In this study, the participants were my own pupils in the age group of twelve to thirteen years old. Although the intervention in the classes is a part of study, it was important for me to explain to the pupils that everything we did was a part of ordinary English classes and that the choice of topic, and the methods used, followed the curriculum. It was explained that they would be observed and that notes would be made throughout the intervention, and they were given the chance to ask questions about anything before we started the intervention and while the intervention was ongoing.

When it comes to the pupils' privacy and personal information, the research methods used secured the anonymity of the pupils, and no personal information was recorded. In addition, ME is purchased by the local school authorities and approved for use in schools. I

did not collect any personal data and therefore did not need the parents' or pupils' consent. Lastly, although this project includes observation and testing of the pupils' knowledge at different times, their achievements and activity levels were not formally evaluated.

4.0 Results

This chapter presents the results of the study. As mentioned in the previous chapter, the data were collected using word clouds, word bubbles and observation. Section 4.1 includes a presentation of the results from word clouds connected to question 1, "Indigenous people – what do you think about?". Section 4.2 includes a presentation of results from the word bubbles connected to question 2, "What do you know about the Māori people and their culture?". Section 4.3 includes a presentation of the results from the word bubbles connected to question 3, "What have you learned from playing Minecraft?". Section 4.4 is a presentation and comment on the results found in the observation of the pupils during the intervention. Lastly, section 4.5 is a presentation of some of the limitations in the results.

4.1 Word cloud results

The word cloud results are based on the answers to question 1, "Indigenous people – what do you think about?". The main idea behind using word clouds was to map and follow any development in what the pupils connected to the term "indigenous people". By asking them this question before the intervention started, it would be possible to map their prior knowledge about indigenous people. By repeating the question two more times, immediately after the five-week intervention that included playing ME for three weeks, and one month after the intervention was concluded, it would be possible to analyse any eventual change in the responses. The analysis of the word clouds focuses on two main elements. They are:

1. What do the pupils connect to the term "indigenous people" and how is what they connect to the term affected by the intervention in their classes?
2. Is it possible to determine how playing ME affected the pupils in the analysis of the word clouds?

4.1.1 Pre-test - Question 1: "Indigenous people – what do you think about?"

To find out which kind of prior knowledge the pupils had about indigenous people, they were given a pre-test before the intervention started. Before they gave their answers, they were told that they could write down anything they connected to the term "indigenous people". They could write a maximum of ten words each. Some pupils did not know what the term "indigenous people" meant, so they were told that "indigenous people" could be

translated into the Norwegian term “urfolk”. The table below shows the number of unique responses from the two classes and the number of pupils that participated. The word clouds that were created from the responses can be seen below in figure 6 and 7. A note in relation to the results in this chapter is that all the pupils were not present for all the tests, which gives varying numbers in the tables.

Table 1: unique words and participants in the pre-test

	Class 1	Class 2
Unique words	54	47
Number of pupils	22	20

In a word cloud the largest and most centrally placed words are the most frequent replies. The ten largest words from each class can be found in the table below. It is clear from looking at the word clouds that many pupils had some general and superficial prior knowledge about indigenous people. The majority of words in the word clouds from the pre-test are for example related to phrases like “old people”, “first people”, “old” or something similar. All the words and answers from pupils that follow in this chapter, including the spelling and capitalisaton, are original quotes and therefore contain mistakes.

Table 2: the ten largest words from the pre-test in class 1 and class 2

Class 1		**Class 2**	
africa	indians	old people	people
norway	face paint	indians	first people
old	samer	group	sami
usa	asia	animals	snow
north	the old age	old generation	old days

In addition to the largest words, there are several smaller words or sequences of words that can be linked to the same kind of general knowledge about indigenous people as “old people” or people leading a traditional way of life, for example “old tradisjons”, “the old age”, “dont have much technology” and “people who were first”. Another point in the results from the pre-test is that some of the largest and most centrally placed words are “indians”, “sami”, “norway” and “north”. These words are frequent answers among the pupils and are

words that can be connected to “typical Norwegian knowledge” among pupils of this age. In Norwegian primary schools, pupils are taught about the Sami people, and the most common indigenous people to learn about from the English-speaking world is the Native American people from the United States (often called “Indians” by pupils). Moreover, an interesting result from the pre-test in relation to the main aim of this study, is that only two unique answers were related to the Māori people in the word clouds. One was “New Zealand” and the other was “moayi” (spelling error for Māori). It shows that the pupils knew little about the indigenous people from New Zealand before the intervention started.

Figure 6: Word cloud from pre-test question 1 in class 1

Figure 7: Word cloud from pre-test question 1 in class 2

4.1.2 Post-test - Question 1: "Indigenous people – what do you think about?"

To find out how the five-week intervention had made an impact on what the pupils connected to the term "indigenous people", they were given a post-test the day after the intervention was concluded. The pupils had gone through two weeks of lessons about indigenous people in general, and the Māori people and their culture. In addition, they had spent three weeks playing ME in the Māori-world "Ngā Motu". The main idea behind choosing this time to ask the question was to see how the answers to the question were affected by what the pupils had been working with over the last five weeks. The table below shows the number of responses and the number of pupils that participated.

Table 3: unique words and participants in the post-test

	Class 1	Class 2
Unique words	59	38
Number of pupils	22	16

The results from the post-test are very different to the pre-test. The ten largest and most frequent words from each class can be found in table 4.4 below.

Table 4: the ten largest words from each class in the post-test

Class 1		**Class 2**	
haka	tribes	haka	maori
new zealand	maori	nature	canoe
nature	tattoos	culture	trench
samer	the maori people	first people in a country	maori people
animals	norway	urfolk	samer

The post-test shows a clear overweight of words linked to the Māori people and their culture in both classes, and it is clear that the five-week intervention has affected what they connect to the term "indigenous people". The largest words like "New Zealand", "maori", "haka", "nature" and "canoe" are elements they had met during the intervention. Other words that can be connected to what they were working with during the English lessons about indigenous people and the Māori are "tattoo/ta moko", "tribes", "discrimination" and "ancestors". During the first two weeks of the intervention the idea was to give the pupils

more knowledge about indigenous people in general and the Māori people in particular, and it is clear that this has made an impact on the results, compared to the pre-test. There is a shift in what the pupils connect to the term "indigenous people", as most of the words are now connected to the Māori people and their culture.

Another result in the post-test is that several words can be linked specifically to the three weeks of playing ME at the end of the five-week intervention. Words like "village/pa" (Māori word for village), "houses where they sleep", "the trenches", "wakas/canoes/boats", "walls", "jungle", "watch tower", "ocean" are examples of words and elements that can be specifically traced back to the period they played ME. These words were not a central part of the lessons in the English classes before they started playing ME but were elements they met when in the Ngā Motu world.

Lastly, even though the post-test shows a majority of words related to the Māori people and their culture or the fact that the pupils had been playing ME, there are still many responses that can be linked to "general knowledge" about indigenous people. Several responses are for example connected to words or sequences of words like "First people in a country", "people who were first" or similar responses. These elements were a central part of the lesson plans and the information that the pupils learned about in the two weeks before playing ME, both through texts they read, and film clips they were shown. However, a clear difference from the pre-test is that fewer words are connected to their prior knowledge. Only a few responses are for example connected to the Sami people of Norway or Native Americans from the United States ("indians").

Figure 8: Word cloud from post-test question 1 in class 1

Figure 9: Word cloud from post-test question 1 in class 2

4.1.3 Delayed post-test - Question 1: "Indigenous people – what do you think about?"

The delayed post-test was given to the pupils one month after intervention was concluded. The main idea behind the timing of this test was to see what the pupils connected to the term "indigenous people" one month after they had been working with the topic. It would also be interesting to see what the pupils remembered from the intervention they had been a part of, or in other words, whether the intervention had any lasting effect on their

knowledge. The table below shows the number of responses and the number of pupils that participated.

Table 5: unique words and participants in the delayed post-test

	Class 1	Class 2
Unique words	68	44
Number of pupils	21	20

The delayed post-test shows that the pupils' responses have not changed much from the post-test. There is still an overweight of words related to the Māori people in the word clouds. In addition, there are many responses linked to indigenous people being the first people in a place and living a traditional life, like "first people in a country", "tradisjons" or similar responses. The ten largest words in each class can be found in table 4.6 below

Table 6: the ten largest words from each class in the delayed post-test

Class 1		**Class 2**	
maori	culture	maori	nature
ancestors	nature	sami	first people in a country
boats	pa	culture	haka dance
samer	tribe	tattoos	maori people
the haka	new zealand	old	new zealand

Another point in the results from the delayed post-test is that several responses, like "trenches", "village people" and "weird houses" can be linked to the time they were playing ME.

Figure 10: Word cloud from post-test question 1 in class 1

Figure 11: Word cloud from post-test question 1 in class 2

In summary, it is clear from looking at the word clouds from the three different tests that what the pupils connect to the term “indigenous people” has changed through the three tests. The main change is that the number of words and phrases connected to Māori people increases, which can be naturally linked to the content of the lessons during the intervention and the period of playing ME in class. The discussion of these findings can be found in chapter 5.

4.2 Word bubbles results

The word bubble results are based on question 2 “What do you know about the Maori people and their culture?”. The main idea behind using word bubbles was to give the pupils a chance to write longer responses than they could in the word clouds. This would give them the opportunity to explain their answers. The pupils could submit as many answers as they wanted. By asking them this question before the intervention started, it would be possible to map their prior knowledge about the Māori people and their culture. By repeating the question two more times, immediately after the five-week intervention that included playing ME for three weeks, and one month after the intervention was concluded, it would be possible to analyse any eventual change in the responses.

The analysis of the word bubbles focuses on three main elements. They are:

1. The number of word bubbles the pupils have submitted in each test and the change in the number of word bubbles in the different tests.
2. How the content of the word bubbles changes from the pre-test, through to the post-test and then in the delayed post-test.
3. Is it possible to determine from the word bubbles how playing ME has affected what the pupils have learned about the Māori people and their culture by analysing the word bubbles?

4.2.1 Pre-test - Question 2: “What do you know about the Māori people and their culture?”

To find out what the pupils knew about the Māori people and their culture before the intervention started, they were given a pre-test where they were told that they could write down anything they knew about the Māori people. In the pre-test there were 44 submitted answers by 40 pupils.

Table 7: number of words and participants in the pre-test on question 2.

	Class 1		Class 2	
	Word bubbles	Participants	Word bubbles	Participants
Pre-test	20	20	24	20

The word bubbles submitted as answers to question 2 show that the pupils knew very little about the Māori people and their culture before the intervention started. From the forty word bubbles that were submitted across the two classes, 22 contain responses like “idk” (abbreviation for “I don’t know”), “me do not know very much”, “I don’t know anything”, “nothing” or similar responses. Some of the word bubbles contain answers that are guesses about what the Māori people are, for example “I don’t really know who they are, but I think they are indigenous people”, “oceania” “I don’t know anything. I think they are urfolk” and “They live in caves and eat animals with the bone”. A few responses are also given in what seems to be an unserious character, like “huleboer”, “blue paint” and “mezzern”. The responses in the pre-test are also very short, given as one-word responses, or short sentences.

In both classes, many pupils asked what the Māori people were before they gave their answers. By mistake, the pupils were told that the Māori are indigenous people from New Zealand before they gave their answers. This is reflected in the replies in both classes, as 15 separate answers say “New Zealand”, “They live in New Zealand” or something connected to New Zealand. It must be assumed that these responses are linked to the fact that the pupils were given this information before they answered, and that they did not really know this before the intervention started. (As the teacher who was in the classroom with the pupils and responsible for the testing, I believe that all, or at least most, of the pupils who wrote these responses really did not know anything about the Māori, but only wrote down what they were told before they gave their answers).

Figure 12 and 13 below are two samples from the responses in the pre-test. The rest of the word bubbles from the pre-test can be found in Appendix 2. In summary, it can be said that the pupils in the two classes had very little knowledge about the Māori people and their culture before the intervention started.

Figure 12: a sample of word bubbles from the pre-test in class 1

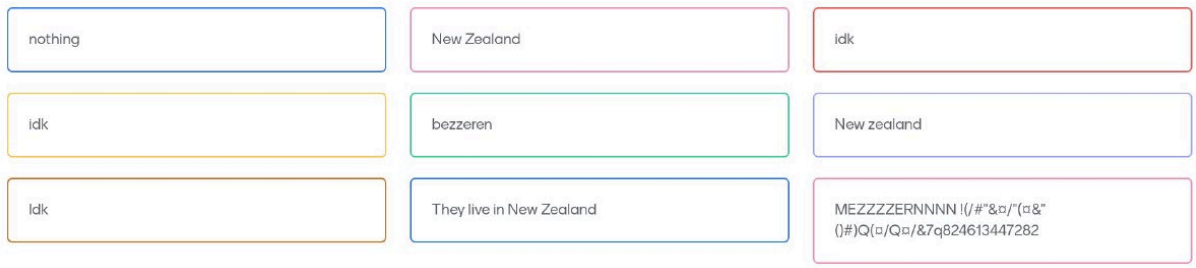
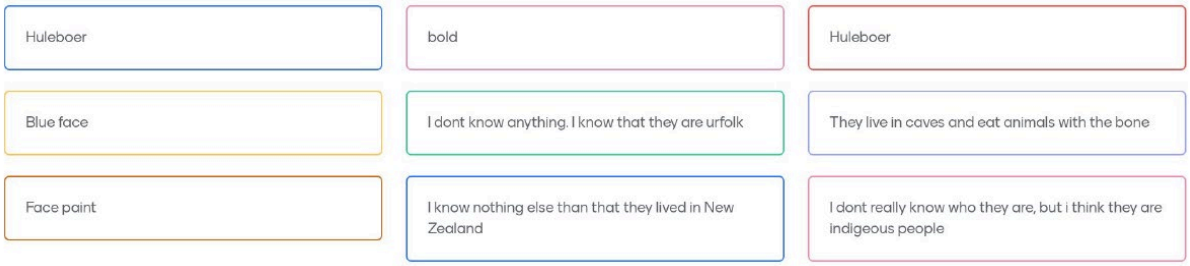


Figure 13: a sample of word bubbles from the pre-test in class 2



4.2.2 Post-test - Question 2: "What do you know about the Māori people and their culture?"

To find out how the five-week intervention affected what the pupils knew about the Māori people and their culture, they were given a post-test immediately after the intervention had concluded. The number of responses increased in the post-test. More than three times as many word bubbles were submitted compared to the pre-test. In the post-test, there were 137 responses given from 41 pupils. The table below shows how the number of word bubbles and participants across the two classes.

Table 8: number of word bubbles and participants in the post-test on question 2.

	Class 1		Class 2	
	Word bubbles	Participants	Word bubbles	Participants
Post-test	61	24	76	17

In addition to an increase in number of words, there is also a big difference in the content of the word bubbles, compared to the pre-test. It is clear that the pupils have learned a lot about the Māori people and their culture during the intervention. None of the word bubbles are linked to the pupils not knowing anything. Instead, the word bubbles now include elements from what the pupils have learned in class and by playing ME. Also, the responses are now much longer and include more relevant information compared to the pre-test. Overall, the results show two main traits.

Firstly, the pupils have given many responses that are linked to the first two-weeks of the intervention, when they learned and worked with the Māori people in the English classes. Some of the central areas they worked with are that the Māori people were the first people in

New Zealand, famous elements from their culture such as the haka dance, their tattoos and their canoes, and the close connection many Māori have to nature and their ancestors.

- Twenty-three word bubbles are linked to Māori-people being the first people in New Zealand, or that they are the indigenous people in New Zealand. Some examples are “I know that the Māori people are the indigenous people of New Zealand”, “They came from 1200 years ago” and “They were the first people in new zealand”.
- Fifty-one word bubbles are linked to the haka dance, Māori-people being close to nature and Māori tattoos. Some examples are “They have tattoos based about their past”, “They Māori people are known for their war dance”, “maori people have tattoos that tell people about their life, their ancestors and what tribe they’re from”, “the women have tatto over the mouth, and the men have the hol body”, “they have a very close relationship to nature, family and ancestors” and “they have a close conection to nature”.

Secondly, the pupils have given many responses that are linked to the three weeks of playing ME in the Māori world called “Ngā Motu”. Here, they learned about several elements that were not a part of the English classes they had in the two weeks prior to playing ME, and this is reflected in the results. 46 word bubbles in total can be directly linked to them playing ME. In this world, they met elements like an example of a traditional Māori village with trenches around it, canoes that the Māori use, called “waka”, different houses for sleeping and storing food, an underground tunnel to escape if the Māori were attacked and much more. Some examples of these responses are “They have trenches around their village”, “They have a separated for a house and a food house”, “They also had food storages over the ground to keep them avay from animals. And storage rooms under the houses”, “they have secret escape ways”, “they had canoes that they can youse to explore”, “they sleep together to keep warm”, “another word for village is pa for the maori”.

Overall, there is a clear difference in the results from the pre-test to the post-test. Both the quantity and the quality of the answers have changed. Figure 14 and 15 below show two samples from the responses in the post-test. The rest of the word bubbles from the post-test can be found in Appendix 2.

Figure 14: a sample of word bubbles from the post-test in class 1

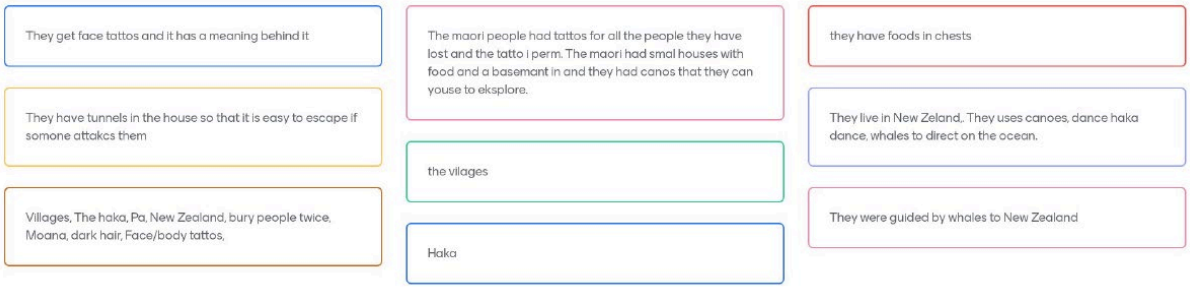


Figure 15: a sample of word bubbles from the post-test in class 2

4.2.2 Delayed post-test - Question 2: "What do you know about the Māori people and their culture?"

Similarly to the process on question 1, the delayed post-test on question 2 was given to the pupils one month after intervention was concluded. The main idea behind the timing of this test was to see what the pupils remembered from the intervention they had been a part of, or in other words, whether the intervention had any lasting effect on their knowledge.

Compared to the pre-test, there is a large increase in the number of responses. The pupils submitted 112 word bubbles, almost three-times as many as they did the first time they were tested, when they submitted 44 word bubbles. Compared to the post-test, however, the total number of word bubbles decreases slightly, and in Class 1, the number of answers is almost halved. Although the number of words the pupils have submitted to the word-clouds have decreased from the post-test, the results show that the pupils remember a lot of the information they have learned about the Māori and their culture. This is also reflected in the content of the word bubbles. Table 4.9 below shows the number of word bubbles and the number of participants in the delayed post-test.

Table 9: number of word bubbles and participants in the delayed post-test on question 2.

	Class 1		Class 2	
	Word bubbles	Participants	Word bubbles	Participants
Delayed post-test	38	22	65	20

The content in the word bubbles in the delayed post-test share many resemblances to the content from the post-test. It is obvious that the pupils still remember a lot about the Māori people and their culture. None of the answers are about the pupils not knowing anything. Similarly to the post-test, the results from the delayed post-test include elements from what the pupils learned during the intervention.

- Fifty-six out of 112 word bubbles include answers related to the haka dance, the Māori tattoos, and the relationship to nature. This means that half the number of word bubbles are related to these elements, which were mainly a part of the two-weeks of English lessons before playing ME. Some examples are “the hakka dance”, “tattoos” and “they are close to nature”.
- Seventeen word bubbles are related to the Māori being from New Zealand. Although the number of answers related to this is relatively similar to the post-test (23), one difference is that much fewer replies include information about the Māori being the first people. Most of the responses in the delayed post-test on this point are shorter and for example only say, “they live in new zealand”, “they are from new zealand” or “they came to new zealand in canoes”. Only two answers say anything about the Māori being the first people in New Zealand.

When it comes to determining the impact of playing ME and what they know about the Māori, 25 responses can be directly linked to elements the pupils learned while playing the videogame. Some examples of this are: “they used fires in the bedroom to keep warm”, “they use trenches”, “they have undergroud tunnels and underground storage”, “they have a own hous for food so animals wont eat it”, “lived in villages called a pa”. These elements were not a central part of the English classes in the two first weeks of the intervention, but words or concepts they remember from the weeks they were playing ME.

In summary, from looking at the word bubbles connected to question 2, there is a big difference in what the pupils know about the Māori and their culture across the two classes

from the pre-test to the delayed post-test. From having a very limited understanding of anything related to the Māori before the intervention started, the post-test and the delayed post-test both show that the pupils have gained a lot of knowledge and that they also remember a lot of their knowledge a month after they had finished working with the topic. Figure 16 and 17 below show two samples from the responses in the delayed post-test. The rest of the word bubbles can be found in Appendix 2.

Figure 16 – a sample of word bubbles from the delayed post-test in class 1

Figure 17 – a sample of word bubbles from the delayed post-test in class 2

4.3 Word bubbles results

The word bubble results are based on question 3 “What have you learned from playing Minecraft?”. The main reason for asking the pupils this question was see what kind of reflections the pupils had around what they learned from the playing experience itself. The pupils were told that they could write whatever they thought about in connection to the question, but the point was to concentrate on what they had learned from the three weeks of playing ME. They were also told that they could reflect around what happened in the classroom and in the groups while they were playing and what they learned from this, in addition to what they experienced in the “Ngā Motu” world. As in question 2, the main idea behind using word bubbles was to give the pupils a chance to write longer responses than they could in the word clouds. This would give them the opportunity to explain their answers. Question 3 was naturally only given to the pupils in the post-test and the delayed post-test, as

they had not been playing ME before that. Table 4.10 below shows the number of word-bubbles and participants in the post-test and the delayed post-test on question 3.

Table 10: number of word bubbles and participants in the post-test on question 3.

	Class 1		Class 2	
	Word bubbles	Participants	Word bubbles	Participants
Post-test	22	22	16	16
Delayed post-test	47	22	39	21

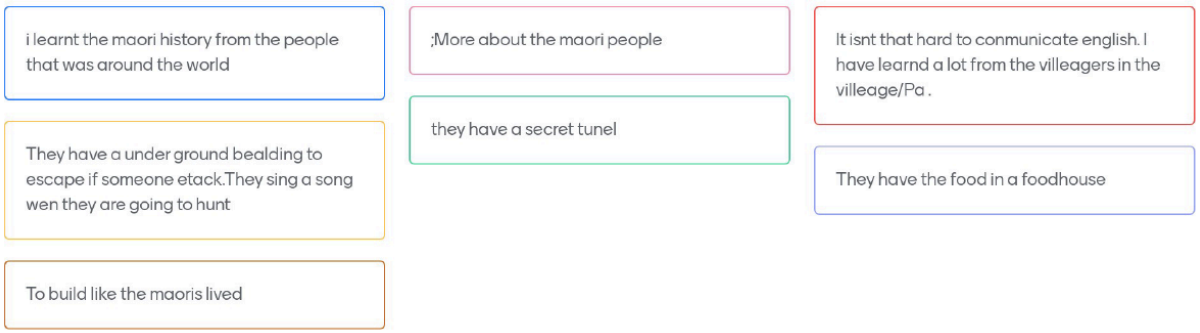
4.3.1 Post-test - Question 3: "What have you learned from playing Minecraft?"

The results from the post-test show two main trends. Firstly, many of the answers are still linked to what the pupils learned about the Māori people and their culture through playing ME. From a total of 38 responses, 22 are related to this area. The pupils mention elements such as the Māori houses, how they stored food, and other things they experienced and could see in the game. Some examples are: "I learned about their houses and how they used to live", "how they store food", "that they have fire pits in their houses to keep them warm", "to learn how the maoris live". In this way, many of the word bubbles from the post-test resemble the answers from question 2.

The second trend in the results from the post test is that there are some responses that show reflection about elements the pupils learned or experienced that are not directly related to ME or the "Ngā Motu" world itself. Several answers mention soft skills, such as co-operation, teamwork, communication and creativity. From the total 38 answers, 11 are linked to this. Some examples are: "I learnt that it is important to discuss what you wanna do before making changes", "I learned to work together on something in a group", I learned that there are different ways to learn" and "that you can creativ". Although the number of replies related to this area is only a third of the responses, it is clear that some pupils have learned about soft-skills and how they can be important in a classroom. Two samples from the post-test on question 3 can be seen below. The rest of the word bubbles from question 3 can be seen in Appendix 2.

Figure 18: a sample of word bubbles from the post-test on question 3 in class 1

Figure 19: a sample of word bubbles from the post-test on question 3 in class 2



4.3.2 Delayed post-test - Question 3: "What have you learned from playing Minecraft?"

The results from the delayed post-test on question 3 follow the same trends as in the post-test, although there is one clear difference which is related to the number of replies. In the post-test, the number of word bubbles equals the number of participants (38). In the delayed post-test, however, there is a total of 86 replies from 43 pupils. The replies can still be divided into the two same categories as in the post test. A majority of the word bubbles are still linked to elements from the Māori people and their culture. Out of 86 word bubbles, 75 mention things they have seen or experienced in the "Ngā Motu" world. Some examples are "how the houses lokked like", "they sleep close to keep warm", "A lot about the Māori people and their culture", "their food storage" and "what is important for the maoris".

As in the post-test, there are also some replies that are linked to soft skills or how they learned other things that were "outside" the game in the delayed post-test. These replies are in the minority, with only 11 word bubbles mentioning elements like teamwork, cooperation, and communication, for example. In the delayed post-test, a few responses also mention that it

was fun to do something different or to play ME. Some examples are: “To work together and that it is easier that way”, “I learned very much and it was really fun”, “I learnt that coordination is important”, “teamwork” and “how to cooperate while playing”. A deeper discussion of these findings follows in the chapter 5. Two samples from the word bubbles in the delayed post-test can be seen below in figure 20 and 21. The rest of the word bubbles from the delayed post-test on question 3 can be found in Appendix 2.

Figure 20: a sample of word bubbles from the delayed post-test on question 3 in class 1

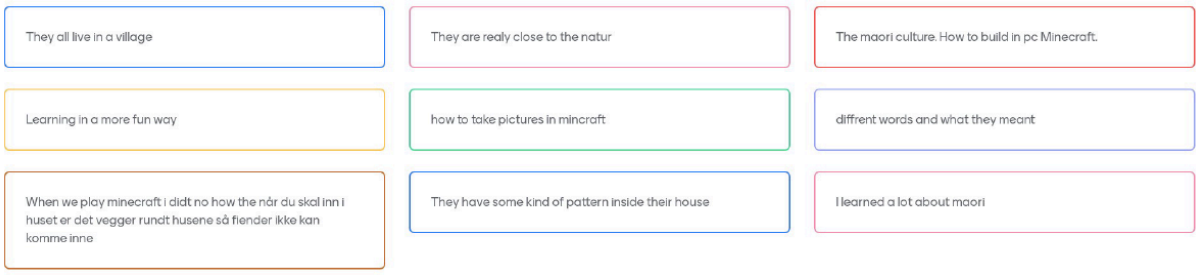
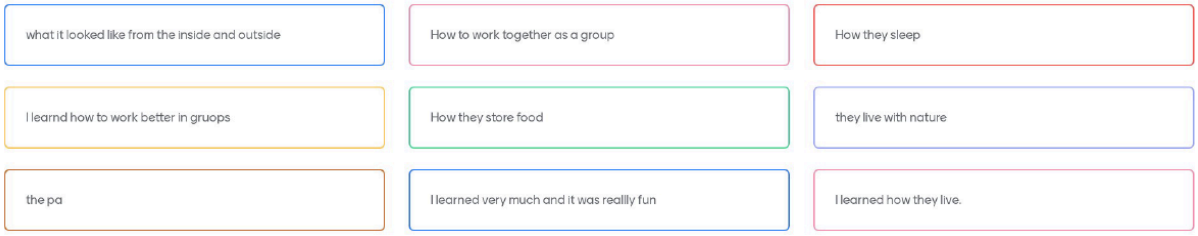


Figure 21: a sample of word bubbles from the delayed post-test on question 3 in class 2



4.4 Observations

The results from the observations are based on field notes taken either during the English classes, or as soon as possible after the English classes had finished. In addition, some of the observations are based on observations from my colleague, and conversations I had with my colleague who was in the classes together with me. When observing two different classes for four weeks, there is a lot of information to process. Of course, it is impossible to include everything that happened in the classroom. In this study, the results from the observations focus on the following areas:

4.4.1 Did the pupils learn about indigenous people?

4.4.2 The use of English in the classroom.

4.4.3 Social and emotional learning, and the use of soft skills.

4.4.4 Effect of playing ME on pupils who normally struggle with "traditional" learning methods.

4.4.5 Motivation in the classroom: How did the pupils show motivation, enthusiasm, interest, or engagement for what they did.

4.4.1 Did the pupils learn about indigenous people?

The results from the word clouds and the word bubbles show that the pupils learned a lot, both about indigenous people in general, but also about the Māori people and their culture. These findings correspond well with the observations made in the classroom. Overall, it can be said that the pupils had little knowledge about indigenous people in general and very little knowledge about the Māori people and their culture before the intervention began. This changed during the intervention. The start of the intervention included two weeks of "traditional teaching", with lectures, reading and watching short film-clips. The aim was to give the pupils an introduction to the topic "indigenous people in the English-speaking world" and give them a deeper understanding of the Māori people and their culture in particular. Here, it was evident that most of the pupils learned about things they did not know before. They got a deeper understanding of indigenous people in general, an what the term "indigenous people" means. Two things that particularly caught the pupils' attention when they learned about the Māori were the traditional Haka dance and the Māori tattoos that they saw in film clips that the teacher had prepared. Many of the pupils found this interesting and asked a lot of questions on the purpose of the dance and if everybody had to have tattoos, for example. We also observed pupils that googled the Haka dance and Māori tattoos in lessons to get more information about it. In summary, there was a significant change in the pupils' knowledge after the two first weeks of "traditional" teaching.

The pupils also learned a lot when they were playing ME in the last three weeks of the intervention, as the results from the word clouds and the word bubbles show. However, some of the most interesting observations made during this period, which is difficult to read from the word clouds or word bubbles, was how the variety of Māori cultural elements in the game caught the pupils' attention in different ways. Some pupils were most engaged when they could use traditional Māori canoes to go exploring in the world, while other pupils found the village and the trenches around it most interesting. Some pupils enjoyed learning from the NPCs in the game, while others enjoyed exploring the forest and he wildlife. This also came

into effect when the pupils started building houses, where they wanted to include some of what they liked the most from the Māori world. The main point here is that as their teacher, it was enjoyable and interesting to observe that almost all of the pupils found something that they enjoyed in the Ngā Motu world, and they wanted to talk about it. Many times, pupils asked the teachers to come over and look at what they had found or found out. Also, they were eager to invite the teachers into their houses to give them a tour and show what they had built. From the observations, it is evident that the pupils gained relevant knowledge and information about indigenous people in general, and the Māori people and their culture.

4.4.2 Use of English as a working language

One of the secondary aims in this intervention was that the pupils should use English as their main language when they were in the classroom. The pupils' use of English is not necessarily directly related to what the pupils learned about indigenous people, as they could be learning a lot of the same content even if they were only speaking Norwegian. However, the use of English is still important in the intervention when it comes to what and how the pupils learned about indigenous people.

In the beginning of the five-week intervention, several pupils struggled with using English as their working language. Many of the terms and areas they were given to work with were new to them, and they did not have a broad enough vocabulary. There was also a divide between pupils who were confident English speakers and pupils that struggled with speaking English out loud in front of others. Therefore, it was necessary to remind the pupils time and time again to try to use English, as many forgot. This was especially evident in the first two weeks of the intervention, which consisted of "traditional" teaching about indigenous people and the Māori. In many of these lessons, there was a mix between Norwegian and English being spoken during the lessons.

However, as the intervention progressed, and the lessons concentrated more on the Māori people, the pupils started working more in groups and there was a change in how many used English as their working language. During these lessons, we heard pupils reminding each other to use English and try to help each other find the right words, if someone struggles. The increase in the use of English was particularly evident when they started playing the ME.

During the three weeks of playing ME, several pupils decided that they would use only English in classes. This was led by a few of the most confident pupils, but many took inspiration and encouragement from the fact that more and more pupils were using English in class. Instead of having to be asked by the teacher to speak English, the pupils now reminded and encouraged each other on a regular basis. This also included the pupils who had been struggling before, and the difference between the pupils in how much English they used decreased. The increase in use of English also led to many pupils using English in informal situations, like when asking to borrow a pencil or talking about what they would do in the break. Several pupils also said that they had not been used to using this much English in class before, and that it became a natural thing to do. An example of this is a quote one of the pupils gave right before taking a break: "I have never used this much English in a stretch before".

Lastly, it was also interesting to see that many pupils started using Māori words in the everyday communication with other pupils. Instead of saying "village" and "canoes", for example, they used the Māori words "pa" and "waka". This can be traced back to the contact they had with NPCs in the "Ngā Motu" world which used Māori words that the pupils had to translate. The increased cultural knowledge this creates might help the pupils increase their cultural understanding and tolerance for others.

4.4.3 Social and emotional learning and use of soft skills

Social and emotional learning and the use of soft skills was also an area of observation. During the intervention, there were several tasks and assignments that required the pupils to use soft skills, such as cooperation, collaboration, communication, and teamwork. They were for example given questions in pairs that they had to help each other with, and they were put in groups that had to cooperate when they were playing ME.

In the beginning of the intervention, many pupils struggled with the use of soft skills. There was little cooperation and communication between them, and they focused mostly on themselves when they were given assignments. There was a difference between typically "strong" pupils and pupils who struggled, but mainly there was less use of these skills than expected. They needed a lot of help and reminders in this area, and the majority of pupils struggled with it.

One example is a task where the pupils were supposed to find information about the Māori people in a text they read. They worked in pairs or small groups of three, and the task asked them to cooperate and divide questions between themselves. They would then share the answers they had found with their learning partners and try to have a discussion around them. Most of the pupils concentrated well on answering their own questions, but had difficulties with communication and cooperation in the part where they were supposed to share answers. The result here was that several of the strongest pupils just answered all of the questions by themselves, but did not spend much time in sharing their findings. Several of the pupils who struggled with finding answers gave up after a short time and did not get much relevant information out of the lesson.

Later in the intervention, when they started working in groups of four, there was a clear change, especially when they started building their houses in ME. It was not an easy process for many, but there was an obvious increase in the amount of communication and cooperation within the groups. Most of the pupils understood the need for teamwork and helping each other. Some examples are that the majority of the groups started planning and deciding together what they would build in ME, and who was responsible for different tasks. They were also able to suggest improvements to each other and discuss how to proceed in their building process. Sentences such as “come over here and I’ll help you” and “I think we should discuss this together before we do anything” are just a few examples from this.

When it comes to social and emotional learning, all of the five competencies that DePaoli (2018) writes about were a part of the learning process for the pupils in varying degrees. Self-awareness and self-management became important for many in the preparation and building process, as they had to control their own emotions and wishes and include the opinions from the other pupils in their group. Social awareness and the ability to take the perspective of and empathize with others was difficult for many, but still a part of the process. Many pupils also showed good relationship skills and practiced how to communicate clearly, listen well and cooperate with others. An interesting observation was also that playing ME in groups helped some of the pupils resist social pressure from fellow classmates. In some cases, pupils were disturbed by others and often the result is that pupils lose their concentration and motivation to work. However, it seemed like the fact that they were building houses in groups and creating something from their own imagination often helped them concentrate, and resist the temptation to do something else. This is also related to the last competence which is

responsible decision-making and the ability to make constructive choices about personal behaviour and social interactions.

Another observation is how many pupils showed interest in understanding and reflecting around the living conditions in the "Ngā Motu" world, and the attempt to compare it to their own world. On several occasions, we as teachers observed and talked to pupils who expressed an interest and showed attempts at reflection on how the world they played in and learned about was very different to the kind of world they live in themselves. Sometimes this came out as statements like: "What, did they sleep together as a family? Why?", and "I didn't realise that they had separate houses for food", or "It's cool that they had trenches around their village". We had several talks and discussions with the pupils about the enormous contrast between the old-fashioned Māori lifestyle and their own modern world. Some of the pupils were also able to reflect around how society has moved on from what they experienced in the Ngā Motu world while playing, although it must be said that these pupils were in the minority.

4.4.4 Effect of playing ME on pupils who normally struggle with "traditional" learning methods

Another area for observation was to see how playing ME could have any impact on pupils who normally struggle in "regular" classes. It was interesting to see how the behaviour and participation changed during the intervention for many of these pupils. In the first two weeks, when they were in the "traditional" lessons, many of them were disengaged and struggled with following the lessons. However, when the three weeks of playing ME started, there was a clear change, and most of these pupils were much more engaged, motivated, and interested. They liked that they had the freedom to move around and explore in the Ngā Motu world, and that they had the chance to choose what they wanted to do for themselves. There was also a change in how much English they used when working and playing, and in how they were calmer and had a less disruptive influence on other pupils.

Some of the pupils who are normally struggling with regular classes had also been playing a lot of Minecraft before and could suddenly take on the role of the "Minecraft-expert" in class. This was a new situation for them and seemed to give them a feeling of mastery that had rarely been experienced before. They could now help other pupils, had the

chance to show their playing skills to others and show which options and tricks could be used in their builds. Generally, they were taking on a new role in class.

One pupil involved in the intervention had problems with reading and writing and generally struggles a lot, both with participating in regular classes and with motivation to do anything in school. Playing ME in class, which the pupil had done a lot at home, opened an arena where the pupil had complete control and therefore could blossom in. The pupil could now suddenly help others, participate in the activities and could give the others ideas for how they could solve tasks. There was also a significant increase in how the pupil used English as the working language, which had rarely been done before. Similarly, another pupil who has issues with learning disorders and usually struggles to follow classes is often a disruptive element in classes. However, when we started playing ME the situation changed completely. The pupil now became one of the leaders in the classroom and took on responsibility in the group and helped others. When someone in the class got lost in the game and needed help, for example, the pupil could help the teacher and fix the problem easily. In some instances, when the teacher did not know how to fix something, the pupil could help and make suggestions. In summary, the main observation here was that playing ME in class helped many of these pupils blossom and feel a sense of accomplishment.

4.4.5 Motivation in the classroom: The pupils' engagement, interest and enthusiasm

The pupils' engagement, interest, and enthusiasm for what they were learning were interesting elements in the observation. At the beginning of the intervention, the pupils did not show any significant interest in the topic "indigenous people". Many of them remembered learning about the Sami people in primary school, but there was no real enthusiasm for learning more about the topic. This is not unusual in school, but the important element in this regard is that the levels of enthusiasm, engagement and interest changed during the project.

It is natural that the pupils show more interest as they are going deeper into a topic, but what was most obvious during the intervention was how the idea that they were going to use a computer game to learn was a catalyst for change in the attitude for many of the pupils. The engagement and interest in the beginning was mostly related to the idea of using gaming in the classroom. Many had not used games in this way before and mentioned that it would be fun to do something they liked. However, as we had started playing ME, and especially when

the pupils started building their houses, many showed enthusiasm and interest for the content of the lessons and the game. It was evident that they looked at it as more than just a break from regular school. They also showed engagement because what they were doing in the game caught their interest and, as the teacher, it was also clear that they were learning from it. Some pupils wanted to play ME during breaks and many were eager to start building as soon as English classes started.

That the pupils were active learners in the last part of the intervention also made a big impact in the classroom. The fact that the pupils had to make their own decisions when they were building houses and how they had to cooperate to find the best solutions for the groups gave many pupils engagement and motivation. They were responsible for their own work, had to think for themselves and communicate with each other within the groups. On several occasions, pupils said that it was fun to decide how to build their houses themselves, and how it was interesting to use what they had learned in a creative way. For many, this was a new experience and something several pupils mentioned as one of the best parts of the whole intervention.

Although most of the pupils showed and increasing interest as the intervention was ongoing, some of the pupils did not like playing ME for various reasons. Some of them found ME difficult to master and struggled because of that, while others never really became engaged in the game or the content at all. Nevertheless, these pupils still liked that they were able to do something different than usual and that this was a new way for them to learn about a topic like indigenous people. Some of them mentioned that “this is still better than regular school”, for example. So, even if a small number of pupils did not really like the game or the content of the classes, there is no doubt about the value of gaming as a part of varied teaching methods.

4.4.5 Importance of teacher in the lessons

There were many things that went well, and many pupils responded positively to playing ME in the classroom. However, the role of the teacher played an important part during the intervention. Firstly, the need to help pupils understand how to play the game was a time-consuming and important part of the whole intervention. Although many pupils knew how to play ME from before, there were some pupils who had little or no knowledge about

how to play the game. Some had difficulties with basic elements like logging in to the game and understanding how to operate the controls within the game. Other pupils made mistakes while building and had difficulties correcting their mistakes. Some pupils ended up in places far away from other pupils because they tried out how far they could travel in the boats they had access to. They then had trouble finding their group members again, and the teacher had to teleport them back to the group, which can be done through operating the chat menu in the game. These are just a few examples where it became evident that the teacher needed game literacy skills to be able to guide and help the pupils operate and play the game.

In other instances, the teacher was needed to help the pupils apply their knowledge about the Māori and their culture in the game. The pupils had obtained knowledge and understood elements from the Māori culture, but struggled with how they could use them. It was therefore necessary to have a dialogue with some of the pupils and help them realise how they could use what they had learned and how they could present their knowledge. A few typical questions were “but how can we show our knowledge?”, or “I know about many things in the game, but how should I use it?”.

In addition to this, some pupils also had trouble when it came to understanding the assignments and the criteria they were given when they were building their Māori houses and needed help. In the classes, there were pupils with a very good understanding of English, and pupils who understand very little, and how the teacher can help all of these pupils on their own level was an important part of the whole intervention. Moreover, there was a need for the teacher’s ability to put the playing of the game into a learning context. Again, most pupils understood the link between what they had learned about the Māori and their culture, and how it played a part in what they did in the game. On several occasions, however, it was necessary to answer question like “why are we doing this?”, and to help the pupils reflect when they asked, “but can’t we just play?”.

Moreover, because this project included cooperation in groups of three or four pupils, the teacher also needed to help and guide the groups in both their communication and their cooperation several times, especially in the beginning of the project. It was clear from the beginning that many of the pupils struggled with finding out how to best cooperate and communicate about their thoughts and ideas. In the beginning, this meant that they were working mostly as individuals, without communication or cooperation. Also, sometimes one

or two of the group members did not do what was expected, and the pupils then struggled in helping each other concentrate. Instead, they became angry or irritated and traded insults or harsh words. The teacher was therefore important in helping them find out how to best work together, and to remind them that they had to communicate with each other if they wanted to succeed. Although most of the groups found a way to make this work after a while, some groups still struggled for different reasons. The teacher therefore played an important part in reminding the pupils and helping them throughout the process.

Finally, on multiple occasions it was also important that the teachers had basic skills about computers, internet connections and could find solutions when something went wrong in the project. One example of this is that at the very beginning of the ME-weeks, the pupils had to download the game, register an account and log into the game. Most of the pupils did not find this easy, and needed guidance from the teacher throughout the process. Another example was a problem that arose in the beginning of the playing process. We found out that the pupils and the teachers could not be logged onto the same network. We did not know this from the beginning, and this created problems in the game. To fix the problem, the teacher had to download the game file which had been started on the same network as the pupils, and then upload it to the internet, and then download it again onto a Chromebook that was connected to a different network. Overall, there were several experiences that showed that the teachers needed some computer literacy and game literacy to fix issues during the time the pupils were playing ME.

4.5 Limitations

There are some limitations in the analysis of the results. One of the most important limitations is the anonymity in the word clouds and the word bubbles. It is not possible to analyse what the individual pupils learned and answered from looking at the word clouds and word bubbles. All it possible to know is the number of pupils who participated, and the total number of replies from each class. From the results, one can therefore only analyse how the pupils have developed as a group, but it is not possible to find how much each individual has learned or to see development in each of the pupils. One pupil who has learned a lot can therefore be responsible for several of the elaborate answers, while other pupils maybe have not written much at all.

Another limitation is the fact that the pupils in both classes were given a que about the Māori being indigenous people from New Zealand before they were asked question 2 for the first time. The pupils' responses may have been influenced by this, and it was therefore important to analyse the results with this in mind.

It is also important to keep in mind that the results may be influenced by the learner composition in the two specific classes, or the teachers' teaching styles and enthusiasm. The results could be different in other classes and with other teachers.

5.0 Discussion

The following chapter is a discussion of how ME can be used in schools. Section 5.1 discusses possible benefits of using ME in education. Section 5.2 discusses some of the issues one should be aware of when using ME in classrooms. Section 5.3 presents some of the limitations in the study, while section 5.4 discusses possible further research on the use of ME in education.

5.1 Possible benefits of using ME to teach about indigenous people

This study shows that there can be several benefits to the use of ME in education. ME can for example be used to teach about indigenous people, to learn language, to increase social and emotional learning, and it can help pupils who usually struggle in school.

5.1.1 ME can be used to teach about indigenous people

The results from this study show that there is a significant change in the pupils' knowledge about indigenous people through the intervention. The word clouds and word bubbles show that the pupils went from having little knowledge about the topic to having a deeper and broader understanding about indigenous people. In the analysis of the results, it is possible to see that many of the answers can be directly linked to what the pupils learned about the Māori people and their culture through playing ME in the Ngā Motu world.

In this study, which focuses mainly on how ME can be used to teach about indigenous people, it can be argued, based on the results, that the use of ME and playing in the Ngā Motu world gave the pupils an in-depth understanding of Māori traditional lifestyle and culture. The weeks they spent in this immersive world, clearly made an impact and they gained valuable insights into different aspects of Māori culture. For instance, they learned about a typical Māori settlement, important elements in Māori culture through communication with non-playable characters (NPCs), and the Māori people's deep connection to nature. The fact that the Ngā Motu world is built by a Māori man also gives the learning experience an authenticity that could be difficult to achieve otherwise. The knowledge the pupils acquired through playing the game could be difficult to impart through traditional teaching methods, which highlights the potential of game-based learning in education.

These results are in line with previous research that shows that games like ME can be an effective tool in teaching a variety of subjects. Previous research shows that computer games in education can offer an increased understanding of the subject curriculum, games can help the pupils remember the curriculum better, and games can provide immersion experiences, contextualise learning, and increase opportunities for knowledge application and a deeper understanding of the subjects in game environments (Baek et al., 2020; Ministry of Culture, 2019; Skaug et al., 2017; Yang et al., 2020). Research on ME also shows that this game can provide practical, immersive and authentic examples of concepts and culture that can be difficult to illustrate in the real world and in traditional classrooms and teaching (Callaghan, 2016; Charteris & Thomas, 2021).

As previously mentioned, the main aim of this study is to explore how ME can be used to teach about indigenous people. In the curriculum for the English subject, two of the competence aims that are most closely connected to this study are that pupils should be able to "explore and reflect on the situation of indigenous peoples in the English-speaking world and in Norway" and that pupils should be able to "explore and describe ways of living, ways of thinking, communication patterns and diversity in the English-speaking world" (The Norwegian Directorate for Education and Training, 2020). These goals are related to the core curriculum for Norwegian primary and secondary education, which states that education in Norwegian schools should give pupils the ability to "open doors to the world and provide pupils and apprentices with historical and cultural insight and anchorage" and that education should "foster an understanding of cultural diversity" (Ministry of Education, 2020).

As seen in the results, most of the pupils knew very little about indigenous people before the intervention started. Some answers mentioned the Sami people of Norway, and a few mentioned the Native Americans in the USA. However, the pupils did not know anything about the Māori before the intervention, but by playing ME in the Ngā Motu world, a door to a different world was opened which presented the pupils with historical and cultural insight into Māori culture and lifestyle. Therefore, they should now be able to describe different ways of living and thinking and hopefully have a deeper understanding of diversity in the English-speaking world.

5.1.2 ME can be used to increase motivation, interest, engagement, creativity, and collaboration

In the results from this study, several pupils answered that the experience of playing ME in class to learn about the Māori people and their culture was enjoyable and fun. Some said they "learned in a more fun way" and that playing ME gave them the chance to be creative. They were motivated by playing games and doing something that was different than they were used to. From the observations, one of the findings was also that most of the pupils liked the experience and were motivated by it, especially when they started building their houses. On several occasions, the pupils wanted to work on their houses during breaks and were eager to continue building their structures when classes started. Ryan and Deci (2000) write that "someone who is energized or activated toward an end is considered motivated" (Ryan & Deci, 2000, p. 54). In the two classes that went through the intervention, many pupils were clearly motivated and energised in the building process and wanted to show what they had learned.

These findings are also relevant when looking at the theory connected to gaming and motivation. The use of games in education is often connected to increased motivation among pupils, in addition to having other benefits, like engagement, creativity, increased interest, and collaboration. Researchers argue that integration of learning content into digital games improves learner motivation, engagement, and performance (Gee, 2004; Skaug et al., 2021; Yang et al., 2020). Also, gaming can be more engaging, motivating and enjoyable than more traditional teaching methods, and can help pupils develop collaboration skills, develop problem-solving strategies, increase creativity and cultivate individuality (Callaghan, 2016; Charteris & Thomas, 2021; Gros, 2007; Ministry of Culture, 2019; Plump & LaRosa, 2017).

Several researchers also point to ME as a game that can increase motivation, engagement and can also effectively boost pupil interest, drive to learn and enhance engagement (Baek et al., 2020; Callaghan, 2016). ME also encourages creativity and problem-solving, which for many can increase the enthusiasm for learning. The game gives players an environment where they can be creative and demonstrate understanding, which can be motivating (Baek et al., 2020; Charteris & Thomas, 2021). That the pupils were motivated by the ME experience is also in line with many of the goals in the core curriculum for Norwegian primary and secondary education. In summary it can be said that the findings in

this study and previous research on the topic correspond, and that games can be an effective tool to increase motivation, interest and enthusiasm.

5.1.3 ME can be used to learn language

The results from this study show that the pupils both learned new vocabulary, new expressions, and, not least, gained knowledge about cultural elements when playing ME. In the pre-test the pupils went through before the intervention started, they showed little knowledge about the content they were asked about and most were not able to answer the questions with relevant, subject-specific vocabulary. However, in the post-test and the delayed post-test, the answers included vocabulary that was relevant to the content, and new expressions they had learned with connection to indigenous people in general and the Māori people in particular.

Moreover, some pupils gave answers in the word clouds about how communicating in English "isn't that hard" and pointed to that they were learning new vocabulary and meaning of words as a result of playing ME. The observations also showed that the majority of pupils used English as a working language in the classroom, especially in the last part of the intervention. This meant that they practiced using vocabulary connected to the content of the lessons, but also used a more colloquial English language when they talked about everyday things. Baek et al. (2020) argues that this kind of casual communication can "promote informal learning processes, as ideas, understandings, and linguistic skills develop through collaboration and information searches" (Baek et al., 2020, p. 10).

One of the competence aims in the English curriculum also says that pupils should be able to "express oneself with fluency and coherence with a varied vocabulary and idiomatic expressions adapted to the purpose, recipient and situation" (The Norwegian Directorate for Education and Training, 2020). It was clear that the pupils were practicing this throughout the intervention, and the use of ME was a catalyst for making it easier for the pupils to practice speaking English in class. This was the case both for pupils who were confident English speakers before the project started, but also for pupils who were more nervous and struggled with speaking English out loud. Previous research has argued that computer games like ME can be a positive factor for pupils, for example they can help to reduce the barrier for learning, decrease apprehension and that using computer games can help pupils relax and reduce

anxiety (Baek et al., 2020; Yang et al., 2020). An interesting finding in this regard was that some of the pupils who struggled before seemed like they went into a kind of "gaming bubble" sometimes and forgot that they often struggled with speaking English out loud.

The results presented above support previous research which argues that games can be a useful tool for English language learning in several ways. Both educational games and commercial games can expose learners to new vocabulary, idiomatic expressions, and cultural references in the context of the game, and can develop and enhance pupils' language and literacy skills (Gee, 2004; Skaug et al., 2017). Games can also increase and improve the players' literacy and can include many of the characteristics of traditional texts (Beavis & O'Mara, 2010; Gee, 2004). Kuhn (2018) also argues that a game like ME can be an effective tool for language acquisition and practice because "the game's open-ended nature and collaborative approaches foster pupil communication and context-based language use" (Kuhn, 2018, p. 221).

All in all, the pupils clearly learned language and were able to practice speaking English in the classroom. For me as their teacher, it was clear that using games in the classroom can have positive impact on language learning.

5.1.4 ME can be used as a part of social and emotional learning, and it encourages use of soft skills

In the results from this study, it is evident that the pupils improved their use of soft skills and practiced their social and emotional learning. Several answers in the word bubbles show that the pupils learned about co-operation, teamwork, communication and creativity from playing ME. They worked in groups when they were in the Ngā Motu world and had to use soft skills to succeed. Statements like "I learned to work together on something in a group" and "I learned that there are different ways to learn" underline this.

From the observations, it was possible to see a progress in the use of soft skills during the intervention. In the beginning, many pupils struggled in this area and there was little cooperation and communication between them. However, in the last weeks there was a significant change in the amount of communication and cooperation within the groups, especially when they started building their houses in ME. It seemed like they understood that

to succeed in the building of their houses, they had to work together and listen to each other. Playing ME increased the pupils desire to use soft skills.

The pupils also showed elements connected to social and emotional learning when they were playing ME. From many of the pupils, there was an increasing self-awareness and self-management, and the pupils had to show self-management and social awareness on several occasions. Perhaps the clearest area where this was shown was in the use of relationship skills. Most of the pupils realised that they had to practice how to communicate clearly, listen and cooperate with to the others, resist inappropriate social pressure from fellow pupils, and seek and offer help when needed.

In the core curriculum for primary and secondary schools in Norway, there is a focus on social and emotional learning and development, and a stated goal that pupils should learn empathy, listening to others, collaboration and cooperating with fellow pupils (Ministry of Education, 2020, p. 11-12). The results in this study align with theory on how computer games can help build social and emotional learning. Researchers argue that computer games can be a helpful tool on this area, as computer games give pupils a safe arena to practice these skills, offer the chance to participate in realities that are otherwise unattainable and presents an arena to explore representational experiences (Skaug et al., 2021; Walker & Venker Weidenbenner, 2019). Also, a game like ME and the Ngā Motu world, gives pupils immersive worlds and authentic tasks that make the content easier to understand. The pupils can become more engaged in what they are doing, and games like ME can make it easier to imagine how historical actors lived (Andersen et al., 2021; Craft, 2016; Garcia-Fernandez & Medeiros, 2019). From this it is possible to argue that using computer games like ME can help pupils in their use of soft skills and social and emotional learning.

5.1.5 Using ME can be a good experience for pupils who usually struggle in school

During the intervention, an interesting result was that the behaviour and learning experience for some of the pupils who usually struggle in school changed significantly. When we started playing ME, there was a clear change in the behaviour of many pupils, and most of these pupils were much more engaged, motivated, and interested compared to what they were like during the weeks of regular teaching. Some of these pupils had played ME before and because of this their role in the class changed as well. This was especially evident in two

pupils who usually struggle with regular school, as they now blossomed and seemed to feel a sense of mastery. From usually being the pupils who ask for and need help, they now became pupils who could help fellow pupils, and the teacher, on several occasions. Other pupils who usually sruggle had not played a lot of ME before, but responded well to playing computer games. They seemed to like the chance to be creative and learn in a different way than usual. This resulted in a much calmer environment in class, and many of these pupils were able to participate in classes and keep their concentration for much longer than usual.

Previous research in this area shows that many pupils find game-based learning more motivating than other ways of teaching and because of this can concentrate over a longer period of time (Ministry of Culture, 2019). These pupils can experience a feeling of success through gaming, which they may struggle to do through other traditional teaching methods. In addition, using computer games can reduce anxiety and emotional obstacles and studies have found that pupils who normally do not actively take leading roles in class can act as leaders when playing games. All of these elements are beneficial for pupils in classrooms and are elements that sometimes can be difficult to facilitate for in "traditional" teaching (Baek et al., 2020; Callaghan, 2016; Ministry of Culture, 2019). Lastly, Baek et al. (2020) argue that pupils who often struggle in "regular" classroom activities can blossom in other activities, like gaming. Many pupils in this age-group who struggle in school use time outside of school on gaming, and because of the competence and knowledge they have acquired through gaming they can become "experts" in situations that they normally struggle in, like school. From the results in this study and previous research it can be said that using computer games can be an effective tool to increase learning and motivation for pupils who usually struggle in school. Using gaming in the classroom can thus offer ways to facilitate for inclusive education.

5.2 Challenges and issues to be aware of when using ME to teach about indigenous people

Although there are several potential benefits to using computer games, as discussed above, it is important to be aware of some of the challenges and issues that are related to using computer games in education. One of the most important points to consider is the teacher's role when using computer games. Additionally, it is important to consider the differences between pupils, for example when it comes to their gaming competence.

5.2.1 Teacher's role when using computer games in education.

The teacher's role in using computer games in schools involves understanding how to integrate technology, content, and pedagogy effectively or having Technological Pedagogical Content Knowledge (TPCK). TPCK is about the teachers understanding of how technological tools can enhance and support education and support the pupils' learning more effectively (Mishra & Koehler, 2006). Previous research shows that the teacher is crucial when it comes to the pedagogical use of games in the classroom and that the teachers should have game literacy and be proficient pedagogues to make relevant connections between games and the subject matter (Callaghan, 2016; Skaug et al., 2021). Additionally, Baek et al. (2020) make a point that teachers should be guiding figures in integrating games like ME into pupil learning.

In this project, the teacher was important on many levels. Firstly, it was important that the teacher had TCPK knowledge and game literacy. Using ME to teach about indigenous people was an important part of the whole project, but it was necessary to put the game into a pedagogical context, so it could enhance and support what the pupils were learning about indigenous people. In order to do this, the teacher had to acquaint himself with the game and spend some time exploring and testing the options before designing the intervention. When the pupils were playing in the pre-made Ngā Motu world, they could then get the necessary guidance and help to understand what they were learning. These aspects were necessary to facilitate for learning through playing ME.

Secondly, the role of the teacher in making what the pupils were doing relevant to the topic was important. Although the results in the word bubbles show that the pupils gained relevant and new knowledge about the Māori people and their culture by playing ME in the Ngā Motu world, it was necessary to have a competent teacher in charge of the pedagogical plan who could put what the pupils learned into context. The pupils might have learned relevant elements about the Māori people by playing the game by themselves, without help from teachers, but the teacher's overall knowledge and competence added necessary depth and understanding to the learning process.

In that regard, a question that arose after the project concluded was "Do the pupils think what they learned in the game is what is true today?" From the answers in the word bubbles about the Māori people and their culture it looks like many of the pupils connect

Māori culture to a traditional lifestyle in a village like the one they met in the Ngā Motu world. Although a part of the Māori people still live in a traditional way, many also lead a modern lifestyle in cities. A challenge in this regard is to help the pupils realise that what they learned in a game like ME and the Ngā Motu world is a relevant representation of Māori history and culture, but should not be mistaken for showing the whole picture. It is therefore important that a teacher is aware of this and that what the pupils learn in a game is nuanced by a teacher with knowledge about content "outside" what the pupils meet in the game. Several researchers also point out that what goes on in computer games must be put into a broader context and it is therefore important that the pupils get the opportunity to transfer terms and skills to contexts close to reality (Andersen et al., 2021; Craft, 2016; Garcia-Fernandez & Medeiros, 2019).

Related to this, it is important to note that the pupils also gained relevant knowledge about the Māori people in the two weeks before we started playing ME. In these weeks, they went through teacher-controlled lessons on indigenous people and the Māori, and learned a broad spectre of information through lectures, reading texts, watching film clips and doing assignments about indigenous people. This can show that using a game like ME to learn about indigenous people can be an effective tool for learning, but it is important to consider that it is not the only effective option and games like ME should be used carefully and pedagogically. This is supported by research which argues that computer games in school can be a relevant pedagogical tool, but that it is important that the game itself "is not the core of the pupil's subject-specific knowledge, but a place to make use of this knowledge" (Skaug et al., 2017, p. 8). In this project, the weeks spent in ME were meant to be a deeper dive into one of the indigenous peoples of the English-speaking world. If the teacher in charge is aware of this, games like ME can be a helpful tool in the teacher's toolbox.

5.2.2 Differences between pupils

When using computer games in education, it is important to be aware of the differences between the pupils. Some pupils respond well to gaming, others do not, and some pupils have played a lot of Minecraft before, while others have not. During this intervention, the teachers observed several elements that needed attention when it comes to differences between pupils. Perhaps the most important element that needed to be considered and followed up was the pupils who had played a lot of Minecraft before. As mentioned above,

some of these pupils could help fellow pupils and be "experts" when they were in the building process. However, they were also sometimes having trouble following or doing some of the basic tasks in groups. On several occasions the teachers observed some of these pupils doing things that were not a part of the assignments or not a part of what the group did. For example, in the beginning of the weeks of playing ME, the pupils were playing in ME's "adventure mode". This is a mode in the game with more restrictions than usual in ME and reduces the freedom the players have a little. Some pupils who had played the game before wanted to find out how restricted this mode was. Sometimes they went on long exploring missions around the world, or tried to find out if they could find a way around the restrictions, instead of working with the assignments in the lessons with the other members of the group. Also, before the pupils started building their houses which was the main task in the ME-weeks, they had to spend some time practicing and preparing to work as a group. For some of the pupils who had played Minecraft before, this quickly became boring, and they struggled to stay interested in what the rest of the group were doing.

It is difficult to establish exactly why these pupils sometimes struggled doing what was expected, but it might be connected to Baek et al.'s (2020) point that experienced players sometimes use their previous skills to skip past the intended lessons. It might also be because some of the pupils who are best at playing ME are among the pupils who struggle most with "traditional" school activities, like working with written assignments. Perhaps establishing the reason behind this is not the most important thing for this study, but it it important for teachers to be aware of it as a challenge to prepare the lessons with these pupils in mind. During this intervention, when these pupils found the lessons boring or when they struggled with concentration, the teachers found out that asking them to be "assistants" and help fellow pupils who struggled gave them motivation. This worked well several times and was something that benefitted all of the pupils.

5.3 Limitations and further research

This study explored how ME could be used to teach about indigenous people in two English classes. The classes went through the same lesson plans and had the same teachers during the intervention. Theory and results from this study support the idea of using games like ME in teaching, but the value of using computer games is a little difficult to assess, as

both classes went through the exact same lessons and activities, and there was no control group. In addition, there is a low number of participants in the study. Ideally, there would be a larger participant group to add more variety, depth and relevance to the study. To add more validity and reliability in future research, it would be interesting to have a control group who went through a different kind of pedagogical project to compare results with. It would also be interesting to see how this project would work in other classes, with other pupils and with other teachers. It would also be valuable and interesting to repeat the intervention with a different set of pupils and compare results.

Another point for future research is to conduct interviews with teachers from other places on how they teach about indigenous people in the English-speaking world. It could for example be interesting to interview, and study how teachers in the Sami parts of Norway teach about indigenous people in the English-speaking world. Also, it would be interesting to get a closer look into what for example Māori people and educators believe pupils from other countries and cultures should learn about them as a people and their culture. Also, as the Ngā Motu world presents a traditional Māori village and lifestyle, it would be interesting to focus more on teaching about more modern indigenous people and their lives.

Lastly, it would be interesting to conduct more research that focused on the pupils' different learning outcomes from an intervention like this and to go deeper into how this type of learning activity compares to other more traditional teaching methods. It would also be of relevance as a teacher to use other games that can be connected to the curriculum and research how different games can be used in teaching.

6.0 Conclusion

In this study, pupils in two eighth-grade classes in a lower secondary school in the south of Norway went through a five-week intervention where the main aim was that they should learn about indigenous people in general and get a deeper understanding and knowledge of the Māori people of New Zealand and their culture in particular. The intervention included a three-week period of playing ME in the pre-made Ngā Motu world. The purpose of this was to explore how ME can be used as a tool to teach pupils about indigenous people in the English-speaking world. In addition, the study aimed to investigate other possible benefits of using computer games as a part of the education about indigenous people.

The study demonstrates that ME can be a relevant and effective tool for learning about indigenous people. The results from the study align with previous research, which documents how the use of games like ME can be an effective tool for learning in several subjects and can increase understanding of subject matter. In the pre-test before the intervention started, the pupils showed little knowledge about indigenous people, and generally knew very little or nothing about the Māori people. However, in the post-intervention tests, the pupils showed a marked increase in their understanding of indigenous people in general, and there was a significant change in the amount of knowledge about the Māori people and their culture. These results suggest that a combination of traditional teaching methods and immersive learning through playing ME in the Ngā Motu world can increase the pupils' understanding of indigenous people in general, and the Māori people and their culture in particular.

Furthermore, the results in this study support previous research which shows that using computer games in education can have many benefits and can be an effective tool for learning in several areas. Researchers argue that the use of games for example can increase motivation, engagement, and interest, encourage social and emotional learning and use of soft skills, give pupils an arena for learning language and can be a positive learning experience for pupils who usually struggle with traditional teaching in school. The results in the word bubbles in this study show that the pupils have learned many things that can be relevant in school from playing ME, in addition to content about indigenous people. For example, they have developed their soft skills, such as teamwork, collaboration, and communication, they

have practiced their social and emotional learning, and they learned new language and vocabulary. This shows that using games in education can have many benefits.

However, a crucial aspect of successful integration of computer games in the classroom is the teacher's role. Teachers should know about Technological Pedagogical Content Knowledge (TCPK), understand the importance of game literacy and be able to use computer games in a pedagogical context. Also, it is crucial that the teacher can be a guide for pupils in their learning and be aware of the differences among the pupils in the classroom. Many of the positive things that can be achieved through using games in school are also dependent on a competent teacher who can lead the pupils through the process, connect what is done in the game to the relevant curriculum and help them understand the meaning behind what they are doing and why they are doing it. The teacher is necessary in keeping an overall oversight over the lessons and the use of games, and to maintain control in what is going on in the classroom. In this study, the results from the observations align with research on the teacher's role. The teacher was an essential component in making the content in the Ngā Motu world relevant, and in giving context to what the pupils experienced.

In addition, teachers must be aware of challenges and issues that may arise in the classroom when integrating computer games in education. It is important to consider and prepare for the differences among students. While research indicates that the majority of pupils in this age group engage in gaming during their leisure time, there can still be a significant difference in how the pupils respond to using games in school. This presents a challenge which teachers must be able to address. Observations in this study show that some pupils had trouble working in groups and staying concentrated on the assignments. Other pupils sometimes struggled to understand tasks when playing ME and were not doing what they were supposed to. Some pupils struggled to operate the game and sometimes gave up and did other things. In these circumstances, the teacher must be prepared and have the competence to meet these challenges in a pedagogical way.

For most teachers the challenges and issues connected to the use of computer games in education are familiar aspects, as they must constantly adapt lesson content to suit different needs among pupils. Perhaps the biggest obstacle is that using computer games is a new teaching method for many teachers and trying out an unfamiliar approach like this might be perceived as too challenging or time-consuming.

Despite the potential challenges, this study has shown the value of computer games as a supplementary tool when combined with other didactic techniques. Teachers can use computer games, such as ME, to enrich their teaching methods, and provide pupils with an in-depth understanding of the subject matter. In conclusion, this study has shown that under the right circumstances and if a teacher considers the issues and challenges related to gaming, the use of computer games can be an effective tool for learning and can be an important part of a teacher's toolbox.

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List of appendices

Appendix 1: Lesson plans: five-week intervention

Week 44-45: Introduction to indigenous people + Māori

Lesson 1 - Introduction to indigenous people.

Goal	Get an overview of previous knowledge about indigenous people + introduce topic "Indigenous people"
How	Make students form a word cloud and answer a question about what they know about indigenous people in general + the Māori in particular
Why	To get an understanding of previous knowledge and level of understanding.

Lesson plan:
Introduction to project

1. Introduce the project/intervention and let students know what will happen over the next few weeks: 5 min
2. Write "indigenous people" on the blackboard.

5 "Activate prior knowledge" - Make students think about what they know from before, but for now, only individually: 2 min

3. When two minutes are up, collect words for word cloud using "Mentimeter" and make students answer first question: 5-10 minutes
   Word cloud: "Indigenous people - what do you think about?"
   Sentences: «What do you know about the Māori people and their culture»

4. **Glossary test** - individually. Encourage pupils to answer everything, and guess if they do not know the answer. Important to underline that this is not an important assessment, mainly an exercise to get an understanding of what they know from before and to see if they learn any of these words during the next few weeks.

5. *Message from teacher after this: Goal for the next few weeks is that you can add more knowledge at the end of the project, than you have done today.*

If time: Introduction to indigenous people:

- Individually: Students read text about indigenous people from Tv2 Elevkanalen as a preparation for next class.

Lesson 2: A continuation of introduction to indigenous people

Goal	Get an understanding of which indigenous people exist in the English speaking world, and how they are spread around the world.
How	Read texts + talk about topic together in class
Why	To get an understanding of basics related to indigenous people before going more into depth about the Māori.

Lesson plan: Intro to indigenous people.

1. Introduce goal + what will happen today

- Class watches two film clips.
- A short (2min) film on Sami people of Norway from TV2 Elevkanalen
- Then a film clip (5min) from Tv2 Elevkanalen as an introduction to indigenous people in the English speaking world
- Quick discussion/comments from class

Class listens to or reads text called "Indigenous people" from Tv2 Elevkanalen together

Answer questions about what we have worked with today:

Questions about indigenous people.

1. Explain what "indigenous people" are
2. Which indigenous people do you know about and where do they live?
3. Which main challenges have indigenous people faced, according to the text and films we have used today?
4. Which similarities are found between indigenous people, according to the film we saw?
5. Why do you think we try to learn about indigenous people and their culture?
6. Is there anything you would like to know about indigenous people?

If time:
Kahoot about Māori.

Lesson 3: An introduction to the Maori people

Goal	Get an introduction to some basic elements in Māori culture.
How	Watch film clips - read text
Why	To get an understanding of some basic elements in Māori culture

Lesson plan: Introduction to Māori culture

1. Teacher: Use pre-made presentation and

- Show map of New Zealand - get an understanding of where in the world we are and where the Māoris came from.
- Introduce some of the main elements that we will learn about:
    1. Importance of history/ancestors/family/nature/beliefs
    2. Haka
    3. Ta Moko
    4. Nature
    5. Modern living

Watch a short clip about New Zealand from Tv2 Elevkanalen, as an introduction to the country and the Māori: News in English about Maori (from 0.22-3.10)

Watch a short clip from Youtube Maori - New Zealand (without subtitles) from a documentary about Māori that depicts a few central elements, like haka, wakas (boats) and the importance of keeping traditions alive. (Watch from 0.00-4.35). Main idea is just to get a few glimpses into life and culture.

Individually: Read/listen to text about Māori and culture: Text about Maori culture

If time: Questions to the text: The Māori people are the indigenous people of New Zealand.

- Explain how and when the Māori arrived in New Zealand?
- What happened when the British people arrived?
- How would you describe the Māori way of life
    - Mention nature, haka and tattoos, for example
- What is the situation like for Māori people today?

Lesson 4: A deeper understanding of the Māori people

Goal	Go a little bit more into depth about some important elements in Māori culture.
How	Watch film clips + talk about questions in pairs
Why	To get a deeper understanding of some basic elements in Māori culture

1. Main plan today is to watch a short travel documentary which shows some relevant parts of Māori culture. They cover topics like haka, tattoos, and the importance of ancestors, for example. They also talk about the Treaty of Waitangi, but do not explain it, so it is important for the teacher to mention this and what it is about before watching the film.

- MAORI DOCUMENTARY | Meeting the Māori people of New Zealand

2. Talk about these questions from film about Māori:

- What was the first name of New Zealand?
- What is a "haka"?
- How would you describe the nature of New Zealand?
- What is Ta Moko?
- What is Te Reo Māori?

3. *If time:* Play Alias and include the words from this document.
   Some are taken Tv2 Elevkanalens web-pages:

In the game Alias, you are asked to explain a word without using the word itself. Use the list below and play Alias together with a learning partner. All the words are tied to the groups of indigenous people you can read about in the e-books.

After these lessons, the plan is to go into the Maori world "Ngā Motu" in Minecraft education to learn more about the Maoris and their culture.

Week 45-48: Exploring "Ngā Motu" / "The islands".

Week 45 - Lesson 1 + 2: Exploring Ngā Motu + answering questions

Goal	Get a basic understanding of traditional Māori lifestyle and culture
How	Explore Ngā Motu and talk to/learn from the different people in the world
Why	To get an understanding of Māori lifestyle and culture

In the two first lessons, there are two main tasks. The meaning behind these two tasks is to explore the Ngā Motu world and get a deeper understanding of traditional Māori life.

Task one:
In the first two lessons in Minecraft your group will explore the Ngā Motu world and take pictures with your Minecraft camera of the different elements in it. At the end of this week, you will present your findings/portfolio to other pupils in class.

You will have to take pictures of:

- The wakas (canoes) - both big and small
- Different houses in the Pa
- Places for storing food + sleep
- Places to keep a lookout
- A selection of animals
- The island outside the mainland
- The building plots
- Some of the people you meet
- 3 things of your own choice

Task two:

In your groups, you will also have to explore Ngā Motu and find answers to the following questions. Remember - you can cooperate in finding answers

The first people on the boat/waka

1. What is New Zealand called in Māori?
2. Which kind of transport did the Māori use to travel on water?

Talk to the woman close to the first boat/waka and find answers to the questions below:

3. What is a "Pa"?
4. What does "Te ao Māori" mean?

Go up to the PA/fortified village and talk to the different people there

5. What does "Whanau" mean in Māori?
6. Why was there often only one entrance to the Pa?

7. Where is the underground tunnel, and why did the PAs have underground tunnels, do you think?
8. How did the Māori often sleep to keep warm and what were the beds made of?
9. How did the Māori often store food?
10. How did the Māori often cook food?
11. Why did the PAs often have trenches around them?

Go to the main house of the PA - the biggest house at the back

12. What did the Māori often use to decorate their walls in their main houses?
13. What does Atua mean?

General questions for the group:

- How would you describe the area the Māori settled in?
- How is their world different from ours?
- How would you describe their relationship to family/ancestors?
- What do you like most about the world you have explored?

Week 46: Lesson 3+4 - Making your first small construction in groups

Goal	That you are able to use some of the knowledge about Māori culture to build a small house (as a practice for the bigger house you will build)
How	Cooperate in your group and build a shelter in Minecraft that can house 5 people for a short period
Why	To start using the building plots and get a feeling for the tools, before next weeks real build of a larger house.

Task:

There are 25 people who have just arrived in Ngā Motu. They will be here for a while until they finish repairs on their waka. Where will they stay?

The visitors to the islands need somewhere to stay. Each group must use the building plots and supplied resources in Ngā Motu to create a humble house for five people.

Think carefully about what your visitors might need and build a shelter that they would like to stay in. Build a small whare (house) that can provide shelter and a place for a fire that can accommodate a small group five people.

Week 47+48: Lesson 5-7 + 6 hour "fagdag".

Making a house with garden in accordance with Māori tradition

Goal	Apply your knowledge about Māori culture and combine it with your own creativity to build a large Māori-style house with a garden
How	Cooperate in your group and build a large house/meeting place in Minecraft
Why	To show what you have learned about Māori culture and be creative

Task:

Now that you are familiar with the needs of the inhabitants of and visitors to Ngā Motu and have experimented with creating shelters, it's time to really challenge your creativity. Collaborate with your classmates to create a bigger Māori-style house with a garden.

Use what you have learned about the way Māori houses are built and make your own version.

Make the house suitable for living in it. Talk together about what roles your team will have so that each person contributes in a fair way to the construction of the house and garden.

Use your creativity, and remember that you have freedom to build several floors, if you want.

6hr “Fagdag” in English

The main goal for the “fagdag” is that you can build a Māori-inspired house in Minecraft with your group. You should use what you have learned about the Māori in your creation, but you also have creative freedom to make it into your own building.

Before you begin building your house, you have to make a plan.

- Which elements from Māori culture will you include?
- What does your building look like?
- How will you cooperate in your group? Who is in charge of what?

Criteria for your building.

- Your building needs to have at least two floors (etasjer)
    - You have to have a place for sleeping
    - You have to have a place to store food
- Your building has to have some kind of connection to the Māori world
    - How you do this is up to you, but be ready to explain your choices
- All of the group members have to participate in the building process
- You have to have a garden/somewhere you grow vegetables
- Try to make use of the whole building plot

During the “fagdag” you will have a conversation with your teachers about the building you are making and the choices you have made. You will have to explain your choices and give arguments for why you have built your house the way you have.

You will also have to show your house to your classmates at the end of your fagdag.

Good luck!

Self-evaluation: Indigenous people, Maori and Minecraft

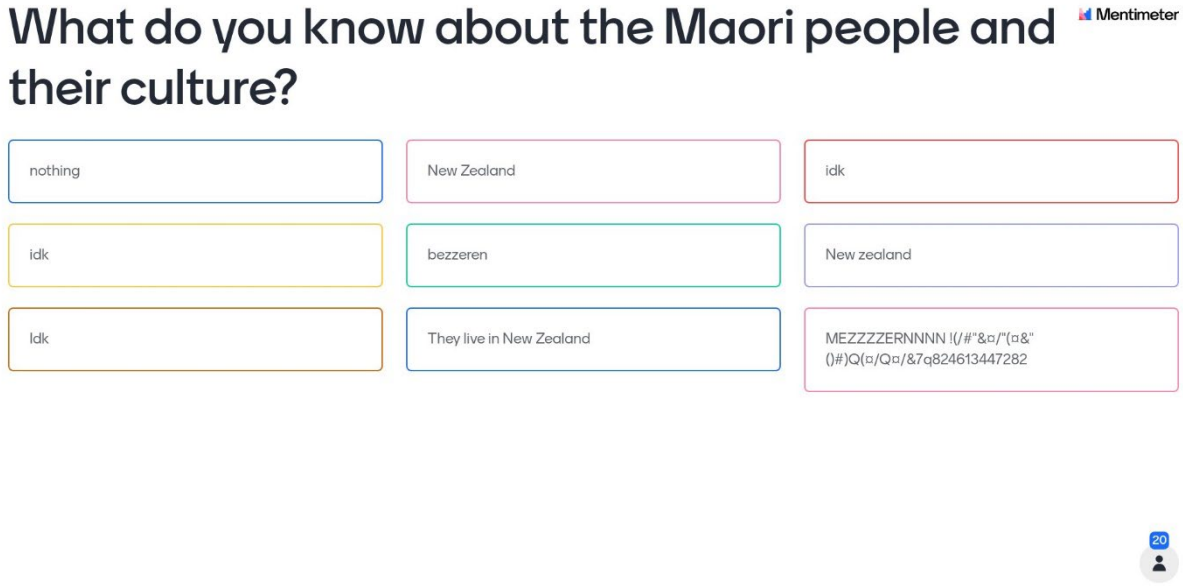
	High level I have done this well	Medium level I need more practice	Low level I am struggling with this.	Other comments?
I have used English as a working language in class				
I have worked well with tasks in preparation for the Minecraft weeks				
I cooperated well with my group				
I know some key elements of Māori culture				
I have used my knowledge about the Māori when I build				
I can explain how I have used my knowledge about Māori in my builds				

Reflection: What have you learned about the Māoris from playing Minecraft?

Appendix 2 – Word could and word bubbles results

Pre-test – question 1

Pre-test – question 2



What do you know about the Maori people and their culture?

Mentimeter

idk

First ppl in new zeland

ye india mother bigRat ugly BIG

no

They where the first people in New Zealand

i dont know so much but i know all itlee bit. So they live in new zeland. They are ca 400 k people and they was begin to be a group i 1987.

20

What do you know about the Maori people and their culture?

Mentimeter

me very do not very much know

Its humans that where there before others and that they come from New zealand

face paint

I don't know anything

i don't know anything but i assume they have connections to easter island

huleboer

i think maori people are indegenous people

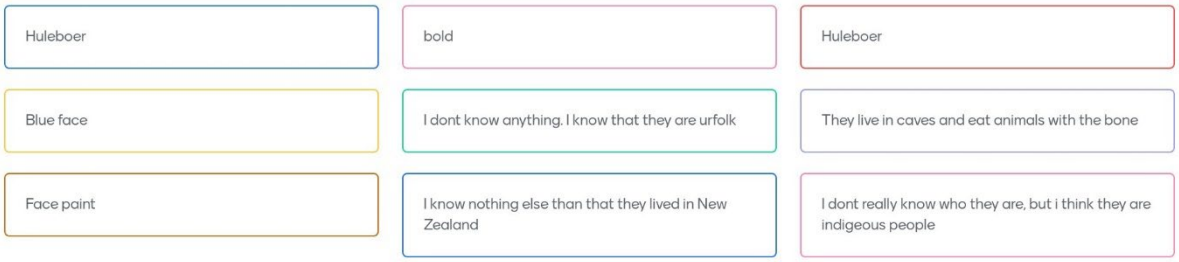
oceania

They use feathers as accessories?

20

What do you know about the Maori people and their culture?

Mentimeter



20

What do you know about the Maori people and their culture?

Mentimeter

20

Post-test – question 1

Indigenous people - what do you think of?

Mentimeter

16

Indigenous people - what do you think about?

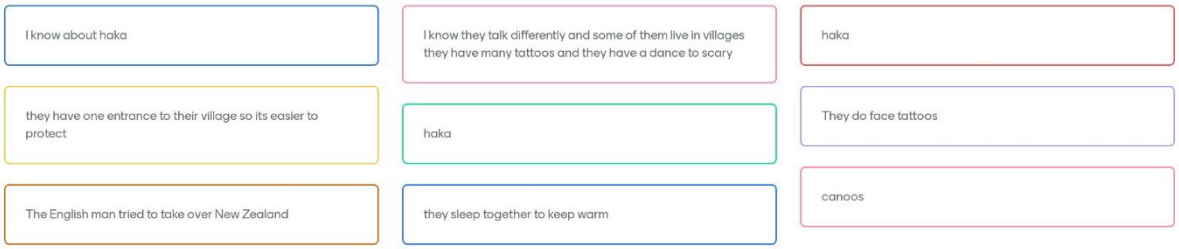
Mentimeter

22

Post-test – question 2

What do you know about the Maori people and their culture?

Mentimeter



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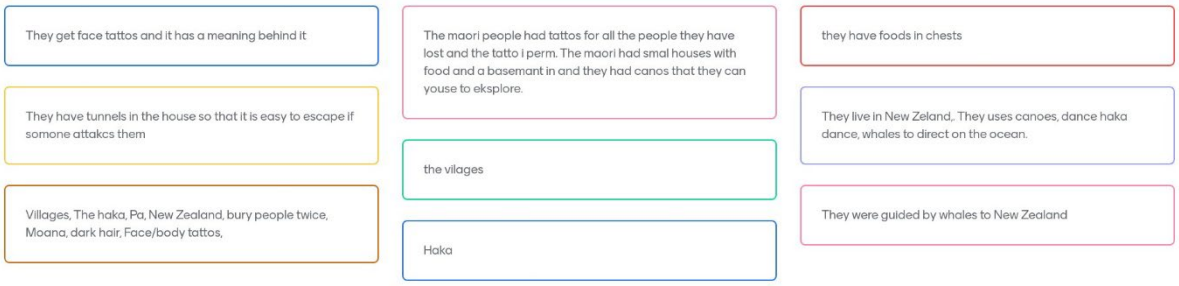
What do you know about the Maori people and their culture?

Mentimeter



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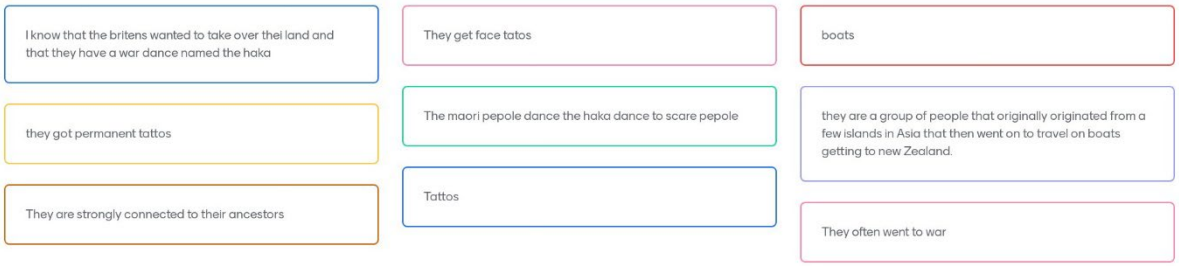
What do you know about the Maori people and their culture?

Mentimeter



24

What do you know about the Maori people and their culture?

Mentimeter

24

What do you know about the Maori people and their culture?

Mentimeter

17

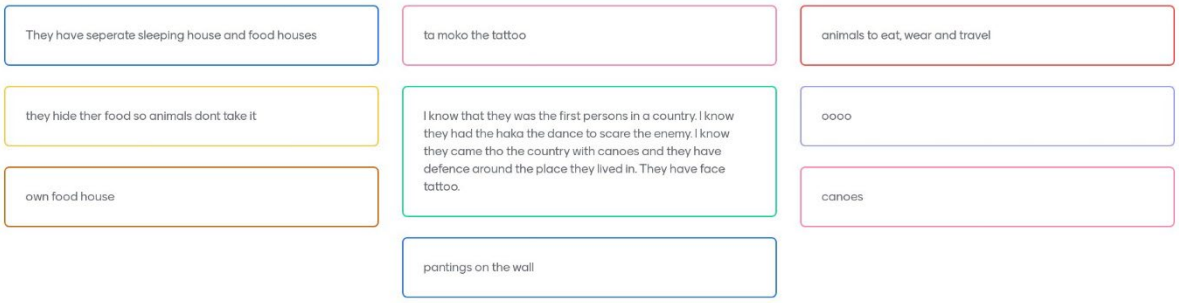
What do you know about the Maori people and their culture?

Mentimeter

24

What do you know about the Maori people and their culture?

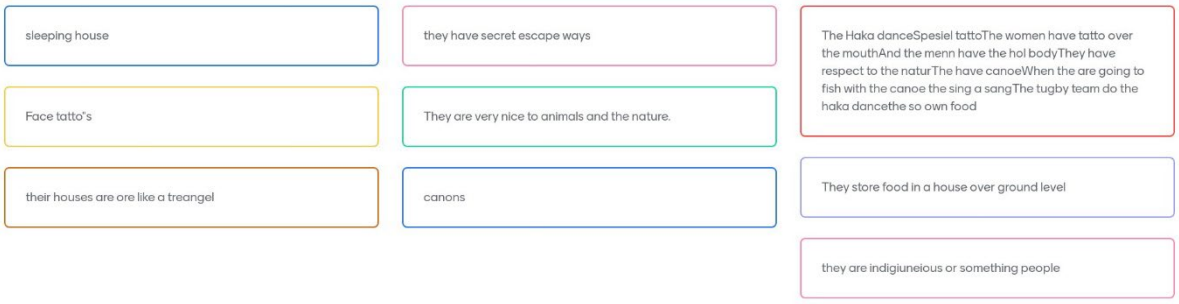
Mentimeter



17

What do you know about the Maori people and their culture?

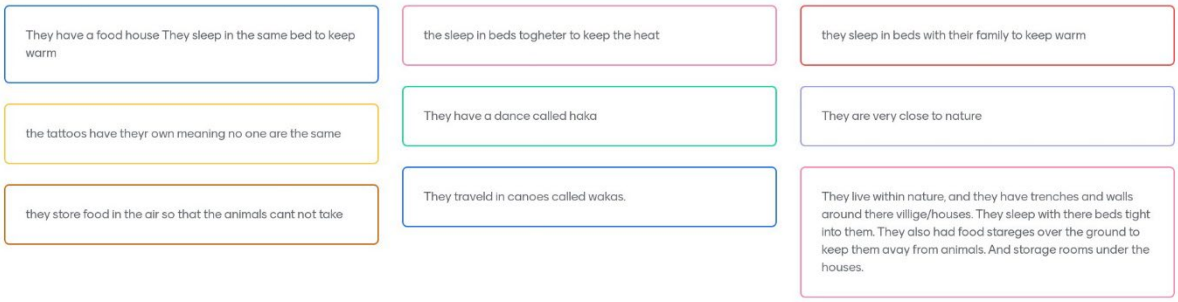
Mentimeter



17

What do you know about the Maori people and their culture?

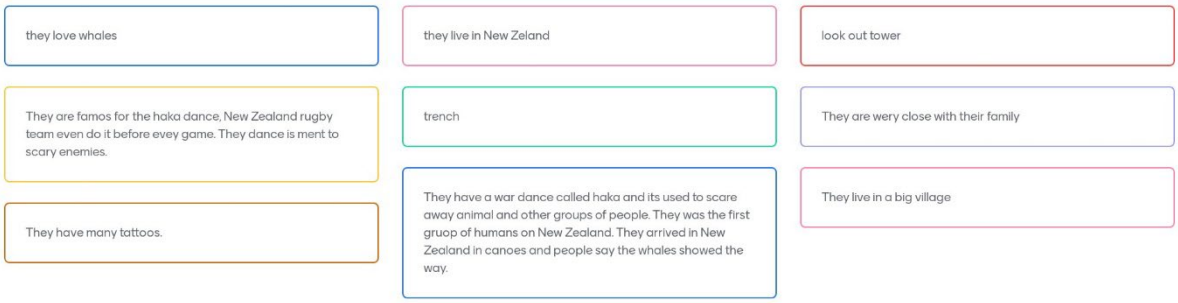
Mentimeter



17

What do you know about the Maori people and their culture?

Mentimeter



17

What do you know about the Maori people and their culture?

Mentimeter

17

What do you know about the Maori people and their culture?

Mentimeter

17

What do you know about the Maori people and their culture?

Mentimeter

They used to own dogs called Kuri

They are adicted to nature

They dance haka to scare people away

the haka dance was used to scare people

They have a dance that's called haka.

They eat food

The Haka dance.

They have a very close relatoinship to nature, family and ancestors. They also belive that some things in the nature is god.

they live many ppl together

17

What do you know about the Maori people and their culture?

Mentimeter

They have underground tunnels

They usely have a watch tower to defend the villeage/Pa . They have treanches around the villeage

They have to types of houses. one food house and one house where they sleep. They food house is a litte bitt smaller, they hide food high in the air so animals cant take it. Is they big house they sleep close to each other to keep warm.

jes

17

Post-test – question 3

What did you learn from playing Minecraft?

Mentimeter

i learnt the maori history from the people that was around the world

;More about the maori people

It isnt that hard to conmunicate english. I have learnd a lot from the villeagers in the villeage/Pa .

They have a under ground bealding to escape if someone etack.They sing a song wen they are going to hunt

they have a secret tunel

They have the food in a foodhouse

To build like the maoris lived

16

What did you learn from playing Minecraft?

Mentimeter

they have their food in the air

to keep tradition and stuff like where they sleep and store food

The word pa means villiage

That they do not have separated beds.

nothing

To learn how the maoris lived

How they store the food

They hide food in the air so animals cant take it. They used wheels to get water. They sleep close to eachother to keep warm.

that maoris sleep on a big bed together so they could keep the heat

What did you learn from playing Minecraft?

Mentimeter

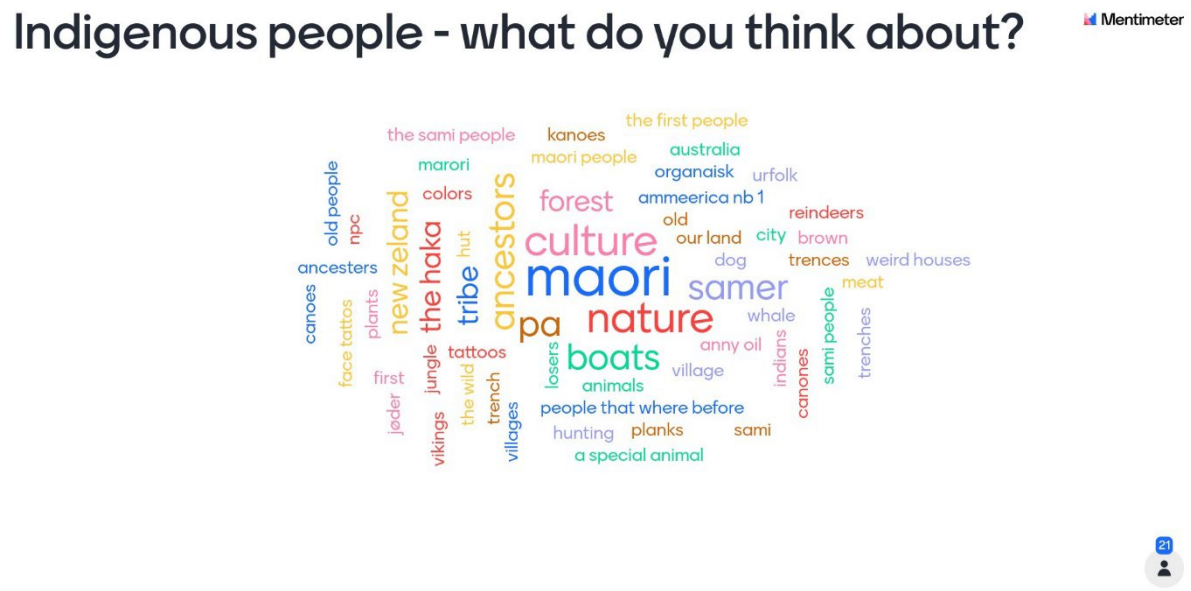
That they have fire pits in the bedroom to keep them warm

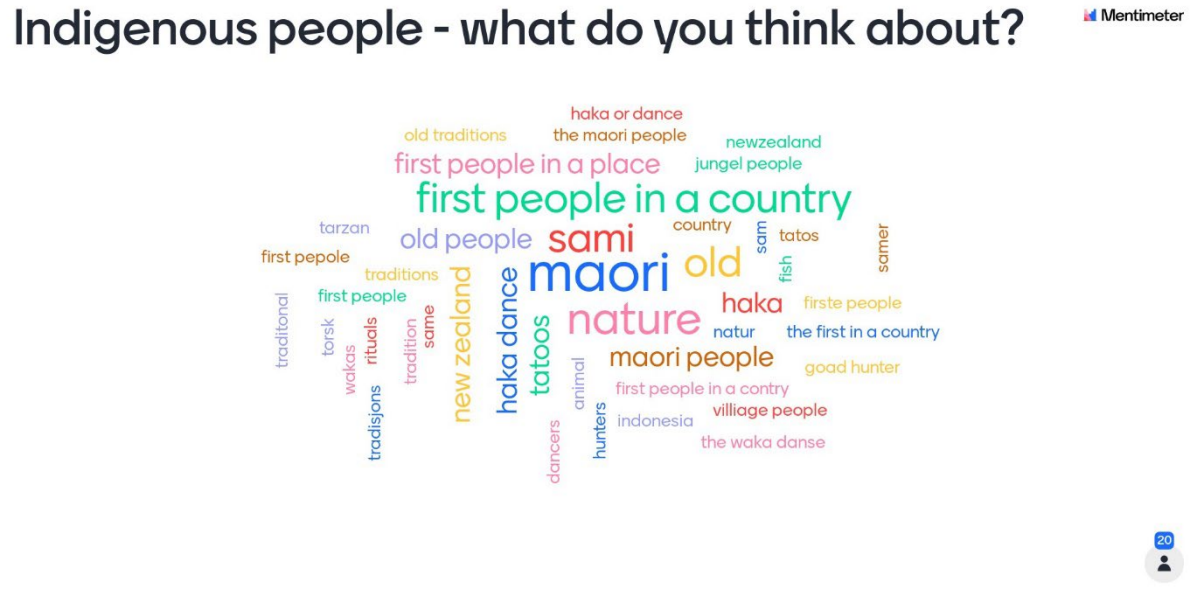
I did not learn anything becuse i have playd minecraft for 6 years.

I learned that we needed to talk and work togheter

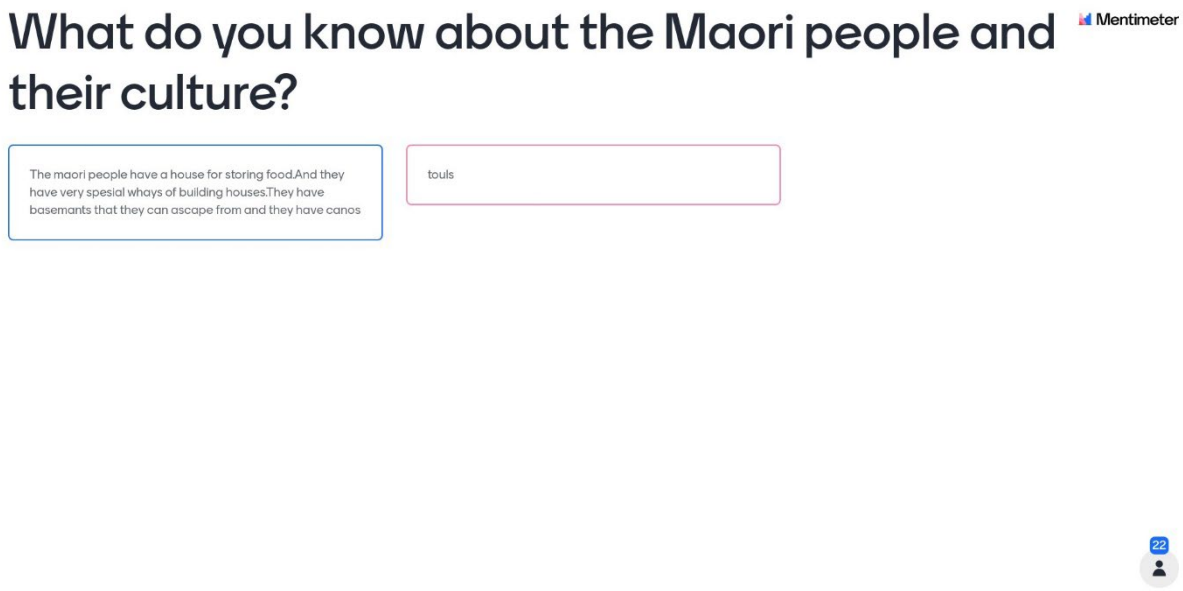
how a house to the maori lookedd

Delayed post-test – question 1





Delayed post-test – question 2



What do you know about the Maori people and their culture?

Mentimeter

They live in the nature

thay have a lot of nature

They have a war dance called the haka.

The maori people uses canoes as transport on the water, and the whales direckt them.

They have a dance called haka which is used to scare people that arent meant to be there

They used to have fires in the bedrooms to keep warm

They have tattos

they have tattoos that told stories about their life. They traveled from island to island in boats and lived in villages called pa. They have their own war dance called the haka where they use movements and show their tounge as a way to intimidate

they live with nature

22

What do you know about the Maori people and their culture?

Mentimeter

tattoos

they have 2 gards autside there hause,

I now that they have tattoes that means something special

They came to New Zealand with canoes

They have the haka wich is a dance they do/use to scare other pepole

they ride in kanoes

There hole body is coverd in tatos

they use 2 difrent homes and one off them is for food

boatsNiga

22

What do you know about the Maori people and their culture?

Mentimeter

Whale is a spechal animal.	i know haka	They have a dance called haka
They have a special dance called the haka dance.	i know waka	haka dance and face tattos
dance	Haka is a dance	They live in New Zealand

20

What do you know about the Maori people and their culture?

Mentimeter

they have tatos	They lived first in new zealend	They use nature a lot
Tatto	I know that they have there own dance cald the haka	They came 1200 years ago?
tatos	They have body tattos all over their body	They have face tattos, you can kind of read those to know who their ansestors are.

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What do you know about the Maori people and their culture?

Mentimeter

New Zealand

Under ground hose so they dont get atacked by animals

They sleep togheter

The haka danse. They have trench around the willage. They have face tatoos. They are froom new zealand

They have a dance to scare animals away

nature made chlotes

Close to the nature

The Maori people have a tradisin dance and the dance name is haka. In maori they have tattos, the menn has tattos over the body , andt the woman have it aorund the mouth. In New Zeland when they place football they do the haka dance. They have afood

They love dancing. And som off them live in the jungle not everyone but some people. They are good hunters and they often have tattos on their body. they live in New Zeland. They have also food housse. their faovritt sport is rugby.

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What do you know about the Maori people and their culture?

Mentimeter

They are close to the nature

i dont like their traditoin

They are frome New Zealand

vaiana movie

they have tunals under the ground

They have a food house

The Maori people are the Indigores people i n New Zealand, they came to New Zealand in boats called Wakas. They live close to natrure, fsmily and ancetors. They have 2 difrent houses, a food house and a house where they sleep.

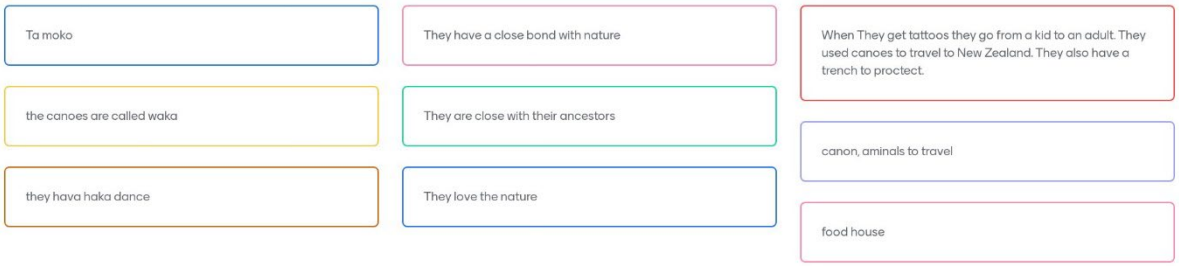
They dance a Haka dance to scare the enemies

Love the nature

20

What do you know about the Maori people and their culture?

Mentimeter



20

What do you know about the Maori people and their culture?

Mentimeter

20

What do you know about the Maori people and their culture?

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What do you know about the Maori people and their culture?

Mentimeter

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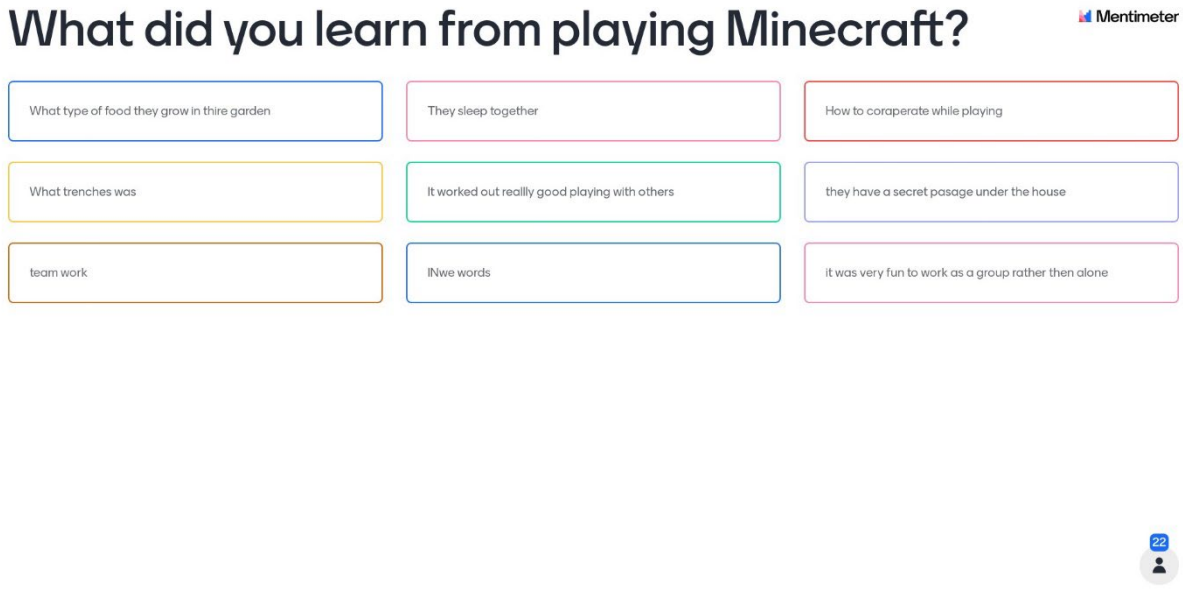
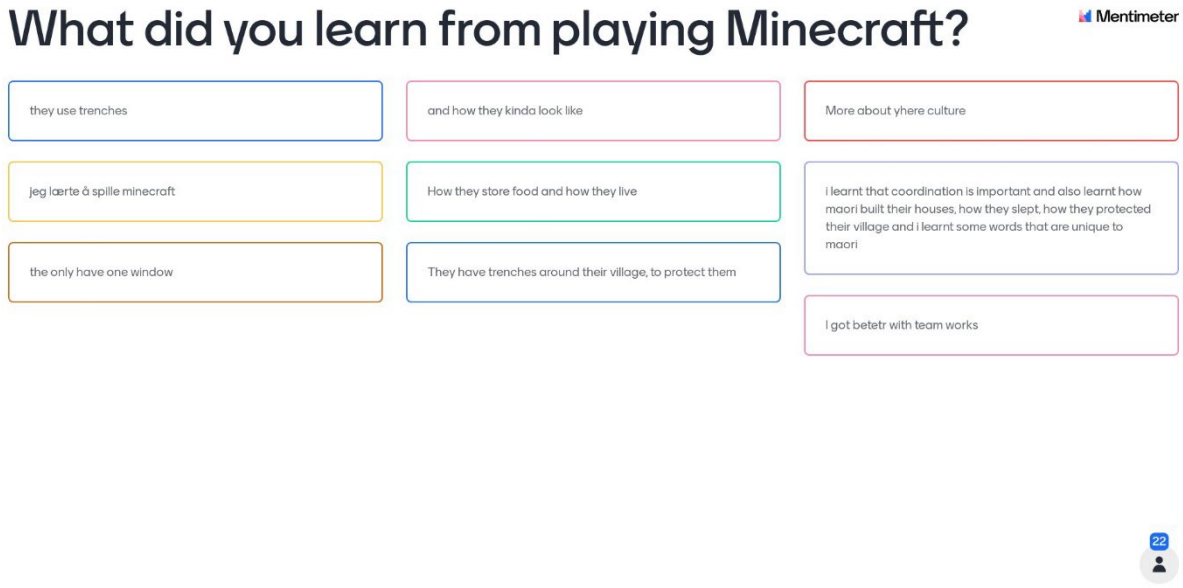
What do you know about the Maori people and their culture?

Mentimeter

Delayed post-test – question 3





What did you learn from playing Minecraft?

Mentimeter

22

What did you learn from playing Minecraft?

Mentimeter

22

What did you learn from playing Minecraft?

Mentimeter

how their houses lokked like	How they build their houses	What pa means
i learnd math	How the Maori people build their houses?	To work better togheter and that its easier that way.
Their food storage	they sleep close to stay warm	I learnt how they live in the village and what the houses look like

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What did you learn from playing Minecraft?

Mentimeter

food storage	boats	How the maoris live
Food house	The maori culture	I learned how the maori people live
i learnt how the village looked like'	The underground inside their house	they have two diffrent houses for sleeping and food

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What did you learn from playing Minecraft?

Mentimeter

I learned that they have a food storage and they have a underground tunnel.

How the buildings look like

there close bond with their culture

they have rugs on the wall with meaning

Garden where they get food

They all sleep in the same bed to keep the warm

The maori storage their food in a different house than theiy sleep in

they have small houses

the samll tunnel

21

What did you learn from playing Minecraft?

Mentimeter

They all live in a village

They are realy close to the natur

The maori culture. How to build in pc Minecraft.

Learning in a more fun way

how to take pictures in mincraft

diffrent words and what they meant

When we play minecraft i didt no how the når du skal inn i huset er det vegger rundt husene så fiender ikke kan komme inne

They have some kind of pattern inside their house

I learned a lot about maori

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What did you learn from playing Minecraft?

Mentimeter

- I learnd that maori living in small houses and they live like old people.
- I learn somting like have the houses was. How their dreesed them selv with cloths. They have a litt speiscal drawing style so its hard to understand
- i learned more minecart and i learfned much about their houses and the mauri people are connect with the nature
- i learn how the building is build
- food house
- cool
- live in green nature
- How the danse looked like
- how the house look

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What did you learn from playing Minecraft?

Mentimeter

- minecraft is very funn toplay with in class with friends.
- I learned about your reglion

What did you learn from playing Minecraft?

Mentimeter

- I lerned that the Maori people live in villages coverd in trenches. I also lerned thet in the food houses they keep the food high up in the air so the animals cant take the food. They also have a secret tunnel in their houses, so its easy to escape.
- small houses
- What is importaant for the maoris

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