University of Stavanger

The Faculty of Arts and Education

MASTER'S THESIS

Study programme: MA in English and Literacy Studies	Spring term, 2024
Researcher: Hazal Gonca Unlu	
Supervisor: Kenan Dikilitas	
Title of thesis: Investigating the Integration of Digital Tools into English Language Instuctions of Young Learners	
Keywords: teacher perceptions, digital tools, young learners	Pages: 85 Attachment/other: 24 Stavanger, 4th May, 2024

Abstract

This thesis explores how primary school teachers integrate digital tools into their classrooms, reflecting on the rapid developments in educational technology. It examines their perspectives and strategies in adapting these tools for educational purposes. Through semi-structured interviews and non-participant observations, this study aims to uncover how four primary teachers (grades 1 to 3) perceive and implement digital tools in an English language setting. The findings reveal that each teacher displays unique views and methods. For instance, one teacher uses iPads and interactive apps to engage students, considering the balance between engagement and distraction, while another focuses on the reliability of technology and the suitability of content to enhance learning. The study identifies several factors influencing these approaches, including the need to maintain student interest, manage classroom distractions, and ensure safe internet use among young learners. The findings reveal that while teachers recognize the benefits of digital tools, they also acknowledge challenges in their practical application. This research emphasizes the importance of continuous professional development programs that not only provide technical skills but also support teachers in navigating the technology use in education. These programs should encourage teachers to personalize technology use in ways that best suit their educational philosophies and classroom dynamics.

Acknowledgements

I would like to express my deepest gratitude to my supervisor, Kenan Dikilitas, for his invaluable guidance, patience, and expertise throughout the course of this research. His encouragement and support have been very important in my journey through this thesis. Additionally, I extend my thanks to the lecturers at the University of Stavanger for their educational support, which significantly contributed to my academic growth. I am also grateful to the four dedicated teachers who participated in this study and the school where it was conducted. Special appreciation goes to the school's leadership team, whose cooperation and support facilitated a conducive environment for my research.

I must express my heartfelt thanks to my family, mom, dad and Jørgen, whose support and encouragement made it possible for me to pursue this master's program. Their belief in my abilities has been vital to my success. Lastly, special thanks to Matthew Manfredi, Mary Kay Polly, Virginia Neilsen, and Lyda Nilssen for their endless support, understanding and flexibility during this project. They played a crucial role in helping me balance my commitments and responsibilities while pursuing this important work. I am truly thankful for their patience and kindness.

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1. Introduction

Primary education is evolving rapidly along with technology, and this brings both exciting opportunities and significant challenges. There is a clear need to understand these technologies from the perspective of teachers, who are central to implementing them. Therefore, the integration of digital tools into the classroom is becoming essential. In the upcoming chapter, an overview of the thesis will be explained along with the aims and the relevance.

In recent years, there have been many big changes and transformations that came along with the introduction of the internet, in many fields, such as technology, education and science. These changes have greatly changed the way we live and have also changed what society needs and expects. Especially, the integration of technology into our lives has changed how we reach new information and became a key factor in the new information age (Ozer & Kuloglu, 2023). As a result, societies today face a vastly different landscape compared to previous centuries since technology plays a central role in every aspect of our daily activities and interactions. This change makes it more important to keep up with a fast-changing world. (Ozer & Kuloglu, 2023). Haleem et al. (2022) highlight that technology helps teachers by reducing repetitive and time-consuming work. They argue that educational technologies not only offer a lot of time and energy savings to both teachers and students but also teach the students important 21st century skills such as being responsible using technology and fostering decision-making skills and self-discipline.

Wiklund and Andersson (2018) suggest that the students usually use the technology in the classroom frequently and initiate its use. Contrary to the common belief that students primarily use technology for extracurricular activities, their research reveals that most student-initiated technology usage and applications are directly related to their academic tasks. As a result, these activities are not perceived as problematic by teachers or students. However, when it comes to student-initiated engagement with social media, games, and communication applications, the situation is more complex (Wiklund & Andersson, 2018). They found that some teachers and students express their concerns that such use may distract students from their studies, although others find it rewarding. However, this does not mean that technology is a foe, but it needs to be constantly reassessed. Instead, Wiklund and Andersson (2018) advocate for a more detailed

understanding of the educational use of information technologies. They emphasize that reflection—taking the time to think about what you're learning and how you're learning it—is essential for truly effective education. This means that using technology should go together with thoughtful consideration.

When it comes to the Norwegian context, Krumsvik (2011)'s detailed examination on Norwegian policy documents shows that Norway has heavily emphasized digital competence in its education policies. He says that this starts with making IT use mandatory in schools by the late 1990s and introducing an ICT Action Plan around 2000 to further integrate technology into education. Moreover, the new plan for teacher education has made digital competence a core skill in all subjects and a key learning outcome for student teachers, reflecting a strong top-down push to embed ICT in both teaching and assessments in schools (Krumsvik, 2011).

Additionally, the research on technology in education, especially internet, is expanding, showing its value as a tool for learning across language, literacy, and humanities subjects (Yang & Chen, 2007). Despite the critical role of language skills, traditional teaching methods have often reduced them to memorization of dialogues or repetition (Naciri, 2019). New technologies are changing how we learn languages by considering different learning styles and abilities, moving away from old teaching methods (Bahadofar & Omidvar, 2014). The needs of today's world require that language instruction, especially to enhance speaking skills, should aim to improve students' communicative abilities (Naciri, 2019). Thus, teachers need to use new technologies creatively to keep their students engaged and to make language learning enjoyable (Roach & Utami, 2017).

While there are wide ranges of opinions on using digital tools in education, it is an inevitable truth that technological advancements continuously influence educational technology research. (Boekweg et al.,2021). However, it is not easy to keep up with these rapid developments. Thus, it is important to continue to research on digital tools in education to maximize its benefits. To deal with these considerations, in this thesis study, semi-structured interviews and non-participant observations are conducted. These methods were chosen to find out the primary teachers' perspectives on integrating digital tools in their classrooms.

1.1 Background

When I was growing up, due to my parents' profession, we had to move to a different region every three years, so I attended many different schools, and experienced many classroom settings. Some schools were equipped with smart boards and iPads, and some did not even have basic projectors. Due to this, I had the chance to observe the effects of both presence and absence of digital tools in a classroom. Personally, I found that digital tools such as projectors and interactive boards had a very positive effect on my learning process. This was spesifically valid for English lessons. Due to the variety of resources in English, we mostly used technology in English classes. This made English my favorite subject and helped me decide on my future career.

Transitioning into a teaching role, I chose to use digital tools as much as possible in my own lessons to make my students focus and learn better, based on my own experiences. However, I noticed a difference in attitudes among my colleagues regarding the use of digital technologies in the classroom. This observation sparked my curiosity on the subject. Additionally, recognizing the presence, use and integration of digital technologies and the status of today's children as digital natives, the importance of exploring the integration of digital tools in education became important. As asserted by Janschitz and Penker (2022), the use of digital technologies has evolved into an important key of our lives, from education to social life, and even professional fields. Therefore, they say that digitalization is a common trend that affects various parts of lives. Due to this background of personal experience and societal importance, I have chosen to explore the integration of digital tools in primary education to explore teachers' perspectives on the integration of digital tools in primary schools.

1.2 Aims

As previously discussed, the integration of digital tools to education settings and ICT competence is an important topic in Norway. Therefore, this thesis aims to gain a deep understanding of the

primary year teachers' perspectives on integrating digital tools in their classrooms and contributes to the discussion in enhancing English skills context. In this thesis study, there are four participants, and they are working as classroom teachers across different primary grade levels (1st to 3rd grade). The teachers were chosen to ensure representation of a varied range of teaching backgrounds and experiences. The research combines non-participant observation and semi-structured interviews as its principal methods for gathering information.

To achieve these aims, the following research questions will be answered:

(1) How do primary years teachers perceive the integration of digital tools into their classrooms?

(2) What specific strategies do they use to integrate digital tools into their teaching, and how they are used to enhance English language skills?

(3) What factors influence their use of digital tools in their teaching?

This study intends to answer three research questions by closely analyzing data from non-participant observations and from interviews with teachers.

1.3 Relevance to the Existing Literature

The integration of digital tools is an important topic for educational research, which has investigated (Dahlstrom, 2018; Nguyen et al., 2023; Bader et al., 2021; Siragusa & Dixon, 2008; Ilomäki et al., 2012; Cunningham et al., 2019; Nosirova, 2023; Dash, 2022) the use of digital tools and its importance in enhancing English language skills in primary classrooms. Their studies showed very important points on how these tools are seen by their users and how they are used in educational settings. However, these studies are mainly conducted for higher education students.

As the research in the education field tries to keep up with technological advancements, understanding the viewpoints of teachers particularly at the primary level is very important. Learning about teachers' perspectives on using digital tools provides important context for the

effectiveness and potential impacts of digital tools. Moreover, learning about how teachers integrate technology into their classrooms and how they combine it with their pedagogical practices can be useful for the development of strategies. Exploring teachers' experiences, perspectives and the obstacles that they come across when integrating digital tools can help with understanding how to improve and make innovations in this area. This is why this thesis study aims to provide an insight into the ideas and thoughts of primary school teachers in using digital tools.

1.4 Thesis Outline

Chapter 2: Theoretical Framework and Literature Review

In this chapter, the thesis study explores theories about the integration of digital tools in education. It also looks at previous research to get insights and find the gaps in the literature.

Chapter 3: Methodology

In the methodology chapter, the methodology, and the data collection process is explained. The rationale behind the chosen methods and their suitability for the research questions is outlined. Detailed descriptions of the procedures for data collection are explained step by step, including interviews and non-participant observations. Additionally, the reliability and validity of the study are discussed. Ethical considerations such as informed consent and confidentiality, are also explained.

Chapter 4: Results

In this chapter, the study's findings are presented along with the data collected through observations and interviews. Key findings from the data are identified. Through analysis, insights into the experiences and perspectives of primary teachers regarding digital tools are explained.

Chapter 5: Discussion

In this chapter, the findings collected from the study are analyzed and discussed based on the research questions.

Chapter 6: Conclusion

In this final chapter, the major findings of the thesis study are summarized. The contributions to the field are discussed and the limitations are acknowledged. Practical implications are explained along with recommendations for future research for understanding the integration of digital tools in primary education.

2. Theoretical Framework and Literature Review

2.1 Introduction

This chapter explores the relevant research regarding the use of digital tools in classrooms. The first section will examine the theoretical aspects and the second section will focus on articles in the field.

2.2 Theoretical Background

In this section, the studies and research about the evolution of the digitalization of education, pedagogical theories integrating said technologies, digital literacy and equity are highlighted. These studies show how education has changed to use new technology, how different teaching methods affect digital learning, and why it's important for everyone to have equal access to digital tools.

2.2.1 History of Educational Technology

Teaching methods and how information is presented to students have changed significantly over the last century. The way information is introduced has shifted from chalkboards to screens. Now, students can access information with just one click instead of searching through books or encyclopedias. (Campo et al., 2012,). They say that the transition from traditional chalkboards to digital screens symbolizes more than just a change in teaching tools. It reflects a shift towards digitalization of information. When teachers used chalkboards, they needed to master their skills, which was time-consuming. So, the introduction of video projectors was revolutionary in comparison (Campo et al., 2012). This gives them the opportunity to do independent research and

learn by themselves. However, it's important to make sure that new technology supports traditional teaching methods instead of replacing them (Campo et al., 2012).

According to Weller (2018), the most significant advancement in educational technology came with wikis. He says that Wikis came out in 1998, at the same time as the World Wide Web and right after, e-learning came out for the first time, and it was quickly followed by blogs, open educational resources, and learning management systems in the early 2000s (Weller, 2018). He claims that as technology evolved outside of the educational sphere, teachers incorporated these technological advancements into education to the greatest extent possible. Thus, technological innovations have had a transformative effect on education. In response to this, the effect of technology on education became more important.

At the start of the 2010s, the discussion on educational technology among researchers became a hot topic. As educational technology evolves together with advancements outside the classroom, Boekweg et al. (2021) assert that the central question has consistently been about its effectiveness and its improvement, which evolves according to the needs of the field. His observation shows the commitment of researchers to maintain an approach to advancing educational technology. Despite trendy topics, such as gaming, researchers remain dedicated to making educational technology and the quality of their teaching and learning experiences better (Boekweg et al., 2021).

Adding to this, in the 2020s, a greater and faster shift in education came by the COVID-19 pandemic (Boekweg et al., 2021). They underline that external circumstances forced education to take a completely digital direction and it pushed teachers to rethink how they teach and encouraged new ideas in using technology for teaching. This made talking about educational technology even more important because it's now crucial to use digital tools well to meet the changing needs of students.

In conclusion, the evolution of educational technology has been marked by several significant milestones. Technology has transformed education in many ways, from the transition of traditional chalkboards to digital screens, to wikis and e-learning platforms, and the focus on digital learning came with the COVID-19 pandemic. As both researchers and teachers try to keep up with all these changes, the main focus is on the effectiveness of using technology in education

and its learning outcomes. Despite the challenges and uncertainties they come across, teachers and researchers in the field are committed to improving and innovating educational technology. This is to ensure that education continues to adapt and evolve to meet the needs of students and teachers. As educational technology evolves, the collaboration between teachers and researchers will become more and more important to ensure that the development continues.

2.2.2 Educational Theories, Models and the integration of Digital Tools

Siemens (2004) states that learning theories are evolving to incorporate technology and connection-making as core learning activities (Siemens, 2004). According to Taber (2017), effective educational planning starts by defining our purposes, then determining the appropriate strategy, or pedagogy, to achieve those goals. According to him, this involves breaking down the content into manageable chunks and connecting new information to what learners already know. Moreover, integrating digital tools into the educational process should be done together with pedagogical theories and models. Therefore, it is important to understand how these theories and technologies work together (Taber, 2017). In this section, three of the learning theories (constructivism, behaviorism and connectivism) and their connection to the use of digital tools will be discussed.

Constructivist learning theory, frequently associated with thinkers like Kant and Piaget, argues that learning happens by connecting new information to what we already know. (Dennick, 2016). Thampinathan (2022) states that there are five key points of constructivism, the first one being that "the construction of knowledge occurs on already existing knowledge" (p.27). This means that the new information should be built on the existing one. The second point of constructivism is that learning should be active, in other words, learning should be an ongoing process where we explore, predict, imagine and create new things (Hamat & Embi 2010). The third principle is that learning is social, the fourth principle is that learning is individual, and the last principle says that our understanding of things keeps growing and changing (Thampinathan, 2022).

In addition, active learning is crucial, as it involves constantly creating and enriching knowledge through exploration, prediction, imagination, and manipulation of information. So, digital tools help these processes by offering varied and engaging learning environments (Hamat & Embi, 2010). They point out that technologies like peer tutoring with computers, computer networks, email, and telecommunications greatly support constructivist learning, making education more interactive and collaborative. Thus, "digital technologies offer considerable affordances for supporting such pedagogic approaches and increase the potential for schoolteachers to work as constructivist teachers". (Taber, 2017, p.11).

Regarding connectivism, it is one of the most notable network learning theories developed for e-learning environments (Goldie, 2016). Connectivism offers a learning model that acknowledges drastic changes in society (Siemens, 2004). The way people function changes as they change the tools they use. Therefore, connectivism helps to understand the skills and tasks the learners need to become better in the digital era (Siemens, 2004).

Goldie (2016) states that in the connectivist approach, learning is not just about gaining knowledge individually; it's also about how learners collaborate, share knowledge and how they use learning resources. Therefore, he emphasizes the potential benefits of implementing digital tools into learning as a valuable resource, yet connectivism is unlikely to be the only theory that can explain "learning in technological enabled networks" (p.1065). Duke et al. (2013) also draws attention to the fact that connectivism has its shortcomings and needs further evaluation, however, he acknowledges that connectivism has made teachers think about digital education and question how everything fits together. They keep checking how each new generation learns to make sure education holds to high standards.

In the context of behaviorism, the teacher's role is to guide their students. They are responsible for delivering content, while students complete tasks, study, and then assessed (Altuna et al., 2015). Gunnars (2021), examined 641 studies to see how often researchers use behaviorism method and investigated the impact of digital technology on learning in primary schools. They discovered that this method isn't widely used by teachers, however, its usage is increasing. Additionally, they found that digital tools can be beneficial for young learners, particularly in presenting information. Therefore, using Information and Communication Technologies (ICT) and

digital tools can help develop and apply teaching methods that match Behaviorism theories (Altuna et al., 2015)

In summary, the integration of digital tools in education enhances learning when supported by pedagogical theories. Constructivism benefits digital technologies that enable active, social, and individualized learning, encouraging learners to build on existing knowledge. Connectivism highlights the importance of social learning and the use of digital tools to collaborate and share knowledge in modern e-learning environments. Meanwhile, behaviorism can be complemented by digital technologies for systematic teaching and assessment. The effective use of digital tools in education depends on understanding and applying these theories.

2.2.3 Digital Literacy and 21st Century Skills

Today's youth are very involved in a digitized world, and they are surrounded by digital systems and technologies that shape their daily lives (Ilomaki et al., 2012 p.63). Pangrazio et al. (2020) states that digital literacy has developed as an important concept for teachers, researchers, and educational policymakers to be able to face the increasing demands in schools and students.

Digital literacy was first defined in the late 1990s as the ability to understand and use information from many sources, especially using computers and the internet (Pangrazio et al., 2020). As technology becomes a bigger part of our lives, it's very important to focus on digital literacy to make sure everyone has the same chances and uses technology responsibly (Sharma, 2023). Knowing how to use digital tools and information technology is essential to success in personal, academic, and professional fields. Thus, technology is key in sharing knowledge and making education better (Haleem et al., 2022).

According to Chalkiadaki (2018), the 21st century is often described as an era defined by significant technological advancements, the integration of Information and Communication Technology (ICT), and growing need for improvement across various sectors. Consequently, they highlight how vital it is for students to gain necessary skills to be able to be successful in the digitalized world. Therefore, it can be said that integrating digital tools into education becomes

very important to equip students with the skills they need. Proving this, Voogt and Roblin (2010) conducted research where they identified 59 documents and analyzed 32 in detail. Their findings show agreement on key 21st-century skills such as collaboration, communication, ICT literacy, and social/cultural competencies.

In conclusion, as the world becomes increasingly digital, the importance of digital literacy continues to grow. Thus, researchers like Pangrazio et al. (2020) and Chalkiadaki (2018) emphasize the necessity for students to develop skills that match the demands of a technologically advanced society, including collaboration, communication, and cultural competencies. Studies, such as those conducted by Voogt and Roblin (2010), support the agreement on the essential nature of these 21st-century skills. Ultimately, integrating digital tools effectively into education is key to preparing for success in the digital world.

2.2.4 Technology Integration Frameworks in Education

As discussed before, using technology in teaching and combining different learning methods is becoming more common in education. Various frameworks have been created to assess how technology is used for learning purposes. This change shows that more people understand how technology can improve learning in different educational areas (Reich et al., 2021). Thus, this sub-chapter will explore the technology integration frameworks such as SAMR model, TPACK framework, RAT model and TIP model.

2.2.4.1 SAMR Model

As digital tools in daily life becomes more common among young people, their love for technology can enhance their learning experiences (Romrell et al., 2014). The SAMR model is an effective tool for making mobile learning better (mLearning) and this model includes four levels: substitution, augmentation, modification, and redefinition (Romrell et al., 2014). In Lubega and

Paul (2014)'s article, "Adoption of the SAMR Model to Assess ICT Pedagogical Adoption: A Case of Makerere University", the four levels of technology integration according to the SAMR model is explained as follows;

In the substitution level, technology directly replaces traditional tools or methods without changing the task. For instance, instead of completing assignments with handwriting, students may use a computer to type their work. Despite the change in the tool, the actual task remains the same, so the technology substitutes pen and paper. Moving to the augmentation level, technology is still a direct substitute but offers improvements over traditional methods. Using a spell-check feature in an online document provides functional benefits not available with handwritten assignments is an example for this. While the task may not change significantly, the inclusion of technological tools improves the process's orderliness. At the modification level, technology goes beyond simple substitution to fundamentally redesign tasks or activities. This leads to a qualitative shift in learning experiences. An illustration of this is students collaborating on a document in real-time using cloud-based software. This integration of technology transforms the nature of the task. Lastly, at the Redefinition level, technology gives the opportunity to create completely new tasks or activities that were previously not possible without the technology use. For instance, students may create multimedia presentations using text, images, audio, and video to show their understanding of a topic (Lubega and Paul, 2014).

In summary, the SAMR model serves as a guideline for teachers, helps them to develop instruction with technology, but more importantly, it helps them to improve their teaching and learning strategies in the classroom (Aldosemani, 2019).

2.2.4.2 TPACK Framework

As stated by Lee et al. (2022), PCK (pedagogical content knowledge) stands for the specific knowledge and understanding about a subject that teachers have about how to teach that subject as effectively as possible. According to Gudmundsdottir and Shulman (1987), teachers with strong pedagogical content knowledge can understand the level and abilities of their students and identify

their learning difficulties. As a result, they can improve their teaching effectiveness. However, new teaching approaches are needed to adapt to the developments. While pedagogical content knowledge provides valuable professional knowledge and teaching skills, it may not specifically address the integration of technology into instruction, or how teachers can help students to use technology to transform their learning experiences (Lee et al., 2022).

In response to this, pedagogical content knowledge developed further (Mishra & Koehler, 2006) and the development of the Technological Pedagogical Content Knowledge (TPACK) framework was created (Lee et al., 2022). This framework specifically considers the role of technological knowledge to enhance learning (Lee et al., 2022). According to Cox and Graham (2009), TPACK Framework is something "to draw attention to the technologies that teachers use" (Cox & Graham, 2009, p.63). This suggests that the TPACK framework helps teachers to understand how technology, teaching and pedagogical content knowledge works together. However, it is worth noting that the biggest responsibility belongs to the teacher, and this will ultimately lead to more effective teaching and learning experiences (Archambault et al., 2010).

2.2.4.3 The Technology Integration Matrix (TIM)

The Technology Integration Matrix (TIM) is a framework created by the Florida Center for Instructional Technology and was created to help evaluate how teachers use technology to improve learning in the classroom (Welsh et al., 2011). It has five key traits of effective learning environments (active, collaborative, constructive, authentic, and goal-directed) with five stages using technology in teaching (entry, adoption, adaptation, infusion, and transformation) (Welsh et al., 2011).

According to Welsh et al. (2011), They say that in addition to providing a framework for describing levels of technology integration and characteristics of good teaching, the Technology Integration Matrix (TIM) is a resource for professional development. They explain that in each section of the matrix, there are four classroom video links including videos for math, science, language arts, and social studies. Along with each video, there's a lesson plan to help teachers who

want to use these methods in their classes. So, they claim that this resource helps teachers learn and use technology better in their classrooms by showing them real examples and giving them resources.

In conclusion, various frameworks help teachers to understand and assess how technology is integrated into teaching. These frameworks, such as the SAMR model and the TPACK framework, help teachers enhance learning by effectively incorporating digital tools. The SAMR model provides a step-by-step method to help teachers to use new tech-based activities in their teaching. On the other hand, the TPACK and TIM framework builds on existing pedagogical content knowledge by integrating technological understanding and helping teachers with instructional methods for the digital age.

2.2.5 Enhancing English Language Skills using Digital Tools

English language teaching has evolved significantly with the integration of modern technology, shifting away from traditional methods like repeated recitation and memorization (Yang & Chen, 2007). Today, a vast array of digital tools and resources are readily accessible, often free of cost, providing a more dynamic and interactive learning environment (Celik & Aytin, 2014). The introduction of these technologies in language teaching is not just a trend but an important shift in pedagogical approach. As Dash (2022) points out, modern technology in teaching English encompasses an innovative application of methods, tools, materials, devices, systems, and strategies that enhance the delivery and efficacy of language education. He notes that these technologies are essential in achieving the integrated view of modern systems, thus benefiting students by achieving the desired educational outcomes. Digital tools such as mobile apps, websites, online courses, and virtual reality offer interactive exercises, language games and video lessons enriching the learning experience (Nosirova, 2023). Mobile language learning apps like Duolingo provide learners with flexible, engaging methods to practice English and they include lessons on vocabulary, grammar, pronunciation, and conversation, and incorporate gamified elements to enhance language learning (Nosirova, 2023).

According to Bahadofar and Omidvar (2014), modern technologies supplement traditional classroom methods, helping full involvement of students in learning rather than viewing it as a boring task. Computers and suitable software provide a platform for students to repeatedly engage with material at their own interest, thus improving essential language skills in today's IT-driven world (Bahadofar & Omidvar, 2014).

In conclusion, technology not only makes learning English more accessible but also enhances the educational experience by providing instant feedback and allowing for connection. This instant feedback mechanism helps learners track their progress, set goals, and identify areas for improvement, ultimately enhancing their language learning journey (Nosirova, 2023). As Roach and Utami (2017) suggest, teachers must be creative with emerging technologies to capture students' attention and create engaging activities in the classroom. This integration of modern technology in English language teaching is very important for both educators and learners to keep pace with the educational landscape (Roach & Utami, 2017).

2.2.6 Policy Frameworks and Governance Structures for Educational Technology in a Norwegian Context

Teaching in Norwegian schools were digitized at record speed in 2020 as in other countries around the world. The changes that could otherwise have taken 10-15 years to develop were now happening in a couple weeks (Haugsbakk, 2021). He claims that Norway's solid digital setup, supported by the ICT industry, made it easy to shift to online learning after the pandemic hit. However, he also says that the quick switch also brought worries about cybersecurity risks and online scams, raising concerns about societal and educational challenges (Haugsbakk, 2021).

"The Norwegian government and the leading political parties have acted in keeping with the European Union and OECD in terms of the need to implement new technology in education" (Haugsbakk, 2011, p.10). The Norwegian Centre for ICT in Education, under the Ministry of Education and Research, has been very important in this matter. It helps the government make strategic decisions and carry out policies to improve education quality using ICT. Norway also has

been a member of the OECD since 1961 (Prøitz, 2015) since it is important to have input from an international area. Therefore, understanding how to navigate between domestic and international arenas, and how international developments influence domestic policies, is crucial for educational researchers to contribute on national education policy in curriculum and assessment (Prøitz, 2015).

On a different note, Lund (2021)'s article, titled "The Norwegian Ministry of Education and Research's action plan for digitalization in primary and secondary education and training: appraisal and critique", reviews Norway's AP20 plan, which aims to integrate digital technology in schools. Lund (2021) criticizes the plan for being unclear about who it's for and what it aims to achieve. He claims that the article's focus is mainly on technical aspects like digital tools and managing information, but it doesn't discuss how these tools can improve teaching. The article points out that AP20 is too focused on rules and equipment and lacks guidance on using technology effectively in classrooms. It also notes that the plan doesn't align well with other educational strategies that better address teaching and learning with technology. The review suggests that future updates of the plan should clarify its audience and goals and emphasize educational practices over just the technical details (Lund, 2021). This shows that even though Norwegian government is taking actions on this matter, it still needs a great attention for its to be applicable.

In conclusion, Norwegian education is evolving with technology and adjusting to it. It is evident with the research that Norwegian education system trying to provide a flexible and safe settings for students and teachers using technology.

2.2.7 Equity and Access in Technology

According to Warschauer and Matuchniak (2010), unlike past revolutions, the rise of computers and the Internet is now happening alongside the economy. They say that this explains why these technologies have spread so quickly and why they are very important for social and economic participation. Information technology is now seen as crucial for generating wealth, power, and knowledge in our time (Warschauer & Matuchniak, 2010).

Lievre and Farb (2003) note that there's an agreement across different fields, countries, and cultures that newer information and communication technologies (ICTs), especially the Internet, have made it faster to create, share, and use information in different forms. However, there's also increasing awareness that these technologies have made existing information access and usage gaps bigger. It could even create new obstacles. (Lievre & Farb, 2003). Stevenson (2001) points out that the Internet, like other communication technologies, can both “centralize and decentralize power” (p.72). Economists, sociologists, politicians, and information professionals have studied the social, political, cultural, and economic involment of the "digital divide" (Lievre & Farb 2003, p.500). Equity and inequity are not easy to understand. Bania and Banerjee's (2020) research on technology access and equity reveals that among the surveyed sample, experienced learners show higher levels of technological success compared to their counterparts. The findings show that this is even higher in those with previous exposure to online learning and with the challenges brought by COVID-19, the existing gap between these groups and gotten even bigger. This situation could significantly impact the educational outcomes of already socially disadvantaged students (Bania & Banerjee, 2020). Lievre and Farb (2003) point out that while there have always been differences in wealth, society, and politics, equity requires looking at both getting access and how things are used from various viewpoints. They claim that this includes spreading out resources and systems, supporting social and personal skills and abilities, and offering meaningful content.

On another note, in a guide designed to help teachers deal with differences in students' access to technology, Warren-Sams (1997) gives useful tips. She states that teachers can consider replacing consumable materials with technology. She also underlines that working together with high-tech companies that want to help local schools and coordination with the local chamber of commerce can offer solutions to this problem. Ensuring all students have access to technology or collaborative projects is essential and despite variations in technology accessibility among students, teachers are responsible for closing or reducing this gap (Warren-Sams,1997).

2.3 Literature Review

2.3.1 Introduction

“Digital technology in the classroom refers to various software and gadgets meant to help students with particular accessibility needs” (Haleem et al., 2022, p.281). Traditional teaching methods have been replaced by newer approaches that include various technological advancements. Contributors, including school administrations, have recognized the value of integrating these technological tools to support learning better (Cancino & Panes, 2021). Therefore, it's crucial to update how educational systems are organized. This ensures that learning remains effective and relevant. Teachers must adopt new strategies to prepare students for the future. Digital education is changing rapidly, consistently introducing new technologies and developments, and this idea of quick change is used to push teachers to adopt the latest technologies, so they don't fall behind (Weller, 2022).

It is important to adapt to change by continuously developing new digital tools. According to Meirbekov et al. (2022), these tools are crucial for managing the growing complexities of modern society and industries and it is important to stay current with technological advancements due to their significant impact. Furthermore, they claim that the massive changes brought by digital technology are pushing education to actively use more information and communication tools. As they report, this shift is expanding opportunities to integrate digital resources into educational methods, changing both teaching and learning processes (Meirbekov et al., 2022) Therefore, integrating digital tools into teaching methods to effectively prepare students for the modern labor market and the rapidly changing technology landscape, is a critical topic in the educational research (Wang & Li, 2022). This section will explore the following topics as digital tools for student learning, digital tools for teachers, teachers’ perception of digital tools, students’ perception and teachers’ preparedness.

2.3.2 Digital Tools: For Teachers and For the Students

Technology is an important resource for teachers, assisting them in meeting the diverse needs of learners in both traditional classrooms and virtual environments (Mucundanyi & Woodley, 2021). Thus, in regular classrooms, technology can make teaching better, get students interested, and make learning fun. Likewise, in online classes, technology helps teachers create exciting learning experiences, where students can work together and talk with each other. Mucundanyi and Woodley (2021) assert that the transformative impact of technology is obvious in how schools, colleges, and universities operate. As they note, while teachers may not need to be experts in digital tools, it's very important for them to know their general features. This helps the teachers to effectively integrate technology into their teaching practices and create engaging learning experiences (Mucundanyi & Woodley, 2021).

Luongo's (2023) article provides guidance for teachers on how to use technology tools effectively. It underlines the need for teachers to acknowledge the need for change in their teaching practices when incorporating technology into the classroom. Accordingly, this changes the traditional role of the teacher, from being the sole center of attention to adapting to new pedagogical approaches. Luongo (2023) states that this transition can be challenging for teachers using conventional teaching methods. However, as noted in the article, it's crucial to recognize that technology does not decrease the teacher's role but rather transforms it. Starting with small steps, such as integrating one technology or tool at a time can help teachers gradually adjust to this change and these issues can be addressed if teachers have a professional community that are focused on technology in their classrooms (Luongo, 2023). As stated, this involves staying updated with new technologies and innovations to continually make their teaching practices better.

On a related note, according to the study made by Purcell et al. (2013), a survey of 2,462 teachers highlights the significant impact of digital technologies on their teaching. It is found that while 92% say that the internet has a major role in accessing teaching materials, 69% say it's important while sharing ideas with colleagues. Additionally, 67% of the teachers emphasized the digital tools' role in communicating with parents. On the other hand, 75% feel that digital tools

have increased demand for their workload and knowledge base. Despite challenges, 62% feel their schools support digital tool integration well, and 68% receive formal training. Mobile phones (73%), e-readers (45%), and tablets (43%) are commonly used in classrooms, with activities like online research (79%) and assignment submission (76%) (Purcell et al.,2013). The finding also show that teachers engage students in interactive online activities such as wikis and collaborative editing platforms. Overall, their study's findings underline that while technology presents both benefits and challenges, teachers demonstrate a willingness to adapt and seek out opportunities to continue learning in digital tool integration (Purcell et al.,2013). This adaptability by the teachers is crucial as students themselves are already using technology a lot in their everyday lives.

Children today are surrounded by technology; social media, smartphones, computers, tablets, and gaming consoles are all very popular (Carstens et al., 2021). It seems like a competition that children are in, and they all need to have the latest gadgets and apps, so technology is a huge part of their lives (Carstens et al., 2021). Due to this, teachers today face great pressure to deliver a quality education that is in line with 21st-century standards (Harris, 2016). A study made by Al-Hariri and Al-Hattami in 2017, involving 219 students, showed that laptops (50%) and phones (42%) were the most used devices, followed by tablets (7%) and desktop computers (0.5%). Importantly, the study found a strong link between students' use of technology and their academic achievements. The results showed that when digital tools are used effectively in classrooms, they can improve learning outcomes, academic performance and improve problem solving skills. This means giving students the necessary technological and informational skills is important to be successful in a constantly changing world (Harris, 2016).

On a different note, it's worth mentioning that despite the increasing usage of technology by students, as previously discussed, there are other factors to consider. A survey made by Kvavik (2005), involving 4,374 students, showed that there is a significant requirement for additional training in information technology for learning and problem-solving skills. The study suggests that students might be progressing slowly in developing the necessary skills to effectively integrate technology into their academic activities. This slow skill development could be limiting the current impact of technology within educational institutions and this points to a need for further developed training strategies for students (Kvavik, 2005).

To sum up, adopting new technologies can be challenging for teachers, who must learn to effectively integrate these tools. The benefits of using technology in education are significant, as it enhances teaching and learning experiences. Educational institutions play a key role in providing the necessary training and resources to support teachers. This helps teachers to use technology confidently and to innovate in their teaching methods and helps them to keep up with technological advancements. At the same time, there's a noticeable skills gap among students. Although they frequently use digital tools, many lack the proper training to fully benefit from these technologies in their learning and problem-solving. This underscores the need for improved educational strategies to equip students with the technological skills needed for success. Both support for teachers and training for students are very important to maximize the benefits of technology in education.

2.3.3 Teachers' Insights on the Digital Tools in Education

According to a study by Westre (2021), most teachers have positive views about using digital tools in education. However, they are worried about them being misused. The study found that this worry is one of them but not the main cause of why teachers are not using technology in their classroom. Even though the teachers see the benefits, they don't use these tools much because there aren't clear rules and instructions on how to use them (Westre, 2021). This is in line with Amhag et al. (2019)’s insights, who underlines the need for detailed guidelines that could assist the teachers effectively when integrating digital tools in their classrooms. It is necessary to give the teachers this opportunity since they need to be able to use technology professionally to be able to help their students (Persada & Sobandi, 2023). Therefore, in terms of the practical application of these tools, studies show that teacher proficiency and availability of digital tools play a crucial role. For instance, Petko (2012)'s research involving 357 secondary school teachers in Switzerland showed a connection between the teachers' proficiency in using digital tools and the frequency of their incorporation in lessons. This implies that making digital tools easy to access and familiar to use could lead to their increased use in classrooms. Likewise, Brevik et al. (2019) emphasizes that a teacher's effective use of digital tools in education depends on their skill in strategically

organizing the tool and making sure it is relevant to the subject being taught. Petko (2012) and Brevik et al. (2019)'s studies suggest that teachers are the key in using digital tools effectively.

The study by Castaño Muñoz et al. (2021) investigates the involvement of teachers in professional learning activities. The data of their study is gathered via SELFIE; an online tool used by schools to assess digital readiness. The researchers analyzed responses from almost 60,000 teachers. The study's findings showed that integrating digital technology in cross-curricular projects is important for improving student digital competency. Also, the study showed that teacher participation in professional networks is linked to the use of digital technology in teaching. The study thereby proves the critical role of digital technology in teaching and learning, especially in encouraging teamwork among teachers (Castaño Muñoz et al., 2021). Additionally, Nguyen et al. (2023) contributes to the discussion with a detailed review of 33 papers published in peer-reviewed journals. The researchers examined the important aspects of digital literacy that scholars often study. They also explored the different tools used to assess digital literacy and the common frameworks and models used to develop these tools. Many aspects of digital literacy are covered in these frameworks, models, and tools, and the researchers organized them based on the six main components of DigCompEdu, a widely used framework (Nguyen, et al. 2023). The findings of their study pointed out that a considerable number of researchers focus on assessing teacher digital competence through four perspectives: the application of diverse educational technologies, the process of teaching and learning, professional development, and learner support. Moreover, the study shows that the discussion of digital competence should also consider the context of technological and educational environments (Nguyen, et al., 2023). Choy & Ling (2015)'s case study, including 32 teachers in one school showed that the teachers found using technology easy if they got support from peers. They also indicated that setting up teacher support groups could help increase the use of technology in student assignments like quizzes, online essays, videos, and e-portfolios. The study's findings highlight the importance of both technological skills and peer support in using technology effectively in teaching. So, the study points out that while teachers feel comfortable using technology for motivation and presentation purposes, they may need additional support and training to integrate it successfully into student research projects (Choy & Ling, 2015). Findings from Olorunsola and Ogwueleka (2021)'s study with approximately 120 teachers also aligns with the results of Choy & Ling (2015)'s study. The integration of ICT into

the curriculum has positively changed the mindset of teachers and students (Olorunsola & Ogwueleka, 2021).

In conclusion, the research showed that the teachers are willing to integrate technology in their classrooms, but they need support from their peers and the school administrations to do it effectively. Additionally, getting enough support and good digital competence will help the teachers feel more confident and help the students learn better.

2.3.4 Students' Perspectives on Digital tools in the classroom

Stables (1997) suggests that watching babies and toddlers interact with their surroundings shows that from a very early age, we start using our creativity and begin to develop skills with technology. When it comes to education, the research indicates that using technology-enhanced gadgets can help create engaging and collaborative lessons that support meaningful learning in very young learners (Gonzalez-Acevedo, 2016). Educational materials that teachers use to teach young learners such as games, hands-on activities, videos, and technology help keep young learners focused, interested, and motivated (Ozet, 2024).

Shifting focus towards studies involving student participants, Bader et al (2021)'s research provides important insights. In their study, the researchers analyzed 128 reflection notes from 40 students and conducted a focus group interview with three of these students. The findings showed a wide range of attitudes towards a new digital tool being used in their learning. Significantly, how much students liked and used a digital tool was mainly because they found it easy to use, not because they thought it would help them learn better. Phrases such as "easy" or "easier" frequently appeared in the students' reflections, indicating the tool's user-friendliness (Bader et al., 2021, p.25). Additionally, Høyvik (2022) conducted a study that explores the attitudes of first-year general studies (VG1) students in Norway towards the use of digital tools in learning English. In his study, an overwhelming majority of the students (87.6%) agreed that digital tools were helpful in their English language learning, while 11.6% remained neutral, and only 0.8% disagreed. The most frequently cited advantages in his study were variation, access to information, and motivation.

However, the teachers also recognized distractions, excessive screen time, and the presence of fake news as significant challenges (Høyvik, 2022). Cunningham et al., (2019)'s study explores how students perceive the use of technology, such as Microsoft Word, to improve their English writing skills. The findings of this study reveal that students believe their English writing is significantly better when using Microsoft Word compared to traditional pen and paper methods. On the other hand, even though students are good at using technologies like social media for learning on their own outside of school, there are rules and different expectations that limit how they can use these technologies in the school and young learners don't fully understand this mismatch, which shows there's a need to figure out how these digital skills can be used better in schools to help with learning (Clark et al., 2009).

According to Dahlström (2018), research shows that students from different economic backgrounds may not have equal access to digital tools and this gap can create an uneven field where some students have the necessary tools for digital learning, while others may not. She states that in some instances, even when these tools are available in schools, students have reported not using them, pointing to potential challenges in their effective use. According to her, the role of teachers and school administrations is significant in these scenarios, as they are responsible for integrating these tools into educational practices effectively and ensuring their access to all students, irrespective of their socio-economic background (Dahlström, 2018). Furthermore, in her study, students have expressed that digital tools facilitate their learning by making content production easier, thereby enhancing their educational experiences but it's very important to consider these results while keeping in mind the different situations and environments students come from. (Dahlström, 2018).

Overall, the studies that include student perspectives showed that most students seem to enjoy using technology in their classrooms. However, it is important to note that the biggest challenge is equity between them.

2.3.5 Teacher Preparedness for the Digital Age

As previously mentioned, Kvavik's (2005) study highlighted the need for better training methods for students. In the same way, teachers also need improved training strategies. According to a study by Maghfiroh et al., (2023) on finding the digital competence levels of the teachers, the findings revealed varying levels among participants. The study consisted of 6 male and 29 female teachers. Specifically, 6% were at level A1, 28% at level A2, 46% at level B1, 14% at level B2, and 6% at level C1, with no participants reaching level C2. When it comes to readiness for teaching in the 21st century, the study found out that only a portion of the participants expressed readiness to incorporate diverse digital technologies into their classrooms. Their research shows the importance of educational programs that can enhance the digital competence of future teachers, aiming to prepare them effectively for the demands of teaching in the modern era (Maghfiroh et al., 2023). Thus, this is an important subject for the educational research field. A study made by Cebi & Reisoglu (2020) aimed to understand how pre-service teachers feel about their digital skills and if these feelings differ based on field of study, and how confident they are in their digital abilities. They surveyed 518 pre-service teachers from various parts of Turkey. Results showed that overall, pre-service teachers felt moderately confident in their digital skills, and this confidence varied depending on gender, field of study, and perceived digital competence level (Cebi & Reisoglu, 2020).

Twining et al., (2013) explains that at the EDUsummIT conference in 2011, a group focused on teacher training realized that effective teaching methods using technology weren't being shared widely enough. They highlight that teachers should integrate technology into their teaching methods, rather than treating it as a separate subject because this approach better prepares students for the digital world (Twining et al., 2013). They also state that there is a need for better ways to spread successful teaching practices into policies and classrooms. Organizations such as UNESCO and ISTE should help to share these practices (Twining et al., 2013).

In summary, as previously stated, it seems that teachers feel more comfortable integrating technology in their teaching when they feel confident using specific digital tools. Their competence and preparedness in digitalization depends on how familiar they feel to the tools.

2.3.6 Connecting the Reviewed Literature

The reviewed studies showed the diverse role of technology in education, focusing its transformative effect on how teachers teach and how students learn with it. Mucundanyi and Woodley (2021) found a very important role of technology in meeting the varied needs of learners, both in traditional and virtual learning environments. This was also underlined by Carstens et al. (2021), who highlighted the omnipresence of technology in children's lives, proving its great influence.

However, using technology in education requires teachers to change how they teach, as Luongo (2023) highlights. Teachers must adapt their pedagogical approaches to make good use of technology. According to Taghizadeh and Yourdshahi (2020), For technology to work well in classrooms for young learners, it's crucial to understand how important it is to find appropriate tools in making sure technology is used correctly. They also highlight the need to move from traditional instructional methods towards more interactive and collaborative learning experiences. The importance of this adaptation is further underlined by Purcell, et al. (2013), who noted teachers are still eager to adopt technology in their teaching, however, it is important that they adapt their practices towards technology use. While teachers generally show a positive attitude towards digital tools, their concerns about technology being misused and lack of clear guidelines might slow down their adoption process (Westre, 2021). Addressing these concerns, Amhag et al. (2019) and Castaño Muñoz et al. (2021) highlight the need for detailed guidelines and professional development opportunities to support teachers in integrating digital tools effectively. Furthermore, the studies by Nguyen et al. (2023) and Choy & Ling (2015) focus on the significance of digital literacy and peer support in using technology integration. According to them, teachers require technological proficiency and collaborative networks to effectively use technology in teaching and learning processes.

On the student front, research by Bader et al. (2021) and Maghfiroh et al. (2023) shows the varying attitudes towards and levels of digital competence among students and teachers. While some students show enthusiasm for new digital tools, others may struggle with digital literacy.

Similarly, teachers' readiness to incorporate digital technologies into their classrooms varies from individual to individual. This indicates a need for the point support and training for teachers (Maghfiroh et al., 2023). Moreover, insights from the EDUsummIT conference in 2011 show that there is an ongoing effort to improve teacher training and effective technology-enhanced teaching methods (Twining et al., 2013). This shows the importance of necessary skills and knowledge when it comes to technology.

To sum up, the reviewed studies show the important role of technology in young learners' education, the need for pedagogical adaptation, and the importance of support systems to help teachers and students with effective technology integration. Some key insights from the reviewed literature show that technological integration in education is becoming essential as digital tools and the internet find their way into young learners' classrooms. While primary teachers acknowledge the benefits of these tools, they often encounter challenges due to a lack of clear guidelines and support, which makes them feel uncomfortable using said tools in their lessons (Westre, 2021; Amhag et al., 2019).

In terms of teacher preparedness and professional development, there is a noticeable variation in digital competence among teachers. This gap shows the need for professional development programs to familiarize teachers with new technologies and also help them adapt their pedagogical methods (Maghfiroh et al., 2023). Luongo (2023) emphasizes that effective technology integration requires significant changes in teaching methods to integrate digital tools effectively. Student interactions with digital tools are generally positive, with many students appreciating that it is easy to use them (Bader et al., 2021). However, differences in access to technology based on socio-economic backgrounds are still a significant barrier (Dahlström, 2018).

Digital tools have also transformed the role of primary teachers (Purcell et al., 2013). This shows that teachers need ongoing support to keep their teaching methods up-to-date and effective as technology quickly evolves. Furthermore, the communities of practice among teachers are crucial for the successful integration of technology. These communities improve the sharing of best practices and offer the support that teachers need (Choy & Ling, 2015).

In conclusion, while primary teachers and young learners are excited about the benefits of these tools, they also face challenges with readiness, access, and proper use. Therefore, continuous

support, training, and clear guidelines are crucial to fully integrate technology in teaching young learners. The body of research underlines the transformative impact of technology in education, highlighting its necessity in both enhancing the learning experience for students and updating teaching methodologies for teachers. To get the maximum benefit from the technology, it is important for educational systems to provide continuous support and clear guidelines for teachers. This includes professional development programs that not only enhance teachers' digital competence but also assist them in effectively integrating these tools into their teaching. Additionally, making sure of equal access to technology for all students is crucial to prevent disparities in opportunities.

3. Methodology

3.1 Introduction

The teachers are actively looking for technological tools to improve their student's learning experiences (Carstens et al., 2021) especially in the context of teaching young learners. This has been mainly because Information and Communication Technologies (ICTs) have developed over the last years. Such developments have encouraged learners to become digital learners, and teachers needed to integrate technology into their pedagogical approaches (Akram et al., 2022, p.1). Therefore, this study aims to gain a deeper understanding of the perspectives and experiences of primary school teachers teaching young learners thought a qualitative research design using observations and semi-structured interviews as data collection methods.

I have adopted qualitative study method since it provides an opportunity to understand the complex and varying process of integrating digital tools into education, as well as the identification of challenges, opportunities, and strategies that teachers may encounter in this process (Denzin & Lincoln, 2011).

The primary research questions guiding this study are:

(1) How do primary years teachers perceive the integration of digital tools into their classrooms?

(2) What specific strategies do they use to integrate digital tools into their teaching, and how they are used to enhance English language skills?

(3) What factors influence their use of digital tools in their teaching?

To answer these research questions, data will be collected through non-participant observations of the lessons, semi-structured interviews and written interviews with first, second and third grade teachers. Observations show how digital tools are being used in the lessons in detail, while interviews allow for understanding of the experiences, beliefs, and motivations of teachers when using digital tools in their classrooms (Creswell & D. Creswell, 2017). By analyzing

this data, this study will try to provide a better understanding of the perceptions of teachers on the issue. The following sections of this methodology chapter outline the research design, sample, data collection and analysis methods, ethical considerations, and measures of reliability and validity used in this study.

3.2 Qualitative Research

Qualitative research is a flexible way to study social events, and it is guided by the gathered information (Hammersley, 2012). It involves gathering information that was not structured focuses on using words and stories to explore the complex nature of human experiences, thoughts and actions and focuses on understanding social things deeply and in their context, using methods like interviews and observations (Hammersley, 2012).

According to Dowling et al. (2016), the most common method in social and cultural fields is the qualitative method. They say that this is due to the qualitative research being about understanding how people interpret things, their experiences, and how they relate to the spaces and places in their social lives. Moreover, qualitative research involves studying real-life situations using different methods to understand people's perspectives and helps researchers observe and interpret phenomena in their natural settings, focusing on the meanings individuals give to them (Dowling et al., 2016). They collect a variety of data, like interviews, observations, and personal stories, to explore both every day and significant moments in people's lives (Denzin & Lincoln, 2011).

In this study, the researcher conducted qualitative methods to investigate the perspectives and practices of teachers regarding the integration of digital tools in their classrooms. By directly observing teachers, documenting their actions, and conducting interviews with them, the researcher aims to gather a full understanding of their views and approaches. This qualitative approach was chosen because it allows for the exploration of unstructured information. To understand teachers' detailed viewpoints, qualitative research was the best method for this thesis.

3.3 Research design

In this thesis study, a qualitative collective case study approach was used to answer the research questions. The collective case study strategy was selected for its capacity to provide insights and a comprehensive understanding of teachers' utilization and integration of digital tools. This approach lets researchers explore a topic in its natural setting using various sources, allowing them to see it from multiple angles and understand its different aspects (Baxter & Jack, 2015). Additionally, it is suitable due to the dynamic nature of the educational landscape concerning digital tools. This method's flexibility made it easy to conduct interviews.

Semi-structured interviews were one of the selected methods for this thesis study. By adopting a semi-structured approach, this thesis study prioritized the teachers' viewpoints, their experiences, insights, and reflections. Furthermore, the semi-structured interviews allowed for flexibility in discussing specific topics and exploring the themes that came out during the interviews spontaneously. Semi-structured don't strictly follow predetermined questions but are structured enough to cover the main topics of interest, ensuring most, if not all, important areas are discussed (Karatsareas, 2022). Along with semi-structured interviews, non-participant observations were conducted to observe how teachers incorporated digital tools. Observation in qualitative research is a fundamental method where data is collected by systematically watching and listening (McKechnie, 2008). These observations helped to identify how teachers interacted with these tools, the methods and duration of their use, and the challenges they faced. Both the interviews and observations gave a complete picture of how teachers interact with digital tools.

The rationale behind the selection of the qualitative collective case study was twofold. Firstly, existing research about the integration of digital tools was mostly about higher education. Thus, the studies that were investigating the experiences of the teachers of young learners was limited. This method was chosen because it provided extensive insight into teachers' perspectives and practices in the context of primary education. Secondly, the qualitative collective case study approach was embraced for its flexibility. This aligned with the changing nature of the digital education field and the diverse experiences of the teachers.

3.4 Overall Research Framework

Initially, the study involved conducting interviews with the teachers, aiming to gather detailed insights into their beliefs and practices. These interviews were carefully recorded to ensure accuracy and later transcribed for detailed analysis. Also, to accommodate different preferences, some participants received a written form of the interview questions. This was to let them provide their responses in writing after the face-to-face interviews. When necessary, follow-up questions were asked to clarify or expand certain points that came out during the interviews. Secondly, non-participant observations were conducted over two months to closely witness and document how teachers incorporated digital tools into their classrooms. These observations aimed to capture the interaction between teachers and digital tools in the classroom setting. Throughout this observational phase, the methods, duration, and challenges they came across when using digital tools in their teaching were documented. Finally, the information gathered from both the interviews and observations was carefully brought together and examined to reach conclusions.

3.5 Context

The study is conducted at an IB school in Norway. The school is recognized as an International Baccalaureate (IB) World School and relates to renowned educational groups like the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Norwegian International Baccalaureate Schools (NIBS). Moreover, it is officially recognized by the Norwegian Directorate for Education and Training and receives funding from the Norwegian Government.

One of the fundamental principles advocated by the school is that students and teachers need to be adaptable and resilient. Adopting change and new ideas is a central goal, showing its dedication to changing education models. The school's focus on adapting to the dynamic nature of the world attracted my interest, as it offers a diverse range of digital tools and provides an opportunity to observe teachers who have experience in various educational systems. Another reason was that English is the teaching language at this school, but the students are not native English speakers. Therefore, regardless of the subject, lessons are also focused on teaching English and introducing new vocabulary.

The school maintains a student body of 92, with small classroom settings that enable teachers to give personalized attention to each student. With this smaller student-to-teacher ratio, teachers can focus on teaching individually and spare more time to plan and carry out a broad range of classroom activities. The school is staffed by a team of 20 teachers, representing diverse cultural and educational backgrounds, including both Norwegian teachers and those from various countries. The variety among the teachers adds to a diverse learning setting, giving students the chance to experience different ways of teaching and viewpoints.

The school has an inclusive Information and Communication Technology (ICT) policy, actively integrating digital tools into the educational process. However, the school empowers teachers by allowing them to choose the digital tools they find most relevant and beneficial for their students. This ensures that the teachers have the freedom to select and use digital resources that match their specific teaching styles and their students' needs, which is another important reason that this school was chosen for this study.

Additionally, it's also important to understand the educational setting and the curriculum of the school for this thesis study. The school is known as an IB World School, following the principles and curriculum of the International Baccalaureate Organization (IBO). The IBO, founded in 1968 in Geneva, Switzerland, aimed to provide a curriculum for university preparation that would equip students for the challenges of a connected world (Dvir et al., 2018). The IB's main goal is to develop students who are not just academically successful but also have the knowledge and skills to interact with and make a positive impact on the world (About the IB, 2023). All IB programs are based on the idea that students actively build their own knowledge rather than just receiving it, thus, this approach, known as constructivism, focuses on challenging and engaging students to help them understand and perform better (Hill et al., 2014). IBO aims to nurture international mindedness in students. The IB curriculum is made to change and grow, keeping up with how education and student needs evolve across the world. It's known for its special way of teaching, which really focuses on students asking questions and learning through discovery. It also aims to help students grow both in and out of the classroom. Considering all these points, the school's adoption of the IB framework provides a rich context for this thesis study.

3.6 Participants

In this section, a detailed description of the participants will be provided, aiming to offer a deep understanding of their characteristics and backgrounds.

3.6.1 Selecting participants

The selection process for this study carefully chose teachers who are focused on teaching young learners with English as the main language of instruction in an international school setting. The idea behind picking teachers from the same school was to look at and compare different ways of teaching in an environment that doesn't change. This method helped in looking into how teachers might use digital tools in their classrooms differently, even when they all have the same chance to use technology in their teaching. Thus, this made it easier to see patterns or unique strategies in using digital tools for teaching and learning. It opened a chance to find out what works best when using digital tools in education, which could help other teachers in similar settings.

3.6.2 Describing the participants

This thesis study involved four teachers, each with a different cultural background and a different level of teaching experience. These teachers came from various parts of the world, including Norway, the United States, Scotland, and India, which meant they brought different viewpoints and teaching styles to the table. This diversity added a rich variety of perspectives to the study. All the participants in this study were women, with ages ranging between 30 to 50 years. This group represented experienced teachers, most of whom have dedicated over ten years to teaching. Only two of the four teachers were native English speakers but all four had English as the language of instruction throughout their carriers. Although they taught different subjects, together, they covered a wide range of areas within the school curriculum. This variety in teaching disciplines meant the study could gather insights on the integration of digital tools across a broad spectrum of educational contexts, not just limited to one specific area of learning.

The study also examined experienced teachers to understand how classroom technology has evolved. By analyzing their practices, the aim was to identify how these experienced teachers adapt to and incorporate new digital tools into their teaching. This exploration helped pinpoint effective strategies and areas needing improvement in educational technology use.

3.7 Data collection

In this section, the data collection process will be explained in detail including the timeline, the interview process and the non-participant observation process.

3.7.1 Data collection Timeline

- Initial contact and consent: January 2023
- Semi-structured interviews: March 2023 to June 2023
- Non-participant observations: August 2023 to November 2023
- Written interviews: November 2023 to December 2023
- Follow-up interviews/questions (when necessary): January 2024

3.7.2 Semi-Structured Interviews

Semi-structured interviews were conducted with open-ended questions to gather additional information on the topic.

3.7.2.1 Interview Guide and Questions

The set of questions designed for the interviews (Appendix 2) in this study was selected to be able to answer the study's three main questions. Each question set is customized to explore topics of interest, to be able to get a complete view of how digital tools are brought into classrooms for young learners from different perspectives.

Firstly, the study aims to get a clear picture of what young learner teachers in Norway think about bringing digital tools into their classrooms. The questions are designed to learn about the teachers' views on the benefits and challenges of using these tools and any noticeable effects on how engaged students are in their learning. This part of the interview asks teachers to share their personal experiences and observations. This is to gather insights and their beliefs on technology use in education, including both its advantages and negative sides they have encountered.

Moving on to the second goal, the focus shifts to the strategies that the teachers use to integrate digital tools into their daily teaching routines and the types of technologies they use the most to enhance their students' English language skills. Here, the questions are aimed at finding out the strategies teachers use to select and integrate digital tools in their lessons. Teachers are encouraged to explain how and why they choose certain tools over others and their intentions behind these choices. This part is very important for understanding the thought process behind the integration of technology, as it reveals the criteria teachers consider important when selecting digital tools.

Lastly, the third goal focused on what factors affect teachers' technology use and what considerations they have. This section of the interview includes questions about how integrating technology affects their lesson planning, whether the use of these tools differs depending on the goals of the lesson or the needs of the students, and what factors affect them. These questions are intended to provide a detailed look at the reasons behind choosing or not choosing to use digital tools. They also aim to understand its impact on the overall educational experiences of both teachers and the students.

By expanding on these objectives through the interviews, the study aimed to build a rich, detailed understanding of the role of digital tools in young learners' classrooms. This strategy reveals both the present situation of technology in education and spots chances for advancement. It helps find ways to support teachers in making their teaching better with new digital tools. The interview questions are as below.

3.7.2.2 Teacher Interview Procedure

The study progressed as planned, with interviews conducted with teachers, each session intended to last approximately 25 minutes. These interviews were recorded using an iPhone for secure

storage on the organization's cloud, in addition to the methodology used. With the approval extension granted by NSD (Appendix 1), written interviews were incorporated into the data collection process later.

Before dispatching the questions, all participating teachers received consent forms (Appendix 4) detailing the study's purpose and provided their signed consent before engaging in the written interview format. Verbal consent was also obtained from each teacher, alongside approval from the school director, before proceeding with the written responses. The document containing the questions was transmitted via the organization's secure email system, and the received responses were collected and stored within the secure cloud service managed by the school participating in this thesis study.

All data, including received documents with responses, was securely stored in the organization's cloud drive, following strong security protocols that match the school's data protection rules. The entire communication process, from sending questions via secure email to receiving responses, was conducted using the organization's secure email platform, upholding data integrity, confidentiality, and compliance with the school's data protection and ICT guidelines.

3.7.3 Non-participant observation

The non-participant observations were done using the structured observation form (Appendix 3) along with notes. The form was filled out in writing while observing.

3.7.3.1. Observation Procedure

The observations were conducted with a specific emphasis on the integration of digital tools within the classroom setting. The observation procedure was designed to document the use of technology by teachers and students during lessons. The following outlines the procedural steps:

Pre-Observation Preparation

Before starting the observation process in the classroom, several steps were taken to ensure everything was set for a smooth and focused evaluation. Initially, official permission was secured from the school's administration. This ensured that there was a mutual understanding and

agreement on the thesis study's purpose, highlighting the focus on digital tool integration within the educational environment. With the formal permissions in place, the next step involved clearly defining the research objectives related to the use of digital tools in the classroom. This step was fundamental as it laid down the framework and set the direction for what specific aspects of digital tool integration needed to be observed and assessed. Setting these goals early on helped create a list of standards for observing, making sure all observations stayed on track with what the study aimed to achieve.

To further prepare for the observation phase, a set of observation tools was prepared. Among these tools, there were detailed checklists and a notebook. The checklists were created based on the study's goals, looking at different things like what digital tools were used, how much they were included in classes, why they were used, and how engaged students were with these technologies. This preparation phase was important to set the observation process for a comprehensive and focused observation. Below the preparation process is explained step by step:

Introduction and Explanation

Before beginning any observation session, it was important for the observer to meet with the teacher involved in the study. During this meeting, the observer introduced the study's focus. This step was crucial for several reasons. This introductory phase was an integral part of the observation process. It reassured the teachers that the observations were conducted with a clear and constructive purpose, promoting transparency and trust.

Observation Process

During the observation, the focus was on how digital tools were used in the classroom. The observer noted the types of digital tools used, their purpose in the lesson, and how they helped meet learning goals. Key points included the teaching strategies with digital tools, how students interacted with the technology, and the effects on student engagement and learning outcomes.

Digital Tools Utilization

During each observation session, detailed notes were taken, specifically focusing on moments when digital tools were used in the lesson. These were carefully documented to provide a clear picture of how technology was being utilized in real-time classroom settings. The observer

recorded specific instances of technology use to collect concrete examples of digital tools in action. This method enabled a detailed analysis of how these tools either enhanced or hindered the educational experience. Documenting these instances was crucial for evaluating how effectively digital tools were integrated into classroom lessons.

Challenges and Opportunities

During the sessions, the observation was especially focused on identifying both challenges and potential areas for improvement when teachers are using digital tools in their lessons. These aspects were very important because they provided valuable insights into the challenges teachers face when using technology in their teaching.

Furthermore, during these observations, the focus also included finding chances to make better use of technology. By identifying moments where digital tools didn't meet expectations or could be used more effectively, the study aimed to provide practical tips for improving technology use. This process was not only about identifying problems but also about recognizing the potential for refining existing practices, making the use of digital tools in education more impactful and meaningful for both teachers and students.

Post-Observation Reflection and Analysis

Upon completion of each observation session, a debriefing with the teacher allowed for reflection on observed practices linked to digital tool integration. This reflection included identifying strengths and areas for improvement, emphasizing their impact on student learning experiences.

Documentation and Analysis

Immediately after the observation form's completion, all the data were written down. This documentation was the basis for more analysis and data gathering, focusing on how it related to the study's goals about using digital tools.

3.7.3.2. Observation Form

The observation form used in this thesis contained various critical topics. These topics were carefully chosen to provide a comprehensive understanding of how technology is integrated.

One of the key areas in observation form was the use of digital tools. This section focused on documenting the types of digital tools used by teachers during the lessons. It aimed to identify the specific tools utilized and how they were integrated into teaching practices. Furthermore, the lesson context was noted. This included things like the subject area being taught and the lessons' overall objectives. Understanding the context in which digital tools are used is very important for evaluating their effectiveness and impact on teaching and learning outcomes. The teaching methods and techniques with digital tools section explored the various pedagogical approaches used by teachers. It sought to identify innovative teaching methods and techniques that integrate digital tools. Student engagement and participation are crucial factors in effective technology integration. For this reason, the observation form included a section specifically dedicated to student engagement and participation with digital tools. This section aimed to assess the extent to which students actively interacted with digital tools during activities and the impact of technology on their learning experiences. Additionally, the observations on technology integration section provided insights into the overall integration of technology within the classroom environment. This included observations on the availability of technological resources and the accessibility of digital tools to students.

Finally, the general comments section offered observers the opportunity to provide any additional observations or insights not covered by the predefined topics. The observation form in this thesis covered various topics to fully understand how technology is used in schools and classrooms.

3.8 Data analysis

The process of analyzing the collected data was both careful and systematic. Qualitative data analysis involves describing, categorizing, and "interconnection of phenomena" to the researcher's ideas (Graue, 2015, p.8). It is designed to extract as much insight as possible. Initially, all responses gathered from the interviews were carefully summarized and organized in another document. This organization was done topic by topic, which allowed for a detailed examination of both the similarities and differences in the responses.

For the observations, a structured form was used, including six primary topics alongside a section reserved for general observations and comments. This form was important in gathering

data in an organized manner. Without a “data management system”, problems with accessing and identifying information occur (Caudle, 2004). The interviews varied significantly in length, including six to thirteen questions. The variation was largely dependent on the depth and flow of each conversation, allowing for a comprehensive exploration of the subjects at hand. After the interviews, the transcripts and observational data were methodically collated. Each piece of data was then summarized and cataloged according to the relevant topic in a separate document. This meticulous process ensured that the data was not only comprehensive but also easily navigable.

A noteworthy aspect of the data collection was the separate documentation of teachers' reflections and personal notes on the use of digital tools within their classrooms. It's important to organize your data into sections that are easy to retrieve (Lacey & Duff, 2001). This decision was made to maintain a clear focus on the thesis's main aim. By gathering these reflections and personal notes, the analysis remained focused mainly on the teachers' perspectives.

This methodical approach to data collection and analysis was important in better understanding the subject matter. It allowed for a detailed exploration of the teachers' viewpoints, experiences, and reflections on integrating digital tools into their teaching practices. The structured organization of the data, coupled with the focused analysis, provided a solid foundation for drawing meaningful conclusions from this thesis study. This thoroughness was critical in ensuring that the insights gleaned from the research were both robust and reflective of the complex realities of digital tool integration in educational settings.

3.9 Trustworthiness

Rose and Johnson (2020) suggested that trustworthiness is essential for maintaining the standing of qualitative research. Qualitative research is a specific approach within the social sciences that relies heavily on observing people in their own environments and engaging with them using their own language, in their own terms (Kirk & Miller, 1986). It is characterized by its “naturalistic, participatory, and ethnographic nature” (p.9). In contrast to quantitative research, which deals with countable things like statistics, numbers, and graphs, qualitative research focuses on the essence of phenomena, so, it is the “absence of counting” (p.9).

Cypress et al. (2017) states that Qualitative studies are more complex compared to traditional investigations. They claim that in quantitative research, everything follows a set

structure, with methods already decided upon. However, in the type of research that studies people, the planning and the actual research happen at the same time, and the plan can change as the study progresses (Cypress, et al., 2017). This is why before fully starting the study, certain preliminary steps need to be completed, like making initial contact, gaining access to the site, getting consent, establishing trust, and identifying participants (Cypress, et al., 2017). To ensure that these preliminary steps were completed, in this thesis study, the school administration was contacted initially. They were provided with the study's objectives and aims, which were then discussed in a meeting. Once the school administration agreed to participate, the primary teachers were approached, and they expressed their interest in taking part.

After confirming the willingness of both the school and the teachers to participate, an application was submitted to NSD (Norsk senter for forskningsdata). Upon approval from NSD, consent forms were signed by the teachers, marking the official start of the thesis study.

According to Leung (2015), the main goal of qualitative research is to understand and identify patterns in words, creating a meaningful picture without losing its depth and complexity. He notes that in quantitative research, human emotions and perspectives are often seen as unwanted biases that can affect results, however, these elements are considered valuable because they add depth and richness to the findings (Leung, 2015). To grasp patterns in words and create an understanding without losing depth, the non-participant observation form was structured into themes. This allowed for a systematic summarization of findings, teacher by teacher and theme by theme. It also helped with the identification of differences and similarities in their thoughts and actions. Additionally, a general comments section was included in the observation form to record any additional information that emerged during the observation process.

For the interviews, a similar approach was adopted. Despite being semi-structured, which permits asking follow-up questions based on emerging themes, the initial questions were categorized based on three research questions. By structuring the interviews in this way, the ability to draw meaningful conclusions from the gathered information was ensured.

Franklin et al. (2010), defines reliability in qualitative research as similar interpretations by different people. According to them, this means that the researchers conducting similar observations and analyses, would arrive at similar interpretations and results when reading transcribed field notes or narrative data. They claim that the goal is to achieve greater consistency across various settings and time periods. Adding to this, they indicate that in qualitative research,

reliability is often referred to as dependability (Franklin, et al. 2010). To ensure dependability, researchers must document everything. Thus, to provide the dependability of this thesis study, a detailed form for the research design and data collection process was completed with NSD. This showed that the research followed ethical standards. Objective themes were determined for both the observation and interview forms. This allowed for the systematic management of the data collection process. Using themes to evaluate the data strengthened the consistency and dependability of the research.

To ensure reliability in qualitative research, Franklin et al. (2010), suggest considering several factors. Firstly, it's important to have clear research questions that align with the study design. This ensures that the focus of the research is well-defined and consistent throughout the study. They claim that the researchers should explicitly describe their role and status within the research site. This helps provide transparency and clarity about the researcher's position and potential biases that may influence the study's findings. Moreover, they note that fundamental concepts and analytical frameworks should be clearly specified. This ensures that the methods used for data analysis are grounded in well-defined principles, enhancing the credibility of the research findings (Franklin et al., 2010). Reliability in research refers to how dependable and sound the study is. This depends largely on the methods selected for the research and how effectively they were applied and implemented during a qualitative study. (Rose & Johnson, 2020). Noble & Smith (2015), in line with Rose & Johnson, suggest that validity makes sure that the research methods are appropriate and relevant, while reliability makes sure that the research findings are dependable. Both validity and reliability are important aspects to ensure the quality and credibility of research outcomes. Thus, to guarantee the validity and reliability of this thesis study, each step of the research process, from the first design to data collection and analysis, was carefully documented. This collaborative effort with the supervisor ensured that the research methods remained consistent and dependable.

3.10 Ethical considerations

In conducting this study, ethical guidelines were carefully followed to ensure the protection of all participants and data involved. Right from the start, making sure the participants understand and agree to what is expected and what this thesis study is about was a priority. Detailed information

regarding the study's aims, methodologies, and the handling of data was shared with both teachers and the school administration through written documents. These documents aimed to provide comprehensive transparency about the research process and the participants' roles within it, ensuring they were fully informed before giving their consent.

To conduct observations legally and ethically within classroom settings, permissions were taken from the appropriate educational authorities and school leadership. This step was critical in establishing a formal agreement and understanding about the study's nature and scope. Furthermore, all participants were granted the choice of to not to take part in the study or request the exclusion of their data at any point. This is to make sure that the participants have control over their personal information. In addition to written documentation, verbal consent was taken from the school administrators and teachers participating in the study. This dual approach to consent—both written and verbal—reinforced the participants' understanding and acceptance of their involvement. Before any observation activities began, the aim of the study and the expectations were discussed, and a consent form signed.

To protect the privacy and confidentiality of all participants involved, strict security steps were taken to protect the data and the participants' identities. To uphold the ethical standards, all data was eventually deleted upon the project's completion.

Understanding the need for official approval, the project got the necessary permission from the Norwegian Centre for Research Data (NSD). This step confirmed that the study is in line with national research standards and highlighted the ethical considerations throughout the research process. The application to the NSD, submitted after receiving the research proposal's approval, was a critical step to meet the ethical standards.

4. Results

4.1 Introduction

This study explored how digital tools are integrated into primary school classrooms where the language of instruction is English, and it is focused on the perspectives of four teachers with diverse backgrounds. This chapter will be presenting the data taken from both classroom observations and semi-structured interviews with the four teachers. This chapter will explain the findings found in the semi-structured interviews with the four teachers, followed by the non-participant observations in the classrooms. The outcomes of these insights will be discussed in the upcoming chapter.

4.2 Results from the semi-structured Interviews

In this chapter, the findings from the semi-structured interviews with the four primary school homeroom teachers are presented. The interviews include a broad spectrum of insights. These include their methodologies in lesson design, the selection and utilization of teaching materials, the routine integration of technological devices into their classrooms, the strategies for incorporating technology and their opinions and considerations on digital tools. Their viewpoints on the ethical considerations associated with the use of these tools within the educational context are also explained. This chapter presents the responses to the three research questions central to this study.

4.2.1 Presenting the Interview Findings

The interviews focus on the teachers' experiences, whether positive or negative when it comes to using digital tools. This section is organized around the three research questions. First, the teachers' perceptions on the integration of digital tools are presented. Secondly, their strategies when integrating such tools are presented. Lastly, the extent of digital tool usage and the considerations teachers have when using these tools are presented.

4.2.2 The Teacher's Perceptions on Integrating Digital Tools

This section presents the findings related to the first research question: " How do primary years teachers perceive the integration of digital tools into their classrooms?"

4.2.2.1 Teacher 1

Teacher 1 has a background in Montessori teacher training. After her formal training, she began working as a kindergarten teacher. Over the years, she has taught various age groups, starting with toddlers, then moving to nursery students, and eventually teaching first and second grade. Her experience is primarily on young learners in an international school setting where English is the main language of instruction.

Teacher 1 emphasizes that using digital tools in teaching can greatly change how it's done, suggesting that sticking to traditional methods might make students less engaged over time. The teacher observes, "So I think it's just, when you teach in a traditional way without involving technology, I guess things start getting boring at some point. (Teacher 1)" She also recognizes the potential for technology to enhance student interest and motivation. Teacher 1 highlights the shift in student engagement by the use of digital tools: "Now since the kids are...they enjoy it when they are having an iPad or when they are learning through an iPad or using technology, they are more interested in learning." She also uses specific tools and apps for specific lessons, saying "we have

some apps called Brainpop and Epic where they, you know, get to read stories and Athletics where they learn math".

The teacher also underlines the importance of inclusion, as they also have students who do not speak English at all. She uses apps such as "google translate for students who don't understand English" (Teacher 1). She states that technological devices are a great way of including their students with lower language abilities in the activities.

4.2.2.2 Teacher 2

Teacher 2 has a master's degree in early years education, and she has experience across all primary years, currently focusing on first grade.

Teacher 2 uses technology sparingly in her lessons. She mentions that although iPads are available, they are not used by the first graders due to a lack of appropriate content. The teacher remarks, "Um, we have the iPads, but the kids, the first graders don't use them because we don't have anything appropriate for them on it. So, the kids don't use the iPads." She primarily uses her personal iPad and a projector occasionally. The teacher explains, "I use my own iPad very briefly, you know, one or two times a week to show them the screen" She also uses her computer to show videos to her students. She also has a Chromecast in the reading area, which she uses to teach English language skills to her students. "I use my computer to screen share maybe some videos and I have a Chromecast that I use in the reading area where we show language videos."

When technology is used, Teacher 2 is very careful about the content she presents. She pre-screens videos to ensure they are appropriate for her young students to find suitable material. She states, "I view the videos ahead of time to make sure that they're appropriate for them ".

In summary, Teacher 2 integrates technology into her classroom with careful consideration, prioritizing the suitability and relevance of content for her young learners. She uses technology, including iPads, a personal iPad, projector, and Chromecast, sparingly and selectively to ensure that all digital content is age-appropriate and enhances learning.

4.2.2.3 Teacher 3

Teacher 3 studied primary education for four years and earned a bachelor's degree with honors. Before that, she taught English in Asia and worked in a nursery. She has experience with first, second, and third graders.

Teacher 3 uses a balanced approach to integrating digital tools into classroom instruction and thinks it is important to keep this balance. She says; “With tech, it is important to be balanced, I don't like to overuse it”. The teacher uses a laptop to share information with students and the students get to use iPads during some lessons. Teacher 3 elaborates, "I use my laptop to share information with the students, they use their iPads during some of the lessons." Another key aspect of Teacher 3's approach is using Toddle, a platform that helps students record their learning and share it with their families. The teacher explains, "The students use Toddle to evidence their learning and share their learning with their families." This digital platform allows students to display their achievements and share their educational progress with their families, encouraging more parental involvement in their learning.

These examples show Teacher 3 sees using digital tools in the classroom as a balanced way to improve education, carefully adding technology to help with learning while making sure it supports regular teaching methods.

4.2.2.4 Teacher 4

Teacher 4 has a bachelor's degree in social studies and a teaching certificate. She worked as a substitute teacher and an assistant in various schools in different countries before transitioning to full-time teaching. She has taught primary school (grades 1-6) and middle school (grades 7 and 8) before. She currently teaches 3rd grade.

Teacher 4 uses various digital tools to support teaching and learning in the classroom. The teacher mentions, "iPad, Apple TV, and screen" as essential resources. She carefully uses technology, explaining, "I use Toddle to document learning on my end and for children to document their learning," to make sure that she covers all parts of the curriculum and keeps parents involved. Teacher 4 stresses the importance of using technology alongside other teaching methods, noting, "It is very important to be balanced as I think a tool such as technology is best used when it is in combination with other resources and varied." She believes that technology should support various types of learning activities, as it allows students to access different kinds of information, making their overall educational experience better. Overall, Teacher 4 uses digital tools for instructional practices, curriculum coverage, and promote parental engagement in student learning.

To sum up, Teacher 1 sees digital tools to make learning more exciting and accessible. She uses iPads and educational apps to keep young learners engaged, especially for students who do not speak English, says that these tools make her classes more inclusive and fun. Teacher 2 says she is cautious about using technology, choosing to use it mainly for showing videos that improve language skills. She claims that she makes sure all content is suitable for young children, showing that she values careful and appropriate use of digital tools in her lessons. Teachers 3 and 4 both state that they favor a balanced approach to using technology in the classroom. Teacher 3 uses technology to complement her teaching and connect learning with students' families through the Toddle platform. Teacher 4 also claims to integrate various digital tools to support her teaching and believes in combining them with traditional methods to enhance learning and keep parents involved in the educational process. Both teachers view technology as a helpful addition that should support but not replace traditional teaching methods.

4.2.3 The Teachers' Strategies and Their Choice of Digital Tools in Enhancing English Language Skills

This section presents the findings related to the second research question: "What specific strategies do they use to integrate digital tools into their teaching, and how they are used to enhance English language skills?"

4.2.3.1 Teacher 1

When discussing the strategies, Teacher 1 seems to focus on designing lessons that strictly follow the set curriculum, specifically for first and second graders. She notes, "So, we have a curriculum, and we normally follow that, and it's as per the age group." Extending beyond the curriculum, she researches topics to improve lesson plans. The teacher states, "when the topics are mentioned, we also need to do some research"

Teacher 1 believes that using digital tools helps prevent her students from becoming bored. She says, "I guess things start getting boring at some point and now since the kids are, they enjoy it when they are having an iPad or when they are learning through an iPad or using a technology, they are more interested in learning." This shows that she uses visuals with the help of technology as a strategy to make her lessons interesting and to keep her students excited about learning. She highlights the digital tools' appeal to her students. She states, "now since the kids are, they enjoy it when they are having an iPad or when they are learning through an iPad or using technology, they are more interested in learning." The teacher chooses these tools because she seems to believe that traditional teaching can sometimes get boring, and using technology makes learning more interesting and fun. She uses technology as a strategy to get her students more engaged. Teacher 1 also highlights the importance of including everyone by using digital tools like Google Translate for students who don't speak English well. She finds that these tools help include students with lower English skills in all classroom activities, improving their ability to enhance their language skills.

4.2.3.2 Teacher 2

According to Teacher 2, teaching and learning materials for young learners are primarily hands-on. The teacher emphasizes interactive activities, stating, "Teaching and learning materials for young learners is anything hands-on." In the context of mathematics, the approach involves

incorporating games that enable students to practice skills in an engaging manner. Teacher 2 elaborates, "We do a lot of games in math where they can practice the skills by playing games." In language learning, the teacher employs the "daily 5" method, which involves word manipulation activities to enhance language skills.

Teacher 2 uses technology and hands-on methods to make learning more engaging. She uses personal whiteboards in her classroom, which allows students to write and show their work physically. This hands-on method helps make learning more interactive and effective, as she explains, "They use personal whiteboards that they can show their work really anything that they can, any tactile things that they can use their hands with basically."

Additionally, Teacher 2 incorporates technology by using videos as a strategy to teach reading and writing in English. These videos help show the differences between how words sound and how they are spelled. She also uses tools like Google Translate to communicate with students who don't speak English. This helps these students start learning English by watching and interacting, even if they can't speak it yet.

4.2.3.3 Teacher 3

Teacher 3 describes their lesson strategies as variable; "It depends on the lesson. I try to ensure that instructions are given verbally and visually, and that those visual cues are always visible on the board." She states, for the English language and math lessons, they use stations; "In these cases I like to have a balance between independent and collaborative work, as well as play/active tasks, focus tasks and digital tasks." This way, the teacher claims that they give an option to their students, and it is a form of inclusion.

The teacher shares her preference for mixed-ability groups: "Personally, I do not split the students into groups based on their ability, I prefer to use mixed ability groups, and I tend to use a random generator to make the groups." Similar to Teacher 2, Teacher 3 also expresses enthusiasm for using the whiteboard in their lessons, "One of my absolute favorites, which we don't have in our school, are whiteboards." And continues; " You can use them for absolutely everything."

Overall, Teacher 3 prefers a balanced strategy and mixes hands on activities with technology in her classroom. To improve language skills, Teacher 3 prefers stations and visual presentations.

4.2.3.4 Teacher 4

Teacher 4 has several specific strategies to integrate digital tools into her teaching. These primarily aim to improve engagement of the students more effectively. She uses a platform called Toddle extensively, both for documenting her teaching and for enabling students to document their learning. This helps to involve parents in the learning process. She explains, "I use Toddle to document learning on my end and for children to document their learning." In her classroom, technology such as iPads, Apple TV, and a screen plays an important role. These tools are chosen to support learning activities and to make it possible for students to access a wide range of information. Teacher 4 thinks that technology is important in diversifying learning sources, stating, "It is important that students view and read information from different sources, with iPads/screen, the students can watch videos, play games, create presentations, complete tasks in apps and communicate their learning to their family." She states that these tools are especially useful when it comes to learning subject related terms in English.

The digital tools she uses are not only for displaying information but also for interactive learning. Apps are frequently used, for specific effectiveness in her teaching approach. For example, she mentions the use of math games and apps like Prodigy, which are used to engage students in learning math, although she notes that balancing screen time is crucial. She reflects on this balance, saying, "In general, I think it is very important to be balanced as I think a tool such as technology is best used when it is in combination with other resources and varied."

Teacher 4 also focuses on technology use and its safety and purpose. She highlights the need for rules and expectations for iPad, along with monitoring internet safety. She explains; "When I was a subject teacher, I found it challenging when students did not have clear expectations for usage of iPads, or it did not match what I would expect from them." To

overcome these challenges, she sets strict guidelines and teaches students about the safe and appropriate use of technology.

To sum up, Teacher 1 says that she focuses on following a strict curriculum for first and second graders but enriches lessons with technology to keep students engaged. She believes that traditional teaching methods can become dull, so she incorporates iPads and other digital tools to make learning more interesting and interactive. Teacher 1 says that using technology helps prevent boredom and increases student interest in learning and choses this as a strategy. For language instruction, Teacher 1 specifically uses Google Translate. Teacher 2 emphasizes hands-on learning and uses interactive methods like games for teaching math and employs personal whiteboards for language lessons. She states that using videos to enhance reading and writing skills in English and Google Translate to assist non-English speaking students are also part of her strategy. Teacher 2 views technology as a supportive tool to complement physical activities in her classroom.

Teacher 3 and Teacher 4 both prefer a balanced approach to integrating digital tools. Teacher 3 describes her strategy as variable, depending on the lesson, and likes to mix digital tasks with hands-on activities. She states that she uses technology to provide visual cues to enhance language skills and support collaborative and independent learning. Teacher 4 uses digital platforms like Toddle to document teaching and involve parents, and she integrates iPads, Apple TV, and screens to access diverse learning resources and helps her students with their English skills. She says that while technology improves learning, it is important to monitor screen time and ensure it is used safely and appropriately. Both teachers' strategies are to blend traditional teaching methods with modern technology to optimize student engagement and learning outcomes.

4.2.4 The Factors that Teachers Consider When Using Digital Tools

This section presents the findings related to the third research question: "What factors influence their use of digital tools in their teaching?"

4.2.4.1 Teacher 1

Teacher 1 acknowledges the significant benefits of digital tools, particularly iPads, in classroom activities. She observes that iPads make students very happy and improve their learning experience, stating, "Technology helps us in a way of when they are the students feel very happy when they have iPad." This positive impact of technology on student engagement is a key factor in its use in the classroom. However, Teacher 1 also points out the potential drawbacks of using iPads too frequently. She notes that students can become overly attached to these devices, which can lead to distractions during lessons. Teacher 1 explains, "Sometimes they get too attached to it. So, they want their iPads... it's kind of a distraction as well."

To manage the challenges associated with iPad use, Teacher 1 emphasizes the importance of establishing a structured routine. By setting clear expectations for when and how iPads should be used, they help students understand that there are specific times for digital activities and other times for traditional learning methods. Teacher 1 describes their approach: "So it's like we just have to make a routine regularly so that they know that this is the time for writing, and we should not be focusing on the iPad too much." This way, she aims to minimize distractions and ensure that technology serves its intended educational purpose.

Teacher 1 also expresses concerns about the potential for young students to access inappropriate content on the internet when using iPads. She highlights the importance of monitoring students' online activities to prevent them from coming across harmful websites. Teacher 1 points out, "we just have to be very conscious so when we are giving iPads to the kids of that age group and just start typing random things."

In summary, the use of digital tools in Teacher 1’s classroom is influenced by several factors, including the positive impact on student engagement, the potential for distraction, the need for structured routines to manage technology use, and the imperative to monitor internet access to ensure safety. These considerations shape how technology is integrated into teaching practices.

4.2.4.2 Teacher 2

Several factors influence Teacher 2's use of digital tools in the classroom. One of them is the reliability of technology, particularly projectors. When technical issues arise, they disrupt the flow of the lesson and affect student attention. Teacher 2 notes the impact of such disruptions, stating, "If the projector is not working, it really throws them off... It definitely causes a lot of delays... when they're young, learners will lose their attention really quickly." This indicates that functional technology is crucial for maintaining student engagement.

Another significant factor is the effectiveness of educational videos. Teacher 2 acknowledges the value of these resources, "But when it is working well, the videos I think if you choose the right ones, they really help them understand." This shows that the right digital content can significantly boost comprehension and engagement. Teacher 2 also emphasizes the importance of ensuring the appropriateness of the digital content used in lessons. She is committed to pre-screening videos to confirm they are suitable for young learners, "I just make sure that I view the videos ahead of time to make sure that they're appropriate for them, that type of thing."

Additionally, the teacher acknowledges that her young students have limited research skills and are not yet ready to navigate digital tools independently. This shapes how she implements technology in the classroom, "They don't do research. They don't have skills or anything yet, so they haven't learned how to site surf." As a result, Teacher 2's use of digital tools changes according to the developmental stage of the students and focuses on guided access to technology rather than independent exploration.

In summary, the factors influencing Teacher 2's use of digital tools in teaching include the reliability of technology, the educational value of digital content, the appropriateness of the materials, and the developmental readiness of the students. These elements collectively determine how technology is integrated into her teaching strategy.

4.2.4.3 Teacher 3

Teacher 3 claims that students often have a strong desire to use iPads in the classroom, which can sometimes resemble an addiction. This behavior might be coming from how iPads are used at home, where they are often seen as rewards. Understanding this context influences how Teacher 3 manages technology use in class. They state, "Some students want to use the iPads all the time, almost like an addiction." In addition to managing iPad usage, Teacher 3 values the role of digital tools in improving communication and documentation of student learning. The use of Toddle, a digital portfolio platform, is particularly favored for sharing information with parents. Teacher 3 comments, "I love how easy it makes it to communicate with parents and share learning." Teacher 3 also appreciates that technology provides students with practice and enhances their skills. She enjoys using technology for activities that allow students to work independently and successfully, stating, "I particularly enjoy using tech for the students to practice/enhance a skill. Something they can do independently and be successful at."

Furthermore, ethical considerations play a significant role in how Teacher 3 integrates technology. She makes sure that students' personal information is protected and that their online activities during class are safe. Teacher 3 explains, "Ethically, I think it's important that the students are not putting their personal information online during my classes, other than on Toddle, which is a safe platform to document learning and communicate with parents." They also respect parents' preferences regarding social media postings.

Lastly, Teacher 3 advocates for a balanced approach to technology use to prevent students from missing out on developing other essential skills. She is mindful of the potential for technology to overshadow activities that develop handwriting and motor skills. "I do not want to overuse tech and allow the students to miss out on skills like writing (by hand), fine and gross motor skills development, crafts, etc. It's all about balance," they note.

4.2.4.4 Teacher 4

Teacher 4 acknowledges the potential of using technology in the classroom. She notes, "I think that technology can support learning activities being varied". These tools enable students to engage in a variety of activities such as watching educational videos, playing interactive games, creating presentations, completing digital tasks, and communicating their learning to their families. However, Teacher 4 also notes the importance of having clear and well-defined rules for using these digital tools. She mentions challenges that she faced in the past, stating, "When I was a subject teacher, I found it challenging when students did not have clear expectations for usage of iPads." This experience has led her to realize the necessity of establishing firm guidelines to prevent misuse. Another significant concern for Teacher 4 is limiting screen time and ensuring technology use is purposeful. She says, "I believe it is very important to limit the access to, for example, iPads, and ensure that these are only used when the teacher has approved it."

Teacher 4 also finds value in using digital tools for research and exploration. They appreciate the availability of apps loaded with books and videos. The teacher notes the critical role of such resources, "it has been very crucial to be able to use apps with lots of books and videos so that the students can research." Lastly, despite the advantages, Teacher 4 is aware of the ethical concerns associated with technology use, specifically regarding screen time and exposure to advertisements. She mentions, "my ethical consideration is mostly screen time and advertisements,".

In summary, Teacher 4's approach to integrating digital tools is shaped by a focus on creating a structured environment with clear usage rules, ensuring purposeful use of technology, and addressing ethical concerns to safeguard student well-being.

To summarize all the results concerning the third research question, we can say that Teachers 1 through 4 each face different challenges and considerations that influence their use of digital tools in the classroom. They each adapt their strategies based on those specific factors.

Teacher 1 appreciates the positive impact of iPads on student engagement but is cautious about the potential for distraction and the risk of inappropriate content access. She manages these challenges by establishing structured routines for when and how iPads are used. Teacher 2 deals

with the practical issues of technology reliability, such as projector malfunctions that can disrupt the flow of lessons and lose young students' attention quickly. Her use of digital tools also revolves around the educational value and appropriateness of content, ensuring that videos and other materials are pre-screened and suitable for young learners. Additionally, she acknowledges the developmental stage of her students, guiding their interaction with technology since they lack independent research skills.

Teachers 3 and 4 both emphasize the importance of a balanced approach to technology. Teacher 3 is conscious of the potential overuse of iPads, which may affect other essential learning activities like handwriting and motor skills development. She uses digital tools to enhance communication with parents and facilitate independent learning but remains cautious about over-dependence. Teacher 4 focuses on setting clear rules for technology use, limiting screen time, and ensuring that digital interactions are purposeful and safe, addressing concerns about screen exposure and advertisement content.

4.3 Results from the non-participant Observations

This chapter shares the findings obtained from the non-participant observations in this thesis study.

4.3.1 How do primary years teachers perceive the integration of digital tools into their classrooms?

Over two months, 8 lessons were observed in Teacher 1's classroom. In Teacher 1's classroom, the setup included a smartboard, Apple TV, and stereo system, with each student equipped with an iPad. The teacher used both a MacBook and an iPad for instructional purposes. Throughout the observed lessons, the teacher mostly used the MacBook to display presentations and written questions on the smartboard. Digital tools such as YouTube and other video websites were used by the teacher to show videos, while the smartboard was used for interactive learning. Students actively engaged with iPads, accessing educational apps like Mathletics and Salaby.

In Teacher 2's classroom, they had a smartboard, Apple TV, and stereo system, although the iPads were not available, they were not in use. Instead, the teacher relied on a MacBook and a Chromecast for instructional purposes. Teacher 2 was observed for 7 lessons over two months.

Throughout the observed lessons, the teacher primarily used the smartboard and projector to show videos, particularly alphabet songs.

In Teacher 3's classroom, digital tools were sparingly integrated into the teaching process, with the teacher primarily relying on traditional methods and even toys for instruction. An Apple TV, projector, and a whiteboard were present in the classroom. All students were equipped with iPads and the teacher had a MacBook. While digital tools such as the interactive board were rarely used for teaching, they served administrative purposes, such as checking plans and taking attendance for Teacher 3. Additionally, the teacher utilized the online platform for planning notes and administrative tasks, as well as for communication with parents and school administration.

Teacher 4 was also observed 8 lessons over two months. In Teacher 4's classroom, digital tools were well integrated into the learning process. They also had a smartboard, Apple TV, stereo system, and iPads for all students, with the teacher engaging both a MacBook and an iPad for instructional purposes. Throughout the observed lessons, the interactive board was used for YouTube videos and presentations. It is also observed that the students actively engaged with their iPads.

4.3.2 What specific strategies do they use to integrate digital tools into their teaching, and how they are used to enhance English language skills?

Despite the variety of digital tools in Teacher 1's classroom, most interaction observed during iPad time. It seemed like the students enjoyed the times when iPads were included the most. Other than that, it was observed that since the students are young and still learning English, seeing the sentences visually made it easier for them to grasp the meaning in most materials.

The use of digital tools in Teacher 2's classroom seemed to contribute to student motivation, however, the students did not directly engage with any of the tools. During follow-up discussions, the teacher mentioned the preference for traditional teaching methods, highlighting the belief that digital tools were not essential for this age group. Instead, the teacher favored the use of mini whiteboards and the blackboard for instructional purposes.

Teacher 3 leveraged Toddle to outline assignment steps, allowing students to track the steps independently. She used iPad time as a reward at the end of some lessons. The digital tools in Teacher 3's classroom seemed to serve a motivational purpose for students rather than being integrated as a fundamental component of their learning process.

The purpose of technology use in Teacher 4's classroom extended beyond visual presentation, encompassing the repetition of lesson objectives and the assignment and completion of tasks. During morning meetings, the teacher used the whiteboard to show questions and facilitate discussions. The whiteboard also served as a platform for watching videos and listening to songs, enhancing the interactive learning experience. The student engagement remained high. Most of the time, the students used their iPads to complete assigned tasks on the digital platform Toddle.

4.3.3 What factors influence their use of digital tools in their teaching?

In Teacher 1's classroom, the integration of digital tools appeared effective in enhancing visual learning experiences for students. However, there were challenges in maintaining student focus in the absence of these tools.

In Teacher 2's classroom, while students seemed to enjoy watching videos and participating in songs, their engagement with digital tools remained passive. Teacher 2 used Chromecast for displaying videos, while handwritten notes on the blackboard were preferred for instructional content. Digital tools such as YouTube and Chrome cast were integrated into the lessons for visual presentations, mainly focused on reinforcing lesson objectives through repetition. Despite the availability of technological devices, student engagement with digital tools was limited, as they were primarily focused on learning fundamental reading and writing in English skills.

Students were given the opportunity to choose from educational apps on their iPads in Teacher 3's classroom. However, this appeared to motivate them more than contribute to their learning process. Observations revealed that students tended to rush their work to maximize their iPad time, suggesting a motivational rather than educational use of digital tools in the classroom.

Teacher 4's students demonstrated responsibility and resourcefulness in using their digital tools effectively. Strengths of technology use included task management and repetition, while no significant challenges or opportunities for improvement were observed. Overall, the integration of digital tools proved beneficial, fostering a conducive learning environment characterized by student engagement and responsibility.

Table 1 below summarizes the findings of this thesis study in categories based on the three research questions:

Teacher	Perception	Strategy & Tools to Enhance Language skills	Factors Influencing Use
Teacher 1	Technology is engaging but potentially distracting.	Uses iPads and apps such as BrainPOP and Epic to enhance engagement. Also uses Google Translate for non-English speaking students.	Need for engagement, managing distractions, and ensuring inclusion of non-English speakers.
Teacher 2	Technology is essential when reliable and content is appropriate.	Uses personal iPad, projectors, Google Translate and Chromecast for showing videos and mainly for teaching language skills.	Reliability of technology, suitability of content, and appropriateness for young learners.
Teacher 3	Technology is a great tool when used in balance.	Uses laptops to share information and iPads in lessons. Uses Toddle for student documentation and family communication. Uses visual presentations for English language skills.	Balancing technology use, encouraging independent learning, ethical considerations like student privacy and parental consent for social media use.
Teacher 4	Technology is vital for varied but implementation requires strict rules.	Uses iPads, Apple TV, screens, and apps for educational activities and Toddle for documentation. Uses videos and independent tasks for language skills.	Need for clear usage expectations, purposeful use of technology, limiting screen time, ensuring ethical use concerning screen time and advertisements, and safe internet usage.

Table 1 shows that Teachers 1 through 4 each have different perceptions and strategies for integrating technology into their classrooms, and their perceptions are influenced by various factors.

Teacher 1 views technology as engaging but potentially distracting, using iPads and apps like BrainPOP and Epic to boost student engagement, along with Google Translate to assist non-English speaking students. The main factors influencing her technology use include the need to maintain student engagement, manage potential distractions, and ensure inclusivity. Similarly, Teacher 2 believes that technology is essential when it is reliable and the content is appropriate, using personal iPads, projectors, and Chromecast to show videos for language skills.

Teachers 3 and 4 also recognize the value of technology in education but also note the importance of balanced and regulated use. Teacher 3 uses laptops and iPads for learning and Toddle to document student progress and communicate with families. Teacher 4 sees technology as crucial for creating different learning experiences and uses a combination of iPads, Apple TV, screens, and educational apps, alongside Toddle for documentation. Her strategy is shaped by the need for clear usage rules, limitation of screen time, and ensuring safe and ethical internet use. Together, these teachers show different ways to use technology in education, each one matching their teaching style and what their students need.

5. Discussion

5.1 Introduction

Through interviews and observations, many perspectives emerged among the teachers regarding integrating digital tools. Teachers are gradually adjusting their teaching methods to include technology in their classrooms. Some teachers demonstrated enthusiasm and confidence in integrating technology for their young students while others were hesitant. These insights can guide future efforts aimed at supporting teachers in effectively using technology and create better learning experiences for young students.

5.2 Discussion of the Results from the Interviews with the Teachers

In this section, the findings from the semi-structured interviews will be presented, with each research question addressed individually. Additionally, similarities and differences between the results will be discussed.

5.2.1 How Do Primary Years Teachers Perceive the Integration of Digital Tools into Their Classrooms?

The findings from primary teachers regarding the integration of digital tools in their classrooms show both the potential benefits and the challenges. However, overall perception seems to be positive. This aligns with Tossavainen et al. (2018)'s study with primary and preprimary teachers as they got a "a quite strongly positive" feedback from the teachers on using digital tools (p.22).

It is noted during the observations that Teacher 1's classroom has a lot of modern technology like a smartboard, Apple TV, a stereo system, and an iPad for every student. Teacher

1 offers a positive perspective on the use of technology in education and uses digital tools as much as possible in her classroom. The teacher notes that traditional methods without technology leads to lower student engagement. A study by Hendriks (2016) found that children aged 8 to 6 like learning with tablets more than traditional methods. He says this might be because they often use tablets for fun during their free time. Teacher 1's perception reflects a common understanding among teachers who want to keep their teaching methods dynamic and relevant to the changing needs of students.

Teacher 1 aims to make her lessons more engaging and ensure that learning is a stimulating and interactive experience for her students. For example, during the observation period, Teacher 1 predominately used a MacBook and an iPad to teach. She often showed slides and texts on the smartboard using her MacBook, which seemed to make students focus better. Research, like the one by Stokes in 2002, shows that using pictures and videos in teaching helps students learn better and develop important skills. He claims that these visual tools make it easier for young learners to understand and remember information, and they also help them get better at visual tasks. This might be because the children today are considered digital natives and they are used to having digital tools in every aspect of their lives (Carstens et al., 2021). Moreover, Teacher 1's frequent use of slides and visuals also helps to include non-English speaking students by improving their active participation.

Besides slides and visuals, Teacher 1 uses specific educational apps like Brainpop and Epic. These apps not only support what she teaches but also cater to different ways students like to learn. Her experience shows that using technology wisely can greatly improve teaching by making lessons more engaging and easier for everyone to access. This aligns with a wider trend in education where digital tools are becoming crucial for updating teaching methods to fit the needs of today's learners (Núñez-Canal, et al. 2022; Palamar, et al. 2023). Similar to interview findings, the non-participant observation results for Teacher 1 also highlight the potential of digital tools to promote interactive learning.

Moving on to Teacher 2, the findings show a different approach towards the integration of digital tools. She repeatedly addresses the limitations related to the use of digital tools, such as iPads, especially the lack of suitable educational content for younger students like first graders. She is cautious with her use of technology in the classroom. She explains that while iPads are

available, they aren’t used much by the first graders because the content isn't right for their age. This perspective seems to be common for teachers. A study by Lindner et al. (2019), showed that some teachers feel that there is a shortage of proper teaching materials and tools for young learners. This problem of resource availability and content appropriateness affects the integration of technology in a negative way. Being able to access appropriate media easily is considered the most important element for using information and communication technology (ICT) in primary schools (Neofotistos & Karavakou, 2018). Even though Teacher 2 is very selective when it comes to digital tools, she also shows flexibility by using personal digital devices to enhance lessons, such as using a computer and Chromecast for multimedia presentations. It seems that Teacher 2 sees the value of digital tools but chooses to use them very carefully. She focuses on making sure that any technology used fits well with the needs and ages of her students. During the observations, besides using technology, the teacher wrote notes on the blackboard the old-fashioned way. This mix of using both new technology and traditional methods also shows that she is flexible and chooses the best tool for each lesson’s needs. It might be that the teacher’s willingness to use technology depends on how safe she feels and how much she knows about such tools. This is similar to Zhao (2007)’s study, who found out that teachers often use technology more effectively and creatively if they are willing to use it and have had good experiences with it before. As stated by Castaño Muñoz et al. (2021), this can be solved by giving teachers professional development opportunities regarding integrating digital tools. Another finding that is also worth noting is that during the follow up discussions, the teacher expressed a strong preference for traditional teaching methods over digital ones, explaining that she doesn’t think digital tools were crucial for young learners. Instead, the teacher preferers to use mini whiteboards and the traditional blackboard to teach. This choice shows how much a teacher's beliefs about teaching can influence how they use technology in their classroom. Blackwell et al. (2014)’s study proved that the teachers’ integration of digital tools is correlated with having positive attitudes towards it. Moreover, Hendriks (2016) claims that young learners’ attitudes towards technology is the most important, as negative perception of it will make the technology integration unsuccessful.

Teacher 3 has a bachelor's degree in primary education and has experience teaching first through third graders. In Teacher 3's classroom, it is observed that there were many different digital tools, such as an Apple TV, projector, whiteboard, iPads for students, and a MacBook for the

teacher. Observations revealed that digital tools are sparingly integrated into the teaching process. The findings from the interviews and the observations in Teacher 3's classroom show that she is very careful not to overuse technology. While digital tools such as the interactive board are rarely used for teaching, they serve administrative purposes, such as checking plans and taking attendance. Kassem (2018) suggests that it is important for teachers to find their own balance between technology and traditional teaching strategies.

The teacher uses the platform Toddle for communication between the school and home to increase parental involvement and allow students to share their learning progress. This use of digital portfolios helps maintain a connection between school and home, making it easier for parents to stay involved in their children's education. This might be interpreted as one of the key aspects of integrating technology in young learners' classrooms as parent communication for early ages is very important. Therefore, Teacher 3 seems to appreciate this tool for its ability to improve communication. It is evident that she views technology as a tool that, when used properly and in a balanced way, can greatly enhance learning and communication. Her approach focuses on using digital tools to support her teaching and to help students learn independently while keeping their families in the loop. This selective use of digital tools highlights her potential for improving efficiency in administrative tasks rather than instructional delivery. According to Mwalongo (2011) using digital tools mostly for administrative purposes is common. He says that by digitizing documents and using ICT for scheduling and reporting, the teachers can streamline their operations.

Next, considering Teacher 4, it is observed that she uses various digital tools comprehensively to support her teaching. By using iPads, Apple TV, and Toddle, Teacher 4 delivers content, documents learning, and tracks student progress. During the observations, devices like smartboards and projectors were used for visuals, repeating lesson goals and helping with task assignments and completions. This shows a different way of teaching where technology helps with different kinds of classroom activities. Similar to teacher 3, Teacher 4 also uses both technological tools and traditional methods to make learning better for her students. On the other hand, despite her comprehensive use of digital tools, Teacher 4 is conscientious about the need for clear rules and expectations concerning the use of technology, particularly iPads. She mentions challenges in maintaining consistent usage policies across different classrooms when she worked as a subject teacher. This indicates that Teacher 4, when not in full control of the digital tools in the classroom,

feels uncomfortable with them. As Baek et al. (2008)'s study indicates, some teachers tend to use the technology involuntarily because they are not familiar enough with it. Teacher 4's approach shows that she sees technology as an important tool for making learning better but is also aware of the potential challenges. A structured approach to integration of technology is very important for its success in educational settings (Tossavainen et al., 2018). Therefore, Teacher 4 seeks to use technology in a way that she feels safe and in full control.

The findings of the first research question show that the teachers have different opinions on integrating digital tools. The use of digital tools varies significantly among the teachers, from heavy reliance on iPads and interactive applications to more cautious use alongside hands-on activities. For example, while Teacher 1 emphasizes the use of iPads and a classroom screen and integrating digital applications like BrainPOP, Epic, and Athletics, Teacher 2 focuses on hands-on, interactive activities. Additionally, Teacher 3 seems to adopt a more balanced approach, mixing verbal and visual instructions in their lessons. Moreover, Teacher 4 uses technology for administrative tasks and to communicate with parents. This variation reflects different pedagogical beliefs and an understanding of student engagement and learning. Another finding from the study is the theme of safety as a primary concern among teachers. This suggests that while teachers recognize the potential benefits of integrating digital tools for educational purposes, they are also cautious about the potential risks. Teacher 2's consideration of digital tools as not being age-appropriate for their students also shows the importance of selecting and implementing technology suitable for their developmental stage and learning needs.

5.2.2 What specific strategies do they use to integrate digital tools into their teaching, and how they are used to enhance English language skills?

Teacher 1 uses a few specific strategies to make sure digital tools are helpful in her classroom. She mainly uses iPads along with educational apps like Brainpop and Epic. These apps help make her lessons more interesting and fun because they include games and stories that teach different subjects such as reading and math. She believes that using these tools can stop lessons from becoming boring and keep students excited about learning. Hsbollah et al. (2022)'s study

shows that digital tools do create meaningful and more fun learning experiences for young students. Teacher 1 also uses Google Translate to help students who don't speak English well. This app lets all students follow along and understand the lessons, which makes the classroom more inclusive. Teacher 1 uses iPads and specific apps to make her teaching more accessible and fun for all her students. This approach helps keep the students interested and involved in their learning. As Eden et al. (2024) points out, technology can be used to improve inclusivity in the classroom. Similar findings emerged from the observations of Teacher 1; her classroom has a lot of modern technology like a smartboard, Apple TV, a stereo system, and an iPad for every student and this variety of technology seemed to make learning more interesting and different in many ways. These findings indicate that using digital tools to attract the attention of young learners' work surprisingly well. This was also proven by previous research, for example, Hendriks (2016) found that a significantly larger portion of children indicated having more fun with the tablet-based method (73.9%) compared to the traditional method (26.1%). He also states that most young learners found the tablets less boring (30.4%).

As stated before, Teacher 2's perception of technology is that the technology should be used carefully and sparingly. She is cautious about how and when to use technology and feels that there isn't appropriate content available for that age group on these devices. Instead, she uses her own iPad and a projector occasionally to enhance her lessons. This is mainly for displaying educational videos that help teach English language skills. Teacher 2's strategy of using technology includes using a personal iPad, a projector, and a Chromecast in her teaching, and focusing on enhancing language skills through videos. She is very mindful about the content quality and appropriateness; however, this does not indicate her negative attitude but rather shows her need for appropriate content and tools. Young learners' teachers need access to adequate tools to implement technology in their classrooms successfully (Kara & Cagiltay, 2017). This can be interpreted as deciding whether to integrate technology depends a lot on what the teacher believes is the best way to teach their students. Ertmer et al. (2012) identified two main obstacles when teachers use technology in the classroom. They state that first-order barriers are external and include things like having the right equipment, enough training, and ongoing support. These are the practical issues that can prevent technology use in young learners' classrooms. On the other hand, second-order barriers are internal and have to do with a teacher's personal feelings and

thoughts (Ertmer et al., 2012). Understanding the difference between these two types of barriers can help in solving the challenges that teachers face when trying to bring more technology into their classrooms. This approach allows for more targeted solutions.

Moving on to Teacher 3, the findings show that she limits integrating digital tools in her classroom and emphasizes the importance of not overusing technology. Wright and Wilson (2009)'s study similarly indicates that some teachers shy away from using the available tools as they are scared to overuse the technology. It can be said that a strategy that teacher 3 uses when integrating digital tools is to be considerate of the usage time as much as possible. Teacher 3 uses laptops, iPads and educational videos to share information and help the students with their English skills. She also allows them to use iPads during specific lessons. This helps make the learning experience more dynamic and interactive but controlled. It was noted that during the observations, student engagement in Teacher 3's classroom with digital tools was limited and the teacher uses iPad time as a reward at the end of some lessons. While students are given the opportunity to choose from educational apps on their iPads, this appears to motivate them more than contribute significantly to their learning process. However, observations revealed that students tend to rush their work to maximize their iPad time. This is similar to what Henderson & Yeow (2012) found in their study; the technology between young people is so popular that it even works well as a reward. It is worth noting that another significant part of Teacher 3's strategy involves using Toddle, a digital platform that students and teachers use for documenting. This tool not only supports educational activities but also helps parents stay involved in their children's education. Teacher 3 uses technology carefully to make sure technology complements her teaching and administrative methods rather than overusing them.

Lastly, it was observed that Teacher 4 actively uses a range of digital tools. She uses iPads, Apple TV, and screens to support learning activities, from interactive lessons to informational displays. She also uses this extensive technology to teach terminology for specific subjects, helping her students with their language skills. Technology is a great tool to teach writing and vocabulary skills (Cunningham et al., 2019).

The diverse use of technology helps make learning accessible for all students. This aligns with findings from a study by Henderson and Yeow (2012), which focused on how iPads were used in primary school. Their research highlighted how technology is crucial for providing fast

access to information and encouraging students to work together. In addition to using these devices, Teacher 4 also uses Toddle extensively, both for her own documentation and for students to track and share their learning. This was also noted in the observations. Teacher 4 stresses the importance of setting clear rules and is careful monitoring her students. This strategy helps to make sure that technology is used effectively and responsibly. Teacher 4's strategy for integrating digital tools involves using a different tool to support diverse educational activities, applying a digital platform for documentation and communication, and maintaining strict rules to manage technology use effectively. It seems that this strategy works for her classroom as students in Teacher 4's classroom showed they could handle their digital tools responsibly and resourcefully during the observations.

In conclusion, each teacher's approach discussed here reflects a different strategy. All four teachers include digital tools in their lessons; however, their preferences shape what strategies they use and what kind of digital tools they choose.

Teacher 1's strategy in using digital tools is to make learning more fun and engaging for her students. Due to this, she uses a variety of digital tools in her classroom, from iPads, screens to incorporating interactive apps such as BrainPOP, Epic, and Athletics. Teacher 2 adopts a cautious approach to technology, so, her strategy is using it sparingly to ensure that the content is suitable for young learners. She uses a personal iPad, a projector, and Chromecast and all these tools are all chosen to carefully control appropriateness.

However, the findings show that Teacher 3's strategy is using technology in a balanced way. To do that, she uses laptops, iPads, mini white boards and Toddle. Her preference for mini whiteboards further shows a commitment to include traditional methods. Teacher 4 employs a strategy that integrates many different digital tools to enable various learning activities, while also maintaining strict guidelines for their use. The tools that she uses include iPads, Apple TV, and screens, all coordinated through the digital platform Toddle.

Table 2: Stategies and Tools that are used.

Teacher	Strategy	Tools
Teacher 1	Uses digital tools to make lessons more engaging and inclusive for all students.	iPads, educational apps (Brainpop, Epic, Athletics), For language skills: Google Translate
Teacher 2	Uses technology sparingly, ensuring content is appropriate for young learners.	Personal iPad, projector, Chromecast. For language skills: Google Translate and screens
Teacher 3	Balances the use of technology to complement traditional teaching and enhance communication.	Laptops, iPads, Toddle (digital platform). For language skills: stations and visual presentations
Teacher 4	Employs a variety of digital tools to support diverse learning activities and enforce clear guidelines.	iPads, Apple TV, screens, Toddle, For language skills: Educational Apps

5.2.3 What factors influence their use of digital tools in their teaching?

Teacher 1 uses digital tools to keep learning interesting and ensure all students can participate fully. She believes that traditional teaching methods can become boring over time, so she integrates digital tools to make learning more fun. It is observed that Teacher 1 uses websites like YouTube and NRK to play educational videos, which she and her students can interact with using the smartboard. This way of teaching keeps students excited and involved. They use iPads to work with educational apps like Epic, BrainPOP and Mathletics, which make learning fun and personalized. By using these technologies, all students seem to stay interested and can learn in ways that work best for them. In addition to these, Teacher 1 uses Google Translate to help non-English speaking students understand the lessons. This suggests that the main factors influencing her use of digital tools are the need to keep students engaged and the desire to accommodate all students effectively, regardless of their language skills. Kafyulilo et al. (2016)'s study indicates similar findings; teachers' use of technology is greatly affected by students' needs. It seems that

the most significant factor that affects Teacher 1 is seeing her students are engaged in the lessons more when she includes digital tools.

Teacher 2 only uses technology when she is certain it adds value to her lessons and is appropriate for her young learners. During the lessons that were observed, the iPads weren't used at all. Instead, the teacher chose to use a MacBook and Chromecast. She uses her personal iPad and a projector occasionally to show educational videos that enhance language skills. Teacher 2 always pre-screens these videos to ensure they are suitable for her students. Her approach to technology is influenced by the need to ensure the technology's reliability and content's usefulness. Teo (2011)'s study has similar findings, indicating that one of the biggest factors influencing teachers' technology use is how useful they perceive those tools. Observing Teacher 2's classroom has also shown a thoughtful approach to using technology in early childhood education. Although digital tools can improve how lessons are taught, their success depends on whether they fit with the developmental stages of the students and the educator's teaching beliefs. This means that the benefits of technology in a classroom will be most apparent when they are used in ways that match what the students are ready to handle and support the overall educational goals set by the teacher.

Teacher 3 integrates laptops and iPads into her lessons, but carefully so as not to overuse them. The use of digital tools in Teacher 3's classroom is influenced by the goal of enhancing student independence and maintaining effective communication with parents. Rahayu et al. (2023)'s study where they investigate the use of artificial intelligence indicates that it can quickly respond to the specific needs of students, help them develop the ability to think independently, and discover each student's unique abilities. This shows that some technological devices can easily be used to enhance independence in students. During the observations, the teacher used online platforms for planning notes, administrative tasks, and communication with parents and school administration. In a study involving 183 parents of young children found that learning outcomes in early childhood education are positively affected by communication between teachers and parents and active parental involvement (Hidayat & Arini, 2022). Factors such as ensuring a balanced use of technology, supporting independent learning, and fostering family involvement influence her decisions on how and when to use digital tools.

Teacher 4 sees technology as essential for creating a dynamic learning environment. She uses a variety of tools, including iPads, Apple TV, and screens, to support different kinds of

learning activities, from interactive games to educational presentations. The factors that influence her use of digital tools include the need to diversify learning experiences, the importance of parental involvement, and the necessity of managing technology use to maximize its benefits and minimize potential distractions.

When it comes to ethical considerations, the teachers express a common concern about the safety and appropriateness of digital content. Teacher 1 focuses on the need for close supervision to prevent access to inappropriate material, focusing on the safety of the learning environment. The observation also shows that even though there are a lot of digital tools in the classroom, there are still some problems with how much the students are into using technology, especially when it's not their specific time to use the iPads. It seems that these tools do help keep the students focused during class, but it's harder to keep them engaged when they are not using the technology. This might mean that the students are becoming too dependent on technology to stay interested, which brings up concerns about finding the right mix between using digital tools and more traditional ways of teaching. It's important to think about how to balance technology with other teaching methods so that students can stay engaged and learn effectively, even without constant technology use. This could help make sure that students not only stay interested but also develop the ability to focus and learn in various settings, both with and without technology. Technology is very useful when its “effectual, targeted, and controlled” (Vargas et al., 2020, p.6) Even though people spend a lot of time on popular social media platforms, effectively incorporating these technologies into school curriculums or formal learning environments is still a major challenge (Flavin, 2017).

Teacher 2 takes precautions by pre-screening videos to ensure content appropriateness and tries to uphold ethical standards in digital content usage. Teacher 3 prioritizes protecting students’ personal information and adhering to parents' wishes regarding social media postings. This shows a commitment to ethical practices in digital interactions. Teacher 4's considerations revolve around managing screen time and avoiding advertisements to minimize distractions and maximize the educational value of digital tools. As Blackwell et al. (2014) states; having a policy when integrating technology and teachers’ experiences are huge factors that are affecting them.

In conclusion, the factors influencing the use of digital tools in classrooms among these teachers are influenced by the benefits they bring to education and the challenges they pose in management and ethical issues. As Kassem (2018) states; teaching isn't just about giving

information or building skills. It's also about mixing these goals with technology to improve learning.

Table 3 below shows the factors and considerations that affect these primary teachers' use of digital tools.

Table 3: Factors that influence teachers use of technology

Teacher	Factors Influencing Use	Considerations Guiding Use
Teacher 1	Need to keep lessons engaging and interactive.	Ensuring inclusivity and fun for non-English speakers using tools like Google Translate.
Teacher 2	Need for appropriate content suitable for young learners.	Reliability of personal devices and technology used for young learners.
Teacher 3	Importance of balancing traditional teaching with digital tools.	Using platforms like Toddle to foster home-school communication.
Teacher 4	Creating a dynamic and versatile learning environment.	Establishing clear rules for technology use to ensure educational effectiveness.

Other findings that are worth noting are that the teachers displayed a generally positive attitude towards integrating digital tools. They recognized the benefits of technology in enhancing student engagement and learning outcomes. The study also highlighted a wide range of digital tools being utilized in classrooms, including tablets, laptops, interactive boards, and specialized educational software. The teachers used these tools for various purposes, such as presenting new information, facilitating group work, and supporting students with different needs.

While the teachers acknowledged the potential of digital tools to transform teaching and learning, they also pointed out several challenges. These included technical issues, the need for ongoing professional development, and concerns about screen time and student distraction. Despite these challenges, the teachers identified opportunities for including digital tools to support differentiated learning. The teachers employed specific strategies to integrate digital tools effectively into their teaching practices. These strategies included careful planning of digital activities, aligning technology use with learning objectives, and fostering a classroom culture that

values collaboration and responsible use of technology. The teachers were also mindful of ethical and developmental considerations when incorporating technology into the classroom. They emphasized the importance of age-appropriate digital content, managing screen time, and promoting digital citizenship among young learners.

In conclusion, the study's findings provide valuable insights into the digital tool integration in primary education. It highlights the positive attitudes of teachers towards technology, the diverse applications of digital tools in the classroom, and the challenges and opportunities that come with integrating these tools into teaching practices. The findings also suggest that integrating digital tools into classrooms depends on the teachers' beliefs and readiness.

5.2.4 Comparing the Teachers' Technology Integration Processes

There are many similar trends between the four teachers' technology integration process. Three teachers (Teacher 1, Teacher 3, and Teacher 4) often integrate technology into their teaching through iPads, smart screens, laptops, and educational apps like BrainPOP and Mathletics. Teacher 1 specifically uses iPads and a large screen in the classroom to enhance learning. Although Teacher 2 prefers hands-on activities, Teacher 3 also sees the value in blending interactive tools with traditional methods. This approach reflects their educational beliefs and how compatible they find technology with these beliefs (Akram et al., 2022).

The choice of digital tools among these teachers appears to be influenced by their individual concerns and a desire to make their lessons more engaging. Teacher 1 is particularly open to experimenting with new technologies, conversely, Teachers 2 and 3 are more cautious in selecting technological tools, and they prioritize tools that complement their hands-on teaching style. Despite these differences, all teachers are committed to adapting their teaching strategies to meet diverse student needs, confirming the findings of Howard et al. (2015) that teachers' motivation to incorporate technology is closely tied to their attitudes and emotions towards it.

Teachers 3 and 4 demonstrate flexibility in using both technology and traditional methods, illustrating a balanced approach to teaching. Regardless of their varying attitudes towards

technology, all teachers share a common goal: to keep students engaged and ensure they comprehend the lessons. This shared focus underlines the importance of selecting appropriate teaching methods that resonate with the instructors' beliefs and their students' learning preferences.

The use of technology in the classroom, as described by Teachers 1, 2, and 3, shows that while technology tools like iPads and smartboards can engage students, they also present challenges. Teacher 1 observes that iPads increase classroom interaction, but the transition away from using them can cause distraction among students. This suggests that the excitement created by these devices might be hard to match with other teaching methods. Teacher 3 echoes this by describing the technology as "almost addictive," indicating that the students' dependence on these tools can potentially lead to dependency issues. Similarly, Teacher 2's experience highlights the reliance on technology for smooth lesson execution. Excitement about using tech like videos can turn into a significant disruption if technical issues arise. These observations underline the need for strategies to manage transitions and dependencies on technology in the classrooms. With the right guidance, these technology tools can help with learning and development. Without guidance, their use might be "inappropriate and/or interfere with learning and development", this is why whether young children should have access to technology and social media when they are young is a rising concern. (NAEYC, 2012, p.2).

When asked about the factors affecting their technology use and their considerations, all teachers in this study reflect on the challenges. They are particularly concerned about the establishment of clear expectations and rules. Teacher 4 emphasizes the importance of setting guidelines to ensure responsible and purposeful use of digital tools. She highlights the need to limit screen time and prioritize the objectives. Similarly, Teacher 3 shares the challenge of monitoring and controlling student access to technology, particularly concerning internet safety. The absence of clear policies and guidelines for digital safety creates a significant obstacle. Teacher 2 states that, to her, ethical considerations play a crucial role in technological integration. The teacher stresses the importance of pre-screening and appropriateness for young learners. Likewise, Teacher 3 also emphasizes the ethical responsibility to safeguard student privacy. While the duration of technology and media exposure for children is significant, assessing their interactions with technology is also critical (Christakis et al., 2013).

Besides the similarities, the findings show that there are also many differences between the four teachers regarding integrating technology. Teacher 1 actively embraces digital tools to prevent lessons from becoming monotonous and keeps students actively interested. As Akram et al. (2022) suggest, integrating technology enhances the interaction and relationship between teachers and students. In contrast, Teacher 2 adopts a more cautious approach to technology. She finds it challenging to source content appropriate for young learners, particularly first graders. Although she occasionally uses her personal iPad and a projector to show pre-screened educational videos, her use of digital tools is considerably more reserved than that of Teacher 1.

Teacher 3, however, seeks a middle ground. She includes both traditional methods and the benefits of digital integration, echoing the findings of Stoilova et al. (2021) from UNICEF Innocenti. Their research highlights how children's online experiences can affect their well-being, mental health, and resilience, underlining the necessity for a balanced approach to digital usage.

On the other end of the spectrum, Teacher 4 views technology as indispensable to modern teaching. She uses a wide array of digital tools and believes these tools are essential for effective teaching. Her approach starkly contrasts with Teacher 2’s cautious strategy, yet like Teacher 3, she sets clear guidelines to ensure technology is used safely and effectively, highlighting a shared concern for students' online safety. This aligns with a UNICEF Press release from November 2019, which emphasizes that while the internet can vastly expand learning opportunities and help develop digital skills, its misuse can be dangerous.

As stated previously, while all four teachers acknowledge the benefits of integrating technology, their reflections reveal varied levels of reliance on technology, strategies, and considerations for student safety and privacy. This might be because some of them do not feel comfortable or ready. Teachers' readiness to incorporate technology in classrooms largely depends on their perspectives, recognizing both its advantages and challenges (Akram et al., 2022). As Slutsky et al. (2014) suggest, despite diverse opinions on children using technology, digital tools are here to stay, and they recommend finding a way to integrate these tools in educational settings.

In observing the four teachers, it becomes evident that all classrooms are well-equipped with a range of digital tools. This shows that the school is in line with the Sustainable Development Goal 4 (SDG4), which emphasizes the importance of Information and Communication

Technologies (ICT) in ensuring inclusive and quality education for all (Haleem et al., 2022). Thus, the presence of these tools reflects a commitment to integrating technology into education.

Despite the common availability of technology, there is a noticeable variation in how these tools are integrated in each classroom. For example, Teacher 1 and Teacher 4's classroom showed high levels of student engagement with technology. On the other hand, Teacher 2's students did not actively use any digital tools, possibly due to teacher's uncertainties and a lack of confidence in managing digital tools effectively, which Dyhrkopp (2021) identifies as a common concern among educators. This may be limiting students to traditional learning methods unless clear, supportive policies are in place.

Furthermore, challenges such as the potential overreliance on technology in Teacher 1's classroom were also observed. Dyhrkopp (2021) suggests that school leaders should foster environments that encourage responsible and effective technology use, highlighting the importance of setting clear expectations and providing adequate support for teachers.

In conclusion, while all four teachers incorporate technology to varying degrees, their approaches reflect their individual beliefs about education and their comfort with digital tools. The observations suggest that while technology can significantly enhance learning experiences, its integration must be thoughtfully managed to align with educational goals and student needs. As Carstens et al. (2021) note, prioritizing responsible technology use and upholding ethical standards are essential for maximizing the benefits of digital tools in education.

6.Conclusion

6.1 Introduction

This study aimed to explore how teachers of young learners use digital tools in their classrooms. It focused on understanding the views and methods of four primary teachers, teaching 1st to 3rd grade, to get a wide range of practices based on their different experiences and backgrounds. This careful choice of teachers was made to gather a variety of insights, making the study more comprehensive and its findings more detailed. It's important to note that in all these classrooms, English was the language of instruction.

The main goal was to understand how teachers use digital technologies and what influences their choices to do so. This study aimed to highlight when and how digital tools are most effectively used in teaching, by comparing what teachers do with what they believe and feel about using them. Through this comparison, this thesis aimed to reveal teachers' insights on the best times and situations for incorporating digital technologies into their lessons.

The research unfolded in several stages. Through detailed interviews and classroom observations, varying dimensions of using digital technologies emerged. In this chapter, the thesis study's findings are presented. Furthermore, an examination of the study's limitations and delimitations will be conducted. Lastly, this thesis will offer recommendations for future research, proposing potential directions for exploring digital tool integration in primary education more deeply.

6.2 Implications

This thesis explored how four primary school teachers integrate digital tools into their classrooms and their viewpoints on this integration. The findings suggest that a mix of factors affects how teachers use technology, including their beliefs, teaching methods, and the ages of the students they teach. These insights have important implications for the future of teaching, suggesting that understanding these influences can help tailor more effective technology use in education.

The factors influencing teachers' use of digital tools in the classroom seem to include a combination of the teachers' beliefs, their readiness to integrate technology, and the readiness of their students to use these tools. Firstly, the study indicates that technology use in classrooms varies significantly from one teacher to another, largely shaped by individual attitudes and past experiences with digital tools. For instance, Teacher 1, who is relatively younger, displays a more positive and open attitude towards the use of digital tools in teaching. This contrasts with Teacher 2, who, despite being only a year older and teaching in a similar grade, does not view the use of technology as fitting or necessary in her classroom. This difference highlights how even a small gap in age or experience can lead to divergent perspectives on the role of technology in education.

Secondly, the integration of technology has become so seamless in everyday life that some teachers do not explicitly recognize their use of digital tools as 'integrating technology' into their teaching. Specifically, Teacher 2, uses an iPad and a smartboard to display videos and visuals in her classroom but does not consider this practice as integrating technology. This is because the students themselves are not interacting with the iPads. Conversely, Teacher 3, employing similar techniques, believes she integrates technology effectively and in a controlled manner. This suggests that teachers' definitions vary based on their direct engagement with the tools.

Thirdly, all four teachers were concerned about the safety and control associated with using digital tools in the classroom. Regardless of their stance on technology integration, all teachers express a desire to maintain complete control over how and when these tools are used. This concern for safety influences how teachers navigate the incorporation of technology into their lessons and manage students' interactions with digital devices.

These findings collectively show the complexity of technology integration in primary education, illustrating that teachers' approaches are deeply personal and reflective of their unique journeys and philosophies. As the education sector continues to evolve with the rapid advancement of digital technologies, understanding these personal dimensions becomes crucial. Acknowledging and addressing the diverse perspectives and concerns of teachers can lead to more informed. The diversity in how teachers view and use digital tools shows the importance of continuous professional development. Such training should not only provide practical skills in technology use but also embrace these tools for teaching and learning. Professional development should encourage teachers to explore how to use digital tools.

School leaders play a crucial role in this integration process. They must ensure that technology policies are clear, feasible, and aligned with both teachers' needs and educational objectives. Additionally, they should invest in age-appropriate digital tools. Leaders should also create an environment where technology usage is an integral part of the school culture, providing necessary training and support.

For university educators preparing the next generation of teachers, it’s crucial to integrate technology deeply into their programs. These programs should prepare future teachers to adapt to various technological devices and embrace technology positively. They should prepare new teachers to guide their students through the digital landscape safely. By addressing these aspects, teachers can be supported better in effectively using digital tools.

Overall, the study opens important conversations about the role of technology in education, the varying perceptions among teachers, and the critical issue of safety in digital tool usage. By delving into these aspects, teachers, policymakers, and researchers can work together to create more inclusive, effective, and safe digital learning environments for students.

6.3 Limitations

One possible limitation in this study is the limited sample size. The greater sample size allows qualitative study to be generalized (Boddy, 2016). The study was conducted with a small

group of four teachers from a single IB school in Norway. This limited sample size restricts the ability to generalize the findings to broader populations. The experiences and perspectives of these participants may not fully represent those of teachers in different types of schools, educational systems, or cultural contexts. Generally, it's good to include at least one person from every group you're interested in to get a full picture in these cases (Boddy, 2016). Also, the study's context within an IB school in Norway, known for its specific educational philosophy and resources, may limit the applicability of the findings to other educational contexts. School-specific policies on technology use, access to digital resources, and professional development opportunities can significantly influence the integration of digital tools in the classroom.

Given that the research specifically targeted English-speaking classrooms, the findings may not be directly applicable to teachers of other subjects. The integration and effectiveness of digital tools can vary significantly across different subject areas and languages, each with their own pedagogical challenges.

While the qualitative research design provided in-depth insights into teachers' perspectives and practices, it lacks the statistical generalizability of quantitative studies. The findings are based on the subjective experiences and opinions of the participants, which may not capture the full range of factors influencing digital tool integration in education. The study relied heavily on teachers' self-reported experiences and reflections, and they were gathered through interviews and non-participant observations. This method could lead to biases about how people see and report on themselves, as participants might give an overly good or bad picture of how they use digital tools.

Non-participant observations, even though they are valuable for understanding real-world classroom dynamics, were limited by the observer's presence. This might have influenced teachers' and students' behaviors. This is known as the Hawthorn effect, it is one of the greatest challenges research observers come across when gathering data and has been described as the ‘Achilles heel’ of participant research (Coombs & Smith, 2003; Oswald et al., 2014).

Addressing these limitations could provide a more comprehensive and nuanced understanding of the challenges and opportunities associated with digital technology use in education.

6.4 Suggestions for Future Research

Based on the study's findings and its limitations, several suggestions for future research came up that can extend the understanding of digital tool integration in primary education. These suggestions aim to address the gaps identified in the current study and explore new dimensions of digital education.

Firstly, future studies should consider including a larger and more diverse sample of teachers from various types of schools (public, private, international), educational systems, and cultural backgrounds. This would increase the generalizability of the findings and provide insights into how different contexts influence the integration of digital tools in education.

Additionally, expanding the research to include teachers from different subject areas would offer a more comprehensive view of digital tool integration across the curriculum. This could help identify subject-specific challenges and opportunities and strategies that are effective across multiple disciplines. Combining quantitative and qualitative methods could complement the findings of this study. Surveys, experiments, and analysis of academic performance data could be used to quantify the impact of digital tool integration. Future research could focus on the role of teacher training and professional development in facilitating the effective use of digital tools. Studies could explore the content, delivery, and impact of professional development programs on teachers' confidence and competence in using technology in the classroom. Other than that, including the perspectives of students could provide a fuller picture of the impact of digital tool integration on learning experiences. Research could investigate students' attitudes towards technology in education, the perceived benefits and drawbacks, and the influence on their motivation and engagement.

Moreover, further research is needed to explore issues of accessibility and equity in the use of digital tools in education. Studies could examine the digital divide among students, the challenges faced by schools, and strategies to ensure equitable access to technology for all learners. As stated above, investigating the influence of school policies, infrastructure, and resources on the integration of digital tools could offer insights into the systemic factors. Future studies could also conduct in-depth evaluations of specific digital tools or platforms to assess their effectiveness,

usability, and impact on teaching and learning. This might cover both well-known and new technologies.

By addressing these suggestions, future research can use these to deepen the knowledge of how digital tools can be used in education. This will help develop better ways of doing things and policies that help teachers and improve student learning as technology keeps changing.

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Appendices

Appendix 1: NSD Approval

Sikt

Assessment of processing of personal data

Reference number	Assessment type	Date
811998	Standard	21.12.2023

Title
Investigating the integration of Digital Tools into English Language Instructions of Young Learners

Institution responsible for the project
Universitetet i Stavanger / Fakultet for utdanningsvitenskap og humaniora / Institutt for kultur- og språkvitenskap

Project leader
Professor Kenan Dikilitas

Student
Hazal Gonca Unlu

Project period
03.01.2023 - 01.01.2024

Categories of personal data
General

Legal basis
Consent (General Data Protection Regulation art. 6 nr. 1 a)

The processing of personal data is lawful, so long as it is carried out as stated in the notification form. The legal basis is valid until 01.01.2024.

Notification Form

Comment
Du har oppdatert meldeskjema. Vi kan ikke se at det er gjort noen endringer i meldeskjemaet eller vedlegg som har innvirkning på vår vurdering av hvordan personopplysninger behandles i prosjektet.

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

Lykke til videre med prosjektet!

Appendix 2: Teacher Interview Guide

Introduction and Teaching Background:

- Introduction: Please introduce yourself, providing details about your educational background and areas of study.
- Teaching Experience: How long have you been teaching, and what age group or grade level do you primarily teach?

Teaching Young Learners:

- Motivation to Teach Young Learners: What motivated or inspired you to specialize in teaching young learners specifically?

Classroom Context and Lesson Design:

- Classroom Environment: Briefly describe your typical classroom environment.
- Lesson Design for Young Learners: How do you typically design lessons catering to young learners?
- Teaching Materials: What teaching and learning materials do you find most effective or commonly use in your lessons for young learners?

Teaching Approach for Young Learners:

- Teaching Style or Methodology: Could you describe your teaching style or methodology when engaging with young learners?

Technology Integration in Teaching:

- Technological Devices: What technological devices do you utilize during your teaching sessions?
- Integration of Technology: How do you integrate technology into your teaching, and why do you choose specific tools?

Student Perception and Response to Technology Integration:

- Student Reaction to Technology: How do your young learners react to technology use in their learning process?

- Changes in Engagement: Have you observed any notable shifts or changes in their engagement or learning outcomes due to technology integration?

Reflection on Technology Integration:

- Factors of Technology Integration: How would you reflect on the factors that affect you when using technology in your classroom?
- Enhancements in Learning Experience: In what ways do you believe technology has enhanced the English language skills experience for your young learners?
- Challenges and Solutions: What challenges or obstacles have you faced while integrating technology into your teaching, and how have you overcome them?
- Example of Technology Facilitation: Could you share a specific lesson where technology played a crucial role in facilitating learning among your young learners?
- Ethical and Developmental Considerations: Are there any ethical or developmental considerations you consider when incorporating technology into the learning environment for young students?

Appendix 3: Observation Form

Category	Observations
Lesson Context	
Teaching Methods and Techniques with Digital Tools	
Student Engagement and Participation with Digital Tools	
Observations on Technology Integration	
Overall Observations	
General Comments	

Appendix 4: Consent Form

Are you interested in taking part in the research project

"Investigating the integration of Digital Tools into English Language Instructions of Young Learners"?

Purpose of the project

This project is a master thesis in English at the University of Stavanger. The project's purpose is to find out how teachers perceive technology with young learners.

Who is responsible for the research project?

The project will be conducted by Hazal Gonca Unlu and supervised by Professor Kenan Dikilitas.

Why are you being asked to participate?

The research aims to find out the perceptions of the teachers on using digital tools and their efficiency who work with young learners. You are being asked to participate because you are teaching young learners, and the language of instruction is English.

What does participation involve for you?

If you choose to take part in the project, this will involve you being observed during teaching. It will take approximately two months (approx. 2 lessons each week, 8 lessons in total). I will take notes on the observation form and ask follow up questions if needed. I will also ask you to participate in an interview that will take approximately 30 minutes. This interview will be recorded and transcribed. Participation is voluntary and you can withdraw from participation any time you wish. You can reach out the researcher from 46240916 or by email, (hazalgncunlu@gmail.com), or you can give an oral message.

Your personal privacy – How your personal data will be stored

legislation (the General Data Protection Regulation and Personal Data Act).

- Hazal Gonca Unlu, in connection with the University of Stavanger is responsible to collect and storing the data.
- Your data will be stored and transferred (if needed) in the institution's cloud service to make sure of the safety.

What will happen to your personal data at the end of the research project?

The project is scheduled to end on the 1st of January 2024. The collected data will be deleted after this date.

Your rights

You have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?

We will process your personal data based on your consent.

Data Protection Services has also assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?

If you have questions about the project, or want to exercise your rights, contact:

- University of Stavanger via Prof. Kenan Dikilitas(supervisor) and Hazal Gonca Unlu(Master candidate).
- Data Protection Services, by email: (personverntjenester@sikt.no) or by telephone: +47 53 21 15 00.

- Data Protection Services, by email: (personverntjenester@sikt.no) or by telephone: +47 53 21 15 00.

Yours sincerely,
Hazal Gonca Unlu

I have received and understood information about the master thesis project " Investigating the integration of Digital Tools into English Language Instructions of Young Learners " and have been given the opportunity to ask questions. I give consent:

☐ to participate in interview

☐ to participate in written interview

☐ to participate in follow up interview (if necessary)

I give consent for my personal data to be processed until the end date of the project, 1st January 2024.

(Signiture and Date)