Master

The Digital Classroom: Exploring Pedagogical Approaches to Technology in Southern Norway's Schools

A Qualitative Study on the Use and Pedagogical Implications of Digital Technologies in English Language Classroms of Southern Norway

LINA MARIE OSORIO

SUPERVISOR
Lenka Garshol
University of Agder, 2024
Faculty of Humanities and Education
Department of Foreign Languages and Translation
Course code: EN-503

Acknowledgment

Completing this project has been a transformative journey of personal and professional growth, and I am deeply thankful to those who have been part of this process. I extend my sincerest gratitude to my supervisor, Lenka Garshol, whose expertise and patient guidance have been irreplaceable. I would also like to thank the participants for the time and effort they put into this project.

I am also profoundly thankful to my friends and family, whose support has been my cornerstone; their encouragement and faith in my abilities have been unwavering. To my peers, thank you for the collaborative spirit and mutual support that have enriched, not only this experience, but the many years of the Teacher Program.

This journey has taught me more than I could have anticipated, and I emerge from this process with a greater understanding and a deeper appreciation for the field and for the people around me. Each one of you has left a mark on my path, and for that, I am forever grateful.

Abstract

In the evolving landscape of education, digital tools have become integral to teaching methodologies, particularly in the context of the Norwegian education system's recent reforms. This thesis investigates how primary school teachers in Southern Norway use and reflect on digital tools in their English language instruction, offering an analysis of the pedagogical implications of technology use in classrooms. Employing a mixed-method approach, this study conducted observations and semi-structured interviews with four teachers from two schoolsin Agder County, focusing on classes from sixth to eight grade.

The research reveals that digital tools are predominantly used to enhance engagement, facilitate access to resources, and support collaborative and individual learning processes. Teachers strategically employed devices such as tablets and software like Google Docs, PowerPoint, and educational platforms like Quizlet to cater to diverse learning needs and enrich the instructional environment.

Findings suggest that while digital tools are incorporated within pedagogical strategies to foster a conducive learning environment, their effectiveness depends on teachers' digital competencies and the educational policies that shape these practices. This research adds to the growing body of knowledge on digital education by clarifying the intricate connections that exist between pedagogical advances, technology, and teacher agency.

Contents

1. Introduction

In today's digital age, technology is an integral part of our daily interactions and experiences. With children navigating a world where digital tools are as familiar as pencils and paper, this development changed the Norwegian Curriculum. The introduction of the "Knowledge Promotion Reform" in 2006 and the subsequent 2020 version of the curriculum included digital skills as one of the five competencies that students must acquire during their schooling. In line with this focus on digital competencies, a number of municipalities in Norway have provided tablets and computers to each of their pupils (Kristiansand kommune, 2020). Teachers are free to choose how they want to use these devices for teaching. This freedom is further emphasized by the methodological freedom that was given in the LK20, which gives teachers discretion in how they incorporate digital devices into their lessons. All of this means that teachers, to a still greater degree, are forced to deal with digital devices as part of their teaching, and although they have the freedom to find their own methods, this also means that they have greater responsibility for their chosen approaches.

Parallel to this development, an ongoing debate with regard to students' screen usage has developed and continues to be ongoing. Several parents have expressed dissatisfaction with the use of screens in schools, advocating for a reduction or abolition of screen usage (Jelstad, 2023c). One such group, "Petition for Reduced Screen Usage in Elementary Schools," boasts 21,000 members who regularly comment, write opinion pieces, and contemplate the implementation of digital tools within the Norwegian school system (Jelstad, 2023c). This means that teachers have to deal not only with what school authorities think of their chosen approach but also with parents, many of whom are against the use of digital devices.

In line with this parental movement, Prime Minister Jonas Gahr Støre has recently stated in a political interview that "mobile phones should have a reduced presence in schools; they should be kept out of the classroom during school hours, and screens should be used judiciously"(Norwegian Broadcasting Corporation, 2024, my translation). He further emphasized that this does not imply a complete elimination of screen usage but rather a call for more discerning use, mindful of its impact on learning and well-being (Norwegian Broadcasting Corporation, 2024). This shows that politicians are also being included and have a say in what teachers decide to use in their classrooms. Again, this may change how digital tools are used and are to be used in educational settings.

The above debate has, to a large degree, criticized the introduction of screens to schools as a careless process that has come at the price of students' learning. Elaine Munthe nuances this debate by drawing attention to how the public doubt about teachers' use of digital tools might be due to a gap in teachers' digital competencies. She continues to emphasize how crucial it is for educators to have the expertise and skills necessary to make efficient use of digital resources and to recognize when they should be used (Jelstad, 2023c).

All of this is also something I have experienced through multiple practicum periods during elementary teacher education. I was able to observe practicum teachers and their use of digital tools in an educational setting and in the following discussions with practicum teachers, it has been repeatedly expressed that they find digital skills to be a challenging and substantial topic. Echoing Munthe, teachers in elementary schools have perceived that colleagues and other educators lack sufficient knowledge about how to leverage digital skills. Given the current news landscape, I find this topic highly relevant for my master's thesis and furthering the pool of knowledge in the field, as it gives an opportunity for English language educators to examine what other teachers in Agder are doing regarding digital tools in their English instructions and what other teachers' reasons behind their use are.

In this master thesis, I want to take a closer look at how primary school teachers utilize digital tools in practice, giving me the following main research question: "What digital tools are being used in the English language classroom, and how do primary school teachers in Southern Norway reflect pedagogically on their use of digital tools in their instruction methods?" By digital tools, I mean specific devices such as tablets and computers, and also various web pages such as YouTube and Google Translate, messaging apps, notetaking apps like Microsoft Word or Google Docs, collaboration platforms, and online quiz and assessment tools such as Quizlet and Kahoot. By the term "pedagogically," I mean educational practices that focus on the student's needs while simultaneously facilitating learning and development.

My research project explores specific aspects of tool usage in the classroom. I have identified two central steps that will guide my investigation. Firstly, I aim to identify the particular tools teachers utilize or provide to students. Secondly, I will explore the teachers' pedagogical reasons behind their use of digital tools, aiming to understand their perspectives and choices regarding tool usage in teaching. These two steps will serve as a framework to narrow down and focus on the central question of my thesis mentioned above.

To gather data for my master's thesis, I employed a mixed-method approach involving classroom observations and post-session interviews. I observed English language teaching sessions conducted by four teachers across various schools in Agder County. These observations spanned classes from 6th to 8th grade over some time, allowing for a comprehensive view of teaching practices. Following each teaching session, I conducted interviews with the participating teachers. These interviews allowed the teachers to elaborate on their lesson plans, teaching methodologies, and the reasonings behind their instructional decisions. This combined approach of observation and interview enabled a thorough examination of English language teaching practices in the selected schools, facilitating a nuanced understanding of the dynamics at play in the classroom.

In this master's thesis, I explore the use of digital tools in education, with a particular focus on teachers' pedagogical rationales. This topic is particularly relevant at a time when public discourse is often dominated by concerns related to screen use. I aim to document the aspects of using digital technology in schools and how this can promote learning, support differentiated instruction, and increase student engagement. My results will provide a deeper pedagogical description of how devices are being used in the Norwegian classroom.

Given that the digital revolution continues to shape all areas of society, including education, it is important to understand how teachers can integrate technology in ways that enrich the learning environment. This thesis will contribute to the academic field and practical pedagogy by providing insights that can improve educational practices and prepare the education sector for future challenges.

The subsequent chapters of this thesis will systematically explore various dimensions of the use of digital tools in the primary school English instruction in Southern Norway. Chapter 2 presents the theoretical background, discussing key concepts such as digital literacy, pedagogical theories, and previous research on digital tool integration in educational settings. Chapter 3 outlines the methodology employed in this study, detailing the mixed-method approach that includes classroom observations and semi-structured interviews. This is followed by Chapter 4, which presents the findings from these methods, providing insights into the specific digital tools used and the teacher's pedagogical reasons behind their use. Chapter 5 discusses these findings in relation to the theoretical framework introduced earlier, emphasizing the implications for teaching practices and educational policy. Finally, the thesis concludes with Chapter 6, where the research contributions are summarized, and suggestions

for future research are proposed, focusing on how educators can effectively integrate digital tools to enhance English language teaching and learning. Additionally, I will explore potential areas for future studies to expand English language teaching in general.

2. Theoretical Overview

The next chapter describes the ways that digital tools are changing in educational environments and how they might be used to improve pedagogy and motivation in particular. Drawing from Hadianti and Rohman's (2021) findings, I first define digital tools as easily accessible online resources that streamline processes. The next section of the chapter explores the ways in which these technologies facilitate student engagement and learning. This is supported by theories such as TPACK, which exemplifies the integration of technology with pedagogical and content knowledge. In light of recent research and educational changes, particular attention is paid to the integration and effects of digital devices in Norwegian classrooms. Through an exploration of theoretical frameworks and empirical investigations, this chapter seeks to reveal the many ways that digital technologies are used in the school environment, particularly when teaching English as a second language (ESL), by navigating theoretical frameworks and empirical research. This will prepare the reader for a discussion on the larger implications of digital technologies in education.

2.1. Definition of digital tools

Hadianti and Rohman define digital tools as "programs, websites or online sources that make tasks easier to complete." Often, these tools are accessible without the need for downloading, which opens up for more flexible use (Hadianti & Rohmah, 2021, p. 235). Digital tools can be used for different purposes. However, the aim of this study is to determine what tools teachers introduce to their students and how they use them in educational settings, so general possibilities connected to the educational use of digital tools which were not observed or mentioned by the teachers will not be discussed.

2.2. Digital Devices in the Norwegian Schools

As previously mentioned, the implementation of LK20 signaled a change in how digital skills were used in the Norwegian education system. Both teachers and students are using digital devices in the classroom more than ever. To better understand how digital devices are used in schools, the Norwegian Directorate of Education ordered a descriptive assessment of the

digital landscape in Norwegian schools (Fjørtoft et al., 2019). The report found that, for grades 1-4, the one-to-one coverage of digital tools in schools was 80%; for grades 5-7, it was 90%; and for lower secondary schools, it was as high as 98% (Fjørtoft et al., 2019). Another report by the Norwegian Directorate for Education revealed that 9 out of 10 students used a digital device for learning in all or most subjects.

The statistics regarding the widespread use of translation programs, such as Google Translate, among students are especially noteworthy for this thesis. It was found that 31% of 4th graders, 53.6% of 7th graders, and 65.2% of 9th graders used translation programs in their daily lives (Fjørtoft et al., 2019, p. 34). This shows that not only teachers use and introduce digital tools in their work lives, but also students apply them in their daily lives. The figures above show that digital technologies are used extensively in Norwegian classrooms. However, it is up to the teachers to decide how best to employ digital technologies.

The widespread use of digital tools and devices has sparked discussions in both the public and professional domains. One of the main topics of conversation has been how to manage screen time at school. In a Facebook group named "Petition for reduced screen time in elementary school," thousands of parents come together to voice their concerns about the overuse of screens in classrooms, which they believe should be restricted Jelstad (2023b). Political groups who share their aim for less use of screens and digital tools, such as the Green Party and the Christian Democrats, have openly supported them (Jelstad, 2023b). The Norwegian Labor Party has also supported the concerns of the petition group (Jelstad, 2023a).

The professional debate starts when some educators disagree with the media's representation of screen use in the classroom. They question whether parents comprehend the function of digital devices in school and the teachers' autonomy in choosing instructional strategies (Jelstad, 2023b). Educators propose that screens should be used as tools rather than being seen as ends in and of themselves. This continuous argument emphasizes how crucial it is to take into account the opinions of parents and educators when having conversations about the usage of digital tools in the classroom. However, teachers are the ones who have professional training, theoretical knowledge, and practical experience with managing classrooms, not necessarily the parents or the politicians. This emphasizes how the parents and politicians could be part of the conversation, but should not be given the power to make all the decisions.

The freedom teachers have in choosing their teaching strategies may also have contributed to the birth of this debate. There is still doubt about the actual implementation and the reasoning

behind instructors' decisions because there are no clear rules for incorporating digital devices and tools into the classroom. This ambiguity emphasizes the need for more research and comprehension of the function of digital tools in education and teachers' reasons for using the digital tools.

2.3 Digital tools and Motivation

In order for teachers to justify their use of digital tools, they, first and foremost, must think of their students. An essential part of teaching and learning is engaging and motivating students. Motivated students are often more engaged in class activities and tend to improve their performance over time (Fadda et al., 2022). Li (2019) claims that digital tools can serve as teaching aids. Additionally, it was mentioned that these tools motivated and engaged students (Li, 2019, p.168). Technology can encourage students in two ways, according to Stockwell, as cited in Li (2019, p. 173). First, some students are driven by a sincere interest in technology, which encourages language learning through its implementation. Second, motivated language learners will use technology to improve their education; as a result, educators can take advantage of technology to help students reach their full potential in the language classroom (Li, 2019, p.173).

2.4 The Norwegian Curriculum for the English Subject

Even though teachers have the freedom to choose their teaching methods, they are obliged to follow the Norwegian core curriculum. Parts of this core curriculum give information on what students are to learn in each subject and also state what students should know regarding their digital skills.

In Basic Skills for the English subject (Norwegian Directorate for Education and Training, 2019), it is stated that:

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

By what is being stated about digital skills in the English subject, it is essential to emphasize the critical role digital tools play in teaching and enhancing these skills. The choice of digital tools by teachers and their pedagogical reasons for using them should aim to be intertwined with the aim of providing students the ability to use digital media and resources for language learning. As the basic skills are things every teacher has to think about in their lesson planning, it should influence how teachers select and implement these tools to meet specific educational goals.

2.5 Constructivism and sociocultural theory

Norwegian educational system is founded on the notions of constructivism and sociocultural learning theory. Constructivism is a teaching and learning methodology grounded in the belief that cognition, or learning, emerges from the act of "mental construction" (Bada & Olusegun, 2015). Essentially, this suggests that students assimilate new knowledge by connecting it with their existing knowledge. This approach underscores the influence of the teaching environment, along with learners' beliefs and attitudes, on the learning process. As a psychological theory of learning, constructivism details how individuals may gain knowledge and understanding. Therefore, it has significant implications for educational practices. This theory contends that people develop knowledge and meaning through their experiences. However, constructivism itself does not recommend or impose a particular teaching method. The central idea of constructivism is that learning involves actively building new knowledge on the basis of what has already been learned. This approach contrasts with the notion that learning is just receiving something passively from someone else, i.e. being taught. In constructivism, there are two key concepts: First, learners use their existing knowledge as a foundation for new understanding. There are no blank slates – learners bring prior knowledge to every learning situation, which shapes the new knowledge they gain (Bada & Olusegun, 2015).

Second, learning is an active process. Learners engage with new information, compare it to what they already know, and if there are differences, they adjust their understanding to accommodate new information. This active engagement involves applying what they know, observing new information, evaluating the consistency between old and new knowledge, and then adjusting their knowledge accordingly (Bada & Olusegun, 2015).

Vygotsky's sociocultural theory asserts that learning and development are fundamentally social processes that occur within the context of interactions with others (Cameron, 2001).

Children are engaged in an interactive environment from birth where adults and peers significantly influence their learning. These interactions not only bring various objects and ideas to a child's awareness but also play a crucial role in shaping how these objects and ideas are understood. Adults function as mediators who facilitate a child's access to the broader world, enhancing their learning experience through guidance and support. This mediation is a defining characteristic of human intelligence, allowing children to achieve and comprehend far more in collaboration with others than they could independently. Both cognitive development and skill acquisition are deeply enhanced by these social interactions (Cameron, 2001).

Many digital tools in this thesis facilitate learner interaction, both among learners and between learners and learning materials. These interactions, if managed well by the teacher, can contribute to learning, which is congruent with the constructivist and sociocultural theories of learning.

2.6. TPACK

In the integration of digital tools into classroom settings, teachers' motivations should extend beyond the mere technical capabilities of these tools; they should strategically employ these technologies to enhance pedagogical outcomes. This aligns closely with the TPACK framework, which stands for Technological Pedagogical Content Knowledge. This framework builds on Shulman's descriptions of Pedagogical Content Knowledge (PCK) from 1986 and 1987 but highlights how the interplay between teachers' knowledge of educational technologies and PCK contributes to effective technology-enhanced teaching (Koehler & Mishra, 2009). Given the contemporary emphasis on digital skills within Norway's educational reform, understanding how teachers merge these tools pedagogically is crucial. TPACK lays the groundwork for successful technology-based teaching (Koehler & Mishra, 2009). It emphasizes the importance of several key understandings: how to present concepts using technology, pedagogical strategies that utilize technology to teach content effectively, and understanding how technology can both augment existing knowledge and develop new or reinforce existing theories of knowledge.

Experienced teachers implement TPACK by seamlessly integrating their knowledge of technology, pedagogy, and content into their teaching. Each teaching session is unique, showing that no single technological approach suits all scenarios. Effective solutions rely on

the teacher's ability to skillfully navigate the interactions among content, pedagogy, and technology in specific contexts (Koehler & Mishra, 2009).

2.7. Multimodality

A greater understanding of the possibilities of digital tools and multimodality may give an explanation to underlying pedagogical reasonings to use digital tools and also the teachers' motivations for their chosen tools. In "Multimodal discourse: The modes of media and contemporary communication," Gunther Kress and Theo van Leeuwen (2001) elaborate on the significance of multimodality in the communication landscape. It proposes that the integration of various semiotic modes – such as linguistic, visual and audio, gestural and spatial – offers a more alternative and effective means of transmitting and constructing knowledge. Their theory claims that each mode has its own affordance and limitation, which, when combined, can complement one another to enhance the clarity and depth of the communicated content.

Kress and Leeuwen emphasize the dynamic nature of meaning-making in multimodal communication, where the interplay between different modes not only supports but also amplifies learning. This concept may be relevant in educational settings where digital tools are being used because digital products are often multimodal.

2.8. Gamification

As the digital world has opened up more and become an integral part of educational settings, teachers' choices of digital tools have expanded beyond simple technical tools such as writing aids or digital flash cards. By using gamification, teachers may contribute to engagement and motivation among students. In "The Gamification of Learning and Instruction" (Kapp, 2012), Kapp explores the principles of gamification, explaining how game-based elements can be integrated into educational environments to foster motivation, engagement, collaboration, and improved learning outcomes.

Gamification is defined as the use of game design elements and game mechanics in non-game contexts in order to engage and motivate users toward specific goals (Kapp, 2012).

According to Kapp, common game mechanics may include things such as points, leaderboards, and levels. Kapp gives examples of digital tools and platforms from case studies that highlight the successful usage of gamification; these include game-based learning

platforms such as Kahoot!, simulation and virtual reality tools like Minecraft Education, and educational apps such as Duolingo.

2.9. Previous studies of digital tool use in the classroom

Richard Beach's "Use of Digital Tools and Literacies in the English Language Arts Classroom" gives a comprehensive overview of how digital tools are being integrated into educational settings. Beach focuses on the teacher's role in enhancing English language arts education (Beach, 2012). He highlights the widespread adoption of digital tools among adolescents, emphasizing that these tools are not only used for social interactions but also significantly for educational purposes. In his article, Beach discusses how digital tools facilitate new forms of literacy, such as multimodal communication and collaborative knowledge construction. These are crucial for engaging students in more dynamic interactive experiences (Beach, 2012).

However, Beach also identifies several challenges to the effective integration of these tools, including unequal access across different economic groups and a lack of sufficient professional development for educators. These challenges suggest that while digital tools have the potential to enhance educational settings, their effectiveness can be limited by factors such as resource availability and teachers' digital skills (Beach, 2012). Moreover, in his article, Beach points out that the impact of digital tools on learning varies greatly depending on how they are implemented. This highlights the need for thoughtful planning in the use of digital tools within the educational sector to ensure they are used to their full potential (Beach, 2012).

In the context of investigating how teachers incorporate digital tools into their pedagogical practices in language classrooms, it is important to consider effective strategies for vocabulary learning. This is evident by the study conducted by Kojic-Sabo & Lightbown (1999). The research highlights the pedagogical benefits of structured vocabulary approaches, notably through creating vocabulary lists. By actively engaging students in compiling and regularly visiting the vocabulary lists, these methods showed significantly enhanced retention and recall of new vocabulary. Furthermore, Kojic-Sabo & Lightbown's findings suggest that digital tools can facilitate these strategies, such as implementing apps for vocabulary tracking and multimedia resources for interactive learning (Kojic-Sabo & Lightbown, 1999).

Genlott & Grönlund's (2016) study of digital tools focused on writing and learners sharing their writing in real-time. The integration of ICT tools in educational settings has

demonstrated improvements in literacy skills and mathematical skills. Their study introduced the "Write to Learn" method, which effectively combined ICT with pedagogical strategies to enhance collaborative learning and assessment. This method used digital platforms to facilitate real-time writing, revision, and discussion among students, which is important in fostering engagement and deeper meaning. The study revealed that students using the "Write to Learn" method not only achieved higher literacy outcomes but also showed greater engagement and performance across both genders.

As teachers are free to choose their methodologies in the classroom, looking into methods that have worked showed that engaging lessons made students more positive toward the English subject. Higuchi and Miura (1997), as mentioned by Sugano and Mamolo(2021) examined the impact of different teaching methodologies on learners' attitudes towards English. Their study revealed that traditional grammar-translation methods employed in junior high schools often resulted in students' disinterest. On the other hand, elementary school programs that used engaging and communicative approaches, such as incorporating games and songs, fostered positive dispositions toward learning English. These findings support language acquisition theories that advocate for immersive, context-rich learning environments where meaningful communication enhances motivation and positive attitudes toward language learning.

All these studies show that judicious use of digital tools can support and enhance learning, both for specific language skills, such as vocabulary learning, and more general skills, such as collaborative writing. In addition, digital tools can contribute to greater variation and increased motivation in students. Chapter five and six discuss concrete examples of tools, strategies, and pedagogical reasonings employed by observed teachers, which align with several of the arguments presented above.

3. Methodology

This study aimed to map the use of digital tools in the English classroom and how the teachers used these tools pedagogically. The second aim was to map ESL teachers' reasons for using their chosen digital tools and gain insight into how the tools were applied in the ESL classroom. I chose a qualitative approach because I wanted to explore the reasons behind the use of digital devices in addition to mapping the frequency and types of tools being used. While quantitative methods such as national surveys could have been used to gauge teachers'

thinking, my focus on exploration calls for qualitative research that can go in-depth into people's reflections. By gathering data from a limited number of participants over an extended period of time, this approach offered both a broadened perspective encompassing multiple observed lessons and a deeper understanding of teachers' planning and evaluation of tool use. The type of data material used for this study required qualitative analysis, which clarified insights by concentrating on particular topics.

To gather information, interviews where ESL teachers provided their reasonings for their lessons combined with observations of the mentioned lessons were used.

The data collection for this thesis was conducted as part of a research project focusing on the use of digital tools in schools. For most sessions, there were two observers in the classroom and their notes were combined in the analysis of the results.

3.1. Observations

With the decision to do observations for this study, there was a need to choose which type of observational role was best suited for the data gathering. Cresswell and Gutterman (2021, pp. 248-249) present three types of observational roles: participant observer, non-participant observer, and changing observational role. The participant observer partakes in the classroom activities being observed. To exemplify this, it could present itself as an observer partaking in a lesson and doing the same tasks as the students were doing, or a teacher observing and analyzing their own lesson). The non-participant observer would primarily observe from the outside and take notes about the phenomenon being studied. The combination of the two roles presents the changing observational role. With this role, one could start by only observing and notetaking, then eventually partake in the lesson and become a participant observer or the other way around.

To fully observe every occurrence in the lessons, the role of a non-participant observer was the most convenient. To avoid interfering with the class, the observers sat at the back of the classroom with computers or notebooks, filling in a pre-made document that categorized different lesson objectives.

There were a few main categories. The first was teacher talk - when did the teacher speak, in what language, and for what reasons. The next category focused on when students spoke, to whom they spoke, what language they spoke, and the reasons for speaking. Then, a category was dedicated to the tools used and whether they were used individually or in groups. There was also a question about students' attentiveness when tools were used. Second to last, there

was a category of whether there was a discussion about the chosen activities after digital tools were used. Lastly, there was a category where any problems with the activity implementation could be tracked. The complete observation sheet is attached as Appendix 1.

Cresswell and Guetterman (2021, pp. 249-251) give ten steps to describe the process of observing. Most of the steps were used in order to get good field notes of the present research questions. This observational process started by identifying who and what was being observed, when one could observe, and the length of the observation. For this study, the four teachers mentioned previously were the ones being observed. Students were informed during the first meeting that they were not our observation objects and that the teachers were our primary focus. The second step was to identify one's role as an observer. To avoid interfering with the data, the non-participant role was chosen and kept throughout the data-collecting period. The third step was to "conduct multiple observations over time to obtain the best understanding of the site and the individuals" (Creswell & Guetterman, 2021, p. 250). Observations for this study consisted of five visits to each school over the course of four months, more specifically, from early November to early February. The next step was to consider what type of information one was looking for and what to record during these observations. In order to write down the information we were looking for, an observation writing frame was made. This frame had different observation categories, focusing on the types of activities involved in the lesson, types of instruments used, when teachers and students spoke, what language, and if there were any complications with the activity implementation (see Appendix 1). The last two steps were to introduce oneself to the rest of the group and, after observing, to withdraw from the classroom. At the start of the observations, we introduced ourselves and informed the students that we would return in the future. We also withdrew from the scene with the teacher, often waiting for all the students to leave first. We found it important to introduce ourselves to the students, as we were strangers entering their classroom environment, and they showed curiosity to the two strangers in the background. We also left the scene last, with the teacher, so as not to disturb the natural environment of recess and lunchtime.

3.2. Interviews

Semi-structured interviews with teachers were conducted to investigate some questions regarding teachers' reasoning for their lessons. A semi-structured interview, also known as a partially structured interview, has an interview guide as its foundation, but the questions,

themes, and sequence may vary (Christoffersen & Johannessen, 2012, p. 79). To gain a deeper understanding of the participants' perspectives and experiences of their lessons, semi-structured interviews were used to ask follow-up questions and obtain the appropriate elaboration when needed. Unstructured interviews may result in responses that are too different from one another, making it impossible to compare them. By doing semi-structured interviews, one could limit this difference by securing answers to the questions from the interview guide. In this study setting, some pre-planned questions were required, but participants were free to contribute any details or topics from the interviews that they felt were relevant. "Which tools and resources did you choose to utilize during today's class (ranging from colored pencils and scissors to specific applications)?" and "Did you consider any alternative tools/resources today that you decided to forgo? If so, what types were they, and what led to your decision to exclude them?" were a couple of examples of interview questions. The rest of the interview guide is attached as Appendix 2.

The participants were recruited from the local schools the university cooperates with through an open call. Five English language teachers expressed interest in the study: three female ESL teachers in a lower secondary school and one male and one female in a primary school. However, one of the lower secondary teachers was not available during most of the observation days so she was excluded from the final dataset. The two observed teachers in lower secondary taught 8th grade. The male participant in the primary school taught 6th grade, and the final female participant taught 7th grade.

Participants were verbally informed of the thesis and the goal of the interview. The participants were asked to consent to using a dictaphone to record the interview, which was conducted face-to-face. Additionally, the participants were informed that the audio file would be deleted after the study. The consents were documented with a signature on a consent form, and the study has been approved by the Norwegian Agency for Shared Services in Education and Research. The participants were not asked for anything specific to be done in their lessons.

In order for the interviews to stay as objective as possible, and to not add bias to the answers, the teachers were not encouraged to give specific answers. The interview guide had questions that opened up for their reflections and for them to resonate on their own lessons. However, the teachers knew the research topic so they may have said yes because they were more interested in using digital tools than the average.

3.3. Reliability and validity

The reliability of research is determined by its level of trustworthiness. A study's reliability can be determined by looking at its results' stability and consistency. When researchers deliver the measurements multiple times at different periods, the scores need to be almost the same. In order for research to be reliable, scores also have to be consistent. When someone answers a certain question in a particular way, they should answer similarly or closely related questions in a consistent manner.

Validity is the process of establishing strong evidence to show that a test's interpretation aligns with its intended purpose. This includes ensuring that the test accurately assesses the concept or construct it is designed to measure, as reflected in the scores obtained. Observations and interviews are inherently personal and unique experiences, making replication challenging. However, steps are taken to maintain objectivity and enhance the reliability and validity of these methods. To enhance the reliability of the study, the classroom observations and semi-structured interviews were done over an extended period of time, providing a consistent framework to gather data. This approach likely enhances the reliability of the data as it could reduce the chances of irregularities. The cross-verification between observation data and interview responses also increases reliability and validity as any inconsistencies between the two data sources would have triggered closer investigation, which did not happen in this case. Moreover, this study employed standardized observation and interview protocols to ensure that data collection was systematic and repeatable. This could potentially allow other researchers to replicate the methods and results under similar conditions. Lastly, we were multiple observers involved in the classroom observations, all interpreting and recording events in a similar manner to minimize observer bias.

Following the guidelines outlined by Creswell in "Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research" (Creswell & Guetterman, 2021), the validity of this study is carefully upheld through the methodological design and its alignment with theoretical frameworks. The research ensures that the findings genuinely reflect the phenomena being studied by tailoring both observational protocols and interview templates to directly reflect concepts from digital literacy and educational technology theories. Creswell's approach emphasizes the importance of aligning research tools with theoretical constructs, which this study employs to substantiate its conclusions about the pedagogical uses of digital tools in English language teaching across Southern Norwegian

primary schools. This adherence to established research practices strengthens the validity of the conclusions drawn and enhances the study's credibility within the academic community and its practical implications in educational settings.

3.4. Ethical considerations

This master's thesis aimed to get a more profound knowledge of teachers' use and motivation behind the use of digital tools in the classroom. This was done through observation and interviews. When using these methods, it was important to consider and handle the ethical considerations behind the study in order to maintain participants' anonymity and overall all ethical parts of this study. To maintain this, the Norwegian Agency for Shared Services in Education and Research registered and approved the project. Moreover, the chosen teachers agreed to participate and signed permission slips that informed them of how the data was being collected and the reasons behind the study. Additionally, the teachers gave permission to observe in the classroom as well. It is essential to mention that the students were not this study's focus, and therefore, it was sufficient with only the teacher's permission.

Another ethical consideration was the protection of privacy and confidentiality throughout the project. To maintain this, teachers were encouraged not to disclose sensitive information about their students or other colleagues during interviews. The interviews were recorded and stored on two secure devices. Moreover, all data used was anonymized to maintain confidentiality.

4. Results

In this master's project, I have observed and interviewed four experienced teachers to examine which digital tools they use in their English lessons, and how they reflect on the utility of these tools. I have chosen to systematically present the results, teacher by teacher, to highlight each unique insight and experience. This choice was motivated by the desire for clarity, which I believe could be achieved by isolating each teacher's contribution and the depth it allows to explore individual perspectives. By doing so, comparisons become more accessible, and it also ensures a thorough review without losing essential details. I will present the results from the primary school teachers first, continuing with those from the lower secondary school teachers.

Given that the interviews add depth to the observations and vice versa, I have opted to present these data together. This facilitates a comprehensive understanding of how they collectively address my research questions and strengthens the narrative around my findings. All quotes from the teachers used below were translated from Norwegian to English after the interviews were transcribed.

4.1. General information about the teachers

Teacher I

Teacher I has 60 ECTS credits in English. He is currently teaching 6th grade. When asked how long he had worked as a teacher, the response was: "Yes, as a permanent employee at 100 percent, this is my second year, so almost a year and a half. So, I have worked a lot as a substitute and such before." This implies that Teacher I has approximately one and a half years of experience as a fully qualified teacher.

Teacher I said, "In terms of how I conduct my job, it is 99 percent on-screen," when asked about digitalization in school and the transition from communicating on screen. According to Teacher I, digital devices were used in every lesson he taught.

When Teacher I was asked, "In what contexts do you find digital tools to be most appropriate?" Teacher I stated, "At least, it's especially when they are given tasks where they have to figure out information, search for things, and write documents. So, actually, writing, reading, and especially searching for information, that's what I think is the most important."

"Teacher 1 is a relatively new and young teacher, and perhaps therefore also digitally adept. He uses digital devices for almost all screens, arguing that this is useful for students to search for information as well as writing.

Teacher II

Teacher II has 60 ECTS credits in English. She started working in 2020 and has thus been a teacher for three and a half years. When these interviews were conducted, teacher II taught 7th grade. When asked about digitalization in school, Teacher II responded with "I certainly think it's good. If you look at, for example, the library of books we have upstairs. Now, we've thrown out an incredible amount of old junk. It's like dictionaries; you have to lug around one dictionary, and then you have to lug around one textbook, one workbook. All of this is incredibly much, and you're dependent on the physical book; if you forget it, then you can't work. Now, you have the whole world inside a machine. There are many more excellent

opportunities for how we can explore." The follow-up question after this response was, "So, you seem really enthusiastic?" to which Teacher II then responded, "Yes, I actually am." Moreover, when asked about how often she used digital tools, Teacher II replied, "Almost every hour. If the students aren't working on it themselves, I use the screen and have something up there. Whether it's video clips or some pictures that we talk about and work with."

Teacher II said she finds digital tools most appropriate for text production, as shown in the interview: "Text production. Many students struggle with handwriting. Producing something is more demanding than interpreting and reading. They have the opportunity to use correction software. They can sit feeling unsure and unable to write because they think it will be incorrect. Gathering information, of course. When we're working on something more creative, where they have to create a product, that's text production.". Like teacher I, teacher II is relatively young and sees great advantages in using digital devices in their teaching. So much so that no lesson is without digital devices.

Teacher III

Teacher III has 60 ECTS credits in English. During the observation and interview time, Teacher III taught 8th grade. When asked how long she had been a teacher, she said she started in 1997, 27 years ago. As most interviews with Teacher III were done along with Teacher IV, Teacher III did not give her thoughts on digitalization. However, when asked about Teacher III's opinion of her own digital skills, she said she "had it." However, Teacher III stated that she had lost the spirit around using digital tools and her skills, and every new thing she wanted to try out always ended up being a paid service. Despite this, Teacher III feels she has solid skills in using Word and writing tools. When asked how often Teacher III used digital tools, she responded that she used them in every lesson. The advantages Teacher III found from using digital tools in her lesson were that it increased students' motivation and allowed more visualization with pictures and multi-modal texts.

Teacher IV

Teacher IV has worked as a teacher for 17 years, starting in 2007. Teacher IV is currently teaching 8th grade. When asked about her view on digitalization in school, she mentions that there are too many platforms to juggle around. Moreover, Teacher IV mentions that the economic aspect of digitalization also affects them, hindering them from using the digital tools they would like to use. When asked how often Teacher IV used digital tools, she said

she mostly used digital tools in one way or another for her lessons. Not necessarily were the students to use digital tools, but she gave examples of how the rest of the teachers in 8th grade worked together online to get a somewhat equal lesson outcome.

Teacher IV responded when asked about the benefits of using digital tools, "It's a great way to provide feedback—when they work on something, they learn to share documents. This becomes a writing process, a workflow, and we give feedback on that. It can also happen digitally so that it still is accessible to them." Teacher IV did not mention how she felt about her own digital competence, as the interview was combined with Teacher III. Like teacher three, teacher four can talk from experience of having used a lot of different digital devices as part of their careers. Similarly, she complains that there are a lot of different digital devices to get an overview of and also mentions the economic aspect of these devices. She, however, has retained her enthusiasm for digital devices, emphasizing it is a way of working that has endurance for students, such that they might return to their work later.

While this might not be representative of all teachers, it is not uncommon for teachers to be enthusiastic about the advantages of using digital devices. However, those with more experience do note the challenges connected to there being continually developing new tools, for which they must both learn new skills and often pay for their use. As is noted in the introduction, teachers' competencies in digital devices are an important part of the discussion of the use of digital devices in teaching. It might be added that these competencies must be thought of as required continued development, seeing as the digital devices used are also continually changing. This adds a further challenge to teachers' reflections on digital devices.

4.2. Digital tools used in the classroom

Teacher I

The first research question was, "What particular digital tools did teachers utilize or provide for the students?" The tools used by Teacher I were (a)PowerPoint, (b)Google Docs, (c)Blooket, (d) YouTube, (e)Google Classroom, (f) Google Search Bar, and (g) Students Channel.

In the first lesson observed, the Teacher I used PowerPoint as a digital tool to show students pictures of their theme, "Ireland." Moreover, the teacher made slides with full-sentence facts about Ireland that the students would write down in personal Google Docs.

The teacher then showed two videos on YouTube, one showing the Irish dialect and one showing a River dance. The teacher also assigned the students a task to watch videos using the educational web page students Channel (in Norwegian: Elevkanalen). Unfortunately, during observation, there was no way of seeing what the videos were about. The 'Student Channel' from TV2 references a resource from the Norwegian TV channel, TV2. This initiative aims to give primary and secondary school students access to instructional tools and video content. From traditional academic fields to more practical and life-relevant learning, the content is intended to be instructional and covers various themes and topics. Various direct instruction, documentaries, and instructional programs are available on The Student Channel and can be used for self-study or as a supplement to formal training.

During the first lesson, the teacher also used Blooket. Blooket allows a teacher or host to make a set of questions and select a unique game mode. Blooket then produces a code that players can use to enter the game on their devices. Once the game begins, players respond to questions to aid in their victory. Blooket themselves say this is when the enjoyment begins, as they provide various games to keep students' engagement and excitement. In this particular English lesson, Teacher I used Blooket to create a quiz about Ireland and explained the use for that specific lesson: "Then we used Blooket when we were going to have a summary of what we had last time."

Lastly, Teacher I explained that students used Google Classroom and Google Search Bar for homework. Moreover, Teacher I says he used the Google Search Bar to "Google to find images." This was done after a student asked him a question, and he immediately went to Google to give the student an answer.

Teacher II

Teacher II utilized and provided the following digital tools for students: PowerPoint, Mentimeter, Google Docs, A-Universe, and Quizlet.

From observation, Teacher II used PowerPoint once during the five days she was observed. This digital tool was used to do an activity named "The Odd One Out". The goal was to introduce a new theme to the class. The thought behind "The Odd One Out" is to show a couple of pictures together on a slide. The students are then given time to think about which picture does not belong to the rest. However, it is not always clear which picture does not belong, and students, therefore, have to give their own reasons why they think the picture they chose to "Go Out" does not belong.

Teacher II also used Mentimeter in one of her lessons. Mentimeter is an interactive presentation software that allows students to interact through word clouds, quizzes, multiple-choice questions, live polls, and other interactive tools. From the observed lesson, Mentimeter was used to make a collective mind map. The teacher showed a code and a URL to the web page on the SmartBoard for the students to be able to join the Mentimeter Teacher II had made. The students were then given the task of filling in what they knew about India, as this was the new theme. As everyone submitted their information, a word cloud appeared, functioning as a collective mind map. Teacher II then talked the students through the collective mind map.

The students in Teacher II's class used Google Docs as their central writing platform. This was because the primary school had Chrome devices with Google Software. For Teacher II's lessons, Google Docs were used for a writing exercise; however, no data was collected on the specific writing task. In another lesson, they used Google Docs to work with glossaries.

Regarding digital platforms accompanying the textbooks, Teacher II uses the textbook Quest, delivered by Aschehoug. A-Universe, or A-univers in Norwegian, is a comprehensive digital platform created by this publisher to collect digital resources for textbooks in various areas. As a result, A-Universe acts as Quest's digital equivalent, providing a smooth learning environment.
Teacher II's frequent engagement with A-Universe was evident during the observational period. In one observed lesson, the platform gave the students the readings and homework for the upcoming week. In a different class, students explored texts about "English-speaking countries," with a focus on India in particular, which fit with their new theme. This demonstrated the platform's adaptability.

The exploration of another theme, "Game on," further exemplified A-Universe's utility in Teacher II's classroom. Teacher II introduced the theme through texts and images from the platform, enhancing the lesson with a related video also found in A-Universe. Lastly, from this observation, students were also given a task to answer directly in the A-Universe platform. This multimodal approach engaged the students and accommodated a diverse range of learning styles.

Lastly, Teacher II provided her students with the option to use Quizlet to learn new words for the homework. This was never observed; however, it was explained in interviews. Teacher II explained how Quizlet was used as a pre-reading exercise in relation to English lessons. students used Quizlet to work through and learn new vocabulary by looking at and listening to the new words supplied on this instructional website. Quizlet itself is an accessible online platform that offers a variety of learning tools, including games, quizzes, and flashcards, designed to aid users in studying a wide range of subjects. It allows for the creation of personalized study materials as well as the use of existing ones, making it a versatile resource for acquiring new vocabulary or other knowledge needed for educational purposes or personal interest. What makes Quizlet particularly appealing is its ability to make learning interactive and enjoyable, transforming it into a game-like experience that can be tailored to the user's pace. Furthermore, its compatibility with both computers and smartphones ensures that users can continue their studies seamlessly, regardless of location. In the case of Teacher II's class, Quizlet was presented as an optional, yet potentially impactful, tool to enrich the students' learning journey.

Teacher III

There were four observation notes on teacher III, which showed that teacher III used a) a Digital platform accompanying the textbook, b)It's learning, c) an Online dictionary, d) Word, e)Text from PDF, f) Digital News and g)Minecraft Education.

During one of the lessons, students were asked to open and use an online dictionary named Clue. Clue is an active and practical digital dictionary that encompasses technical as well as everyday language and is accessible to users of all knowledge levels. It's also bilingual and can be used in many different languages. For the lesson, students were asked to check if they were logged in to the dictionary, as they were to have a written task in English the day after.

Teacher III used It's Learning once in her lesson. It's learning platform serves as a digital tool designed for curriculum management, easing communication and collaboration. It also aids in administrative tasks, assessments, and monitoring of student objectives. Educators can create quizzes, tests, and contests. In this lesson, It's Learning was used to give her students a test on irregular verbs so they could practice the irregular verbs they had memorized in previous

lessons. The teacher pre-made the quiz, and the students were able to do it as many times as they wanted.

Students were also given a text to read from a PDF found on It's Learning. During the lesson, students were given around fifteen minutes to read one of the three pre-chosen texts the teachers had uploaded for them.

Teacher III gave the students a task to read digital news. Specifically, teacher III assigned the students to read BBC World News, a British news broadcaster. This was used as an activity to fill the time as Teacher III was busy giving individual feedback on homework, and the students she was not talking to at the moment were without anything to do and had to wait for almost one 45-minute lesson before the rest of the English lesson continued. The students were free to choose which news they wanted to read.

During one of the lessons of Teacher III, half of the lesson was spent checking homework. Teacher III walked from student to student and checked their written tasks from the day before. This homework was written in Word. In Word, there are different possibilities for students to have their text read aloud for them through an immersive reader, and there are also tools for spelling and grammar that students can use to help with the writing. This was also used later in the same lesson, as students were given a "free-writing-task" on what they thought being a new student at a school would be like.

The last digital tool Teacher III used was also the most frequently used tool by Teacher III and her students. The tool was a digital platform accompanying the textbook, named My School (In Norwegian: Skolen min). My school is a digital service provided by Cappelen Damm, where one gets access to everything needed to carry out lessons in line with the new educational reform. The tasks in My School are connected to Cappelen Damm's English book called English (in Norwegian: Engelsk). Through observations, My school was used for different tasks. During one lesson, My School provided an idioms test, which the students took as they had been working on idioms prior to that lesson. Moreover, in two separate lessons, students used audio files from My School as reading support for their personal textbooks and read the text alongside the audio file. Moreover, Teacher III used My School on her computer and showed students pictures of different neighborhoods on the overhead

projector. During this part of the lesson, students were supposed to look for clues as to why they thought the people in the picture were neighbors, what they were eating, where they were, etc. In one lesson, students also read texts in My school that were about the theme they were having that day.

Lastly, Teacher III's use of Minecraft Education in a smaller class setting was not seen during observation but was mentioned in the interviews. The students were given a task to build something in Minecraft and talk to one another in English while building. Teacher III then explained that students could hold a presentation in English, showing what they had built.

Teacher IV
Teacher IV utilized and provided the following digital tools for her students: Clue, Google Search Bar, Word, It's Learning, and the Digital platform accompanying the textbook.

For this teacher, five double lessons (2x45 minutes) were observed. In one of the lessons, Teacher IV used Clue. As mentioned in Teacher III's observations, Clue is a bilingual dictionary the students used. In the lesson where students were to use Clue, they were asked to check if they were logged in and to test the program. From interviews, teacher IV explained that it was essential to check if the students were logged in, as they were having a mid-term exam later that week, and it would save them time being logged in before using it. Teacher IV used Google Search Bar once during her lesson. With her computer connected to a projector, she googled some pictures for inspiration to write a six-word story.

During one lesson, students used the writing program Word. Teacher IV had uploaded a Word file for the students with a form for them to fill in vocabulary for the text they were supposed to work on. This was uploaded to It's Learning, and students had to practice downloading and saving this file into a specific folder on their computers, so it stays available during their exam when the rest of their computer is locked in exam mode.

Teacher IV's students also used It's Learning. The students were observed using It's Learning for three different reasons. The first reason was to find three teacher-chosen PDF files. The students were then given the task of choosing one of the files and reading the story that they had chosen. Moreover, the students used It's Learning to download the Word file mentioned

previously. Teacher IV's students also used It's Learning to do the irregular verb quiz mentioned in Teacher III's observations.

Lastly, Teacher IV also used the digital resource connected to their chosen textbook, My School. Similarly with the observations of Teacher III, using audio files was observed a few times. These were used while students read the text in their physical book, and the audio file functioned as an audiobook. For one specific lesson, this was used for about 45 minutes, where the students listened to the audiobook and read paragraph by paragraph and the teacher gave students the task of discussing the paragraphs they had read. Lastly, the students used My School to write six-words stories. The digital resource provided the students with pictures for inspiration, and the students were then given a small space under the picture to write six words only. The students could then submit their stories for the teacher to read within the digital resource.

4.3. Teachers' pedagogical reasonings behind using their chosen digital tools

This part of the chapter analyzes the pedagogical reasons teachers have for using digital tools in their teaching, based on interviews conducted after observations in the classrooms. The chapter explores how teachers choose technology to support and enrich the learning experience, focusing on meeting curriculum requirements and increasing student engagement. Through quotes and analysis of interview data, the chapter provides insight into how digital tools are practically applied in education.

 PowerPoint

In an effort to diversify teaching methods and cater to various student learning styles, Teacher I has incorporated PowerPoint into the classroom. He articulates a dual purpose for utilizing this tool: "I've adopted PowerPoint because I'm exploring different methods. I want the students to engage directly with the material as I present it," he explains. This approach reflects his commitment to experimenting with and evaluating various teaching strategies and highlights a dynamic teaching style. Teacher I is not content with relying on a single method; instead, he actively explores various tools to determine which most effectively engages his students.

Moreover, Teacher I emphasizes the importance of adaptability during lessons. He recounts a specific instance that illustrates this: "For example, during a lesson you observed, some students at the back mentioned they couldn't see the text clearly due to the small font size. I was able to adjust this by enlarging the font, enhancing visibility immediately," he notes. This incident underscores the utility of PowerPoint not only as a pedagogical tool but also as a means to promote inclusivity and accessibility within the classroom environment. Furthermore, Teacher II employs PowerPoint creatively and interactively through an activity she describes as "The Odd One Out". In this exercise, students are shown a series of images and are encouraged to discuss which image appears out of place and why. "This activity sparks diverse viewpoints and promotes critical thinking, as each student brings their unique perspective and reasoning about why a particular image doesn't belong," Teacher II elaborates. This strategy effectively stimulates students' observational skills and enhances their capacity for analytical thinking.

Writing programs

Google Docs is a valuable tool in Teacher I's educational repertoire. It promotes collaboration and enhances students' writing skills. "Yes, Google Docs is used a lot," remarks Teacher I, highlighting the extensive use of the program in his teaching. It is beneficial when students are working on documents. "They used Google Docs when they were writing their document," he continues, pointing out how the technology facilitates collaboration and access to work regardless of time and place.

Teacher I emphasizes the importance of teaching students to organize and structure their work tidily and properly. "At least in Google Docs, as it is now, I want to teach them to somehow create a document, not just that they should write something down, but that they should try to do things a bit neatly and properly," he explains. By using Google Docs, he underscores how digital tools can overcome certain limitations associated with handwriting, such as speed and difficulties in making changes afterward. This promotes a more flexible revision process where students can easily adjust and improve their texts based on feedback. "So, in a way, that's part of the task now, that they should have the opportunity to make changes later, and that I can look at the documents, okay, what could you do differently here to make things look neater?" This shows how Google Docs functions not only as a writing tool but also as an educational tool for teaching the importance of thoughtful and well-organized presentation of work.

Teacher I also highlights the effectiveness of Google Docs in teaching students to develop a simple, yet comprehensive document that can be expanded and adjusted over time as they progress through a specific topic. "I'm using Docs now because I'm trying to teach them to create a document with various elements that should look neat and tidy. And it's easy to use time after time," he says. This approach enables students to avoid fragmenting their work across multiple files, which can lead to confusion and inefficiency. Instead, they learn to build and maintain a unified document that encompasses all their work, promoting organizational skills and continuity in the learning process. "So they don't create five different files, but they can write everything into one. So, in a way, it's to achieve a bit of a common thread, actually, through several weeks," he adds.

Teacher I concludes by reflecting on the current focus on using Google Docs: "And so, yes, I actually think that's kind of the main focus right now, so that's how it will be." This suggests a conscious approach to teaching in which technology is integrated to strengthen core competencies in academic work processes, not just as a means to an end but as an integral part of the learning experience.

Teacher IV implements technological solutions in a manner that considers the specific learning needs of her students, particularly those with dyslexia. She has developed a "Vocab list" — a list in Microsoft Word where students are to write English words along with their Norwegian translations. This measure is part of a larger strategy to make teaching more accessible: "Due to all those who have dyslexia, we have chosen to do it now," she explains. This adaptation makes it easier for students with reading difficulties to keep up and actively participate in the learning process.

Additionally, Teacher IV notes that working with the Vocab list has also proven to be an effective method to reinforce students' understanding of complex texts and concepts. "I see that the text was very difficult. So, I think it's a wise thing to have it prepared for next week. They are aware that we need to go through it several times. So, I think it was a good thing that we started working on those words and concepts," she says. This illustrates how she proactively uses technology to prepare students for future challenges while emphasizing the importance of repetition in the learning process.

Her use of technology also extends to include practical aspects of digital competence. "But then again, regarding that student group, their digital skills are not very advanced. So, you notice that you have to go through everything in great detail. You find it, then you have to display it on the projectors. This is how you download it, make sure you activate it. Now

everyone needs to save it. You have to take it step by step," Teacher IV explains. Here, she addresses how she must guide the students through basic digital processes, which is crucial for all students to effectively utilize the educational resources.

Blooket

Blooket, an interactive website, is used by Teacher I as an effective tool to make learning more fun and engaging for the students. Teacher I describes his approach to using Blooket as follows: "Blooket is because they find it really fun, and they somewhat forget that they're summarizing and learning since there are many questions they go through without fully realizing it themselves." This illustrates how he uses gamified elements to capture the students' interest, while they engage with academic content without necessarily being aware that they are learning.

He adds, "They find it very engaging and really fun, and I think you manage to sneak a bit of learning in there simultaneously." This further confirms that game-based learning can effectively achieve educational goals in a way that feels less like traditional teaching and more like an entertaining activity.

Teacher I also explains how he uses Blooket as a pedagogical strategy: "Yes, so I use it a bit like a lure, while it also serves as a great method for reviewing material." Here, it becomes clear that Blooket attracts and retains the students' attention and functions as a useful tool for reviewing and consolidating learning material.

YouTube

YouTube has proven to be a valuable tool for Teacher I, who uses the platform to integrate relevant videos into his lessons spontaneously. He expresses enthusiasm for this method: "I always find it fun with things like, I did use some YouTube today, but I enjoy finding YouTube videos to start with." This reveals his preference for using multimodal input to capture and maintain the student's attention from the start of the lesson.

Furthermore, he tailors the use of YouTube based on the students' real-time responses and needs. He explains, "But I incorporated it more on the fly, really, and then adjusted based on what they had come up with, so we could search for and watch relevant content." This strategy allows him to create a more interactive and engaging learning experience where the content becomes directly relevant to what the students are discussing or working on at the moment.

Google Search Bar

In line with developing students' digital competence and the ability to learn independently, Teacher I has designed tasks that challenge students to use the Google Search bar to look up information on their own. He emphasizes the importance of this skill: "I had some tasks designed to have them practice searching the internet and finding information on their own. That's something I consider an important skill to have." This illustrates his pedagogical reasoning in equipping students with the necessary tools to navigate the information society effectively.

Furthermore, he explains, "They can use the internet to discover information themselves." By doing this, he encourages students to develop critical thinking and research skills, which are essential in both their academic and personal lives. By teaching students how to effectively and independently retrieve information from the internet, Teacher I promotes a lifelong learning approach where students can actively engage in continuous knowledge-seeking and problem-solving.

Student Channel

Teacher I has integrated the "Student Channel" from TV2 into his teaching, utilizing it as an educational resource that is both informative and engaging. He describes his approach: "I've used the Student Channel from TV2. They have various English news and videos on various topics, which I often use along with accompanying questions and such, so I'm quite fond of it." This use of varied media resources actively enriches the curriculum, stimulating student learning with current and relevant content.

Further reflecting on the practical aspect of using the channel, he notes: "They were supposed to go there, and it was partly to keep them occupied." This suggests that the content from "Student Channel" also serves as a strategy to keep students engaged and focused, a crucial component in modern teaching practices. Moreover, My School was also used to give students who finished a task early something to do. This was a differentiating strategy to give the faster learners something more to do while the ones who struggled more could have sufficient time to finish the task.

Quizlet

Teacher II has also integrated Quizlet into the teaching framework to enhance vocabulary learning. She selects explicitly words from the prescribed vocabulary list alongside those she considers challenging either in complexity or pronunciation. "I have created a Quizlet which

includes both types of words. It's designed as an optional tool to help students tackle difficult vocabulary and pronunciation challenges at their own pace," she explains.

This method highlights Teacher II's approach to utilizing digital tools to support individual learning needs. By offering Quizlet as an optional resource, she provides students with the opportunity to engage with the material outside of the classroom environment, allowing them to deepen their understanding and mastery of the language in a self-directed manner.

MentiMeter

Teacher II uses Mentimeter as an interactive tool to encourage student participation and to stream the collection of class responses. She explains her rationale for using this technology: "Using Mentimeter allows for collective input, which means there's less pressure on each individual to contribute extensively. This approach is particularly effective because not all students may feel they have significant contributions to make." She also highlights this tool's motivational aspect: "It adds an element of excitement as students get the opportunity to see their responses displayed on the board during the class."

Minecraft Education

Teacher III uses Minecraft Education to engage students in a way that combines play with learning, with a particular focus on language development. The teacher shares their observation: "They are used to playing or building and speaking English. Many of them do that. So, when they build together, they practice speaking English." This illustrates how Minecraft is not just a game, but also a tool for linguistic practice where students naturally use English while collaborating on projects.

Teacher III further comments on the linguistic depth achieved through this method: "It's actually quite interesting to hear how they manage it. But it's not terribly advanced; it's more everyday English." While the language used is not necessarily advanced, it is clear that the students gain valuable practical experience with English and develop their functional communicative competence, which helps them become more comfortable using the language in everyday situations.

Additionally, Teacher III integrates presentations as part of the learning experience: "We don't do this all the time, but occasionally they have to present what they've built and what they've written about." This aspect of the program allows students to develop further and demonstrate their language skills, as well as their ability to present and discuss their projects.

News Outlets

Teacher III uses news channels like BBC World and Sky News strategically in her teaching, especially when the class does not follow the original plan. She explains: "But then I realized that when things take a bit longer than I planned, I just throw in that they could go and read some news on BBC World or Sky News. That's how I think about it. I do it quickly every now and then if I feel that it [giving feedback to individual students] is taking longer than I originally thought." This approach demonstrates how she adapts to situations where time management is needed more effectively.

Online Dictionary

Teacher III chooses to use Clue, an online dictionary, instead of Google Translate, highlighting a strategic approach to learning and exam preparation. She explains her preference: "We don't use Google Translate. But it does work well. However, it's not available during exams. So, they won't have it then. But by that time, they need to have a clue." This underscores the importance of developing an understanding and mastery of different language learning aids students can use, which is also one of the curricular aims.

Digital platforms accompanying the textbooks

Teacher II utilizes the options of A-universe, a digital platform that accompanies textbooks, to offer students a more flexible and interactive learning experience. She points out: "The fact that one can listen to texts and read homework means that I don't spend that much time on it anymore [when speaking about the advantages of using digital tools in teaching]. Partly because they are older, but also because they can listen to the text inside A-universe. Then we don't need to spend as much time going through homework, since they can hear it. We couldn't do that last year." This highlights how listening to texts can enhance understanding and efficiency in reviewing homework.

Teacher II also notes the limited access to physical textbooks: "That's because we don't have a book." This emphasizes how digital resources become necessary and valuable when traditional books are not available, ensuring continuity and access to educational materials. Furthermore, she describes the added value of A-universe: "It's like with the digital texts, that they can listen to them. On some of the tasks, you can type directly into. There are some drag-and-drop tasks. It provides more options in terms of solving tasks." This functionality increases student engagement and interactivity, allowing them to participate more directly in the learning process through varied activities such as typing directly into documents and performing drag-and-drop tasks.

Teacher III actively uses the "My School" platform in her teaching to address specific challenges students face on national tests, particularly in reading and listening comprehension. She expresses concern about the students' low performance. She implements tailored strategies: "And that's what we train them for, because of the reading comprehension and listening comprehension on the national test, which I was quite shocked to see how low it [the students' performance] was." This underscores the importance of targeted training to improve these skills.

She emphasizes listening exercises as part of the learning process: "They need to practice listening to the texts along the way. When they listen to loud playback, they shouldn't just read; they should listen." This helps enhance students' listening skills, which are critical for correctly interpreting and understanding information during tests.

Moreover, Teacher III highlights the importance of visual analysis through the platform's features that display images and texts engagingly: "Because I know that in an exam, they might be given a picture. They need to learn to see more in the pictures than just the obvious. They are so simplistic in a way. They only take exactly what's there, and nothing more. I want them to see more in the pictures." By encouraging deeper analysis of images and texts, she trains students to notice and interpret underlying details and meanings. The curriculum emphasizes the ability to interpret and create texts that combine different modes of communication. Examples of this can be textual, visual and digital elements that combined become multimodal texts or pictures. This is intended to enhance student's understanding and ability to communicate effectively across various media and modalities.

Teacher III also expresses the benefits of the digital platform: "It's very convenient to have them [the pictures] on the screen. That way, I can make them big." and "I find it much simpler. It's so much easier to have everything on My School platform and avoid all the copying, and then they lose it, and they can use it for the tests." Using digital resources enables her to efficiently customize teaching materials and ensure that all students have access to necessary learning resources.

She adds: "So, I add a bit of sound, which I think is probably the best part—that the sound is available to everyone, especially those with dyslexia, who need to listen, right?" This

highlights how inclusion and accessibility are central aspects of her pedagogical approach, providing audio support for those with special needs.

Teacher IV uses "My School" from Cappelen Damm to optimize the teaching process and support students' independent learning. She points out how the platform aids students in their preparations: "They have still begun to prepare a bit for what they need and what they will need for the coming week." This shows that "My School" helps students plan and organize their learning, which is essential for their success and progression.

Furthermore, she emphasizes the importance of listening exercises integrated into the platform: "They need to practice listening to the texts along the way. When they listen to the playback aloud, they should not just read; they should listen." This underscores how "My School" facilitates multimodal learning, where students read the texts and listen to them, enhancing their listening skills and overall language comprehension.

Teacher IV expresses particular satisfaction with how vocabulary is handled on the platform: "But at the same time, that's what's nice about my school and those texts. There, the focus is on the words that were underlined, so explanations appear immediately. What's nice about this is that it's not distracting, unlike in a textbook where you say the vocabulary is on the side. Then, you can't really see where that word is in the text. It just becomes too much of a distracting element in their reading window. But at My School, it actually serves as reading support, because when they come across a word, often it might be the word they stop at. Then I know I can just click directly on it. There, I think, lies the strength of My School compared to a textbook, which can be a bit harder to navigate." She highlights how this feature provides an integrated and less distracting learning experience, allowing students to click directly on underlined words for immediate explanations, making it easier and more intuitive than traditional textbooks.

5. Discussion

5.1. RQ1: Digital tools used

In this thesis, I set out to examine the use of digital resources in primary and lower secondary schools in Southern Norway. The investigation revealed a wide range of technologies applied in the field of English language instruction. In order to add multimedia content to lessons, Teacher I used Google Docs for document management and collaborative writing, PowerPoint for visual presentations, and YouTube for lesson enhancement. Together with Google

Classroom for course management and Blooket for gamified learning, these technologies show a well-thought-through approach to improving student engagement and supporting a variety of teaching styles. Similar to this, Teacher II included tools like A-Universe, which offered a digital version of traditional textbooks, and Mentimeter, which promoted interactive learning settings through real-time polling and feedback. The usage of Quizlet highlights the trend toward gamified digital tools that facilitate vocabulary learning outside of the conventional classroom.

Some of Teacher III's strategies were using Minecraft Education to combine play with learning material and encourage students to use language practically in group settings, and Clue, an online dictionary, to support language skills with trustworthy reference materials. This demonstrates a thoughtful use of digital tools to produce immersive, contextually rich learning experiences in addition to resource access. Teacher IV, on the other hand, seems to favor platforms that facilitate multimodal learning through texts and audiovisual aids and integrate easily with curriculum administration, as evidenced by her use of It's Learning and My School.

Based on the pedagogical goals of improving resource accessibility, increasing student engagement, and accommodating a range of learning styles, these findings highlight a substantial incorporation of digital technologies in teaching methods. The use and adaptation of these tools show how teacher pedagogy and digital technology interact in complex ways, implying that the availability of technologies and the instructors' thoughtful choices about how to use them to achieve learning goals are key factors in successful integration. The present research not only underscores the diverse applications of digital tools but also establishes a framework for scrutinizing the effectiveness of these technologies in fulfilling the educational objectives delineated by the extant educational standards and practices.

5.2. RQ2: Teachers' reflections

This part of the thesis aims to discuss how primary school teachers reflect pedagogically on their use of digital tools in their instruction methods. The interviewed teachers' pedagogical reasons behind the use of digital tools show a deeper understanding of how technology can support and enhance students' learning outcomes. An example of this may be Teacher I's use of PowerPoint. Teacher I's use of PowerPoint was not merely for the sake of using technology but was rooted in enhancing classroom engagement and adaptability. He notes that using

PowerPoint had the benefit of allowing the adjustment of font sizes to improve visibility and cater to different classroom needs. The possibility of being adaptable in a classroom is crucial in maintaining an inclusive learning environment, regardless of where students are seated in the classroom. Moreover, PowerPoint can allow for the incorporation of multimedia elements that can help contextualize learning and make complex content more tangible.

Similarly, Teachers' I and II's use of Google Docs illustrates a deliberate choice to foster collaborative and interactive writing processes. This tool allows students to work simultaneously on documents, offering a practical platform for peer feedback and real-time editing. Teacher I specifically highlights the pedagogical method of using Google Docs to teach students not only to write but also to organize and present their work effectively. This reflects real-world skills that are increasingly valued in digital and professional settings, which aligns with Genlott and Grönlund (2016) study that showed the positive impact of technology's capabilities for collaboration and simultaneous feedback from the teachers when a sharing platform was used (Kanno, 2007).

The education sector is currently undergoing a shift. Old education methods are being updated to embrace and make use of the possibilities that digital technology brings. From the observations in this study, we have seen how teachers use digital tools like Google Classroom, Google Docs, and PowerPoint to simplify the sharing of information and to support interactive, student-centered teaching, which is essential to the constructivist learning process.

The constructivist theory emphasizes the crucial role of students being active participants in their own learning process. It seems that the use of Google Docs facilitates such active participation by letting students share, discuss, and edit text in real-time, which is consistent with the example given by Hung and Khine, in Kanno's book "International handbook of English language teaching" (2007). As students reflect on their own and others' work, this dynamic fosters motivation and engagement, and develops cognitive processes—a crucial aspect of constructivist learning.

Teachers actively support an interactive and collaborative learning process, which is an essential principle of constructivist learning theory. This can be seen by teachers using digital tools such as Google Classroom. Teachers I and II use this portal to offer tasks and resources and gather and discuss student work comments.

When talking about constructivism and sociocultural theory, they emphasize the importance of social interactions in learning processes, relying heavily on Vygotsky's ideas that knowledge construction is a shared process. Digital tools such as Blooket and Mentimeter illustrate this principle by actively engaging the entire class in the learning process. These platforms facilitate not just the distribution of information, but also make room for discussion and critical reflection among students. For example, through Mentimeter, a teacher can create an environment where students' thoughts and ideas are not only shared but explored collectively. This method of interaction encourages a dynamic classroom atmosphere where feedback and discussions are essential. This supports the constructivist belief that knowledge is constructed through social collaboration and shared experiences.

Furthermore, the application of specialized tools like Blooket and Minecraft Education by Teachers I and III underscores a commitment to making learning enjoyable and relevant. Blooket's gamified approach helps mask traditional learning with the engagement for active play. This may particularly affect summarizing and revising, as using active and engaging games has been shown to be effective for students. Even though Minecraft Education was not observed, Teacher III's explanation of her use of it in the classroom should be discussed. Teacher III describes how her use of Minecraft makes learning enjoyable and relevant by situating language learning within a virtual building task. This not only makes use of students' existing interests in gaming but also promotes the English language in a communicative and practical way. This method supports language acquisition theories that talk about immersive, context-rich learning environments where language use is motivated by actual communicative needs and can cultivate positive dispositions toward English among learners.

Teacher III, with considerable teaching experience, uses digital tools like the online dictionary Clue and the educational platform "My School" to enhance language learning and support comprehensive instructions. Her choice for Clue, for example, reflects a strategic approach to equip students with reliable resources for language learning, which are essential during exams where online translators such as Google Translate are not permitted. The focus on using different translators also directly fulfills the curriculum requirements. These requirements are based of the curriculum aims about managing different dictionaries, both for 7th grade aim and 10th grade aims (Norwegian Directorate for Education and Training, 2019). This emphasizes a pedagogical focus on developing students' authentic language skills and ensuring they are well-prepared for academic assessments.

Her use of the digital platform "My School" is particularly insightful, as it provides integrated multimedia resources, which can help address specific challenges in reading and listening comprehension. By having students engage with texts and audio simultaneously, Teacher III is applying a multisensory approach to learning, which could help enhance memory and understanding. Multimodal learning, according to Kress and Leeuwen (2001), emphasizes how integrating text, audio, and visual elements improves learning. These elements are not only distinct methods to communicate information but also very important for students' comprehension of the lesson content.

Teachers who utilize Google Classroom and PowerPoint encourage this multimodal approach by including text, video, and graphics in the classroom materials. As a result of this integration, teachers could help students to be more engaged in the learning process. For instance, when Teacher I uses PowerPoint to provide written data and visuals from Ireland, it may have engaged the students' senses in a variety of ways, which helps strengthen their retention and comprehension of the material. Kress and van Leeuwen(2001) support this claim stating that multimodal texts offer a more profound and nuanced interaction with the content, making learning more dynamic and approachable.

Moreover, Google Classroom enables educators to collect and organize a range of resources so that students are able to easily find them. Teachers can use this platform to contribute video resources that provide further explanations and examples of the textual and visual components they teach. This multimodal format is very important in the current digital learning environment, where students' capacity to switch between several media formats is essential. Thus, the study's conclusions offer a concrete illustration of Kress and van Leeuwen's theory and may serve as an example as to what multimodal pedagogy may look like in practice in the classroom. They emphasize how crucial it is for educators to be aware of and proficient in utilizing multimodal resources to enhance teaching methods and increase student engagement.

This way of teaching is especially beneficial in tackling low comprehension scores observed among her students, demonstrating a targeted intervention that leverages technology to meet specific educational needs. Moreover, her mention of the platform's convenience for displaying large images and text during lessons could show her commitment to creating an inclusive classroom environment where visual and auditory learning aids are available to support all learning. In this case, also available for students with learning disabilities like dyslexia.

Teacher IV showed a more practical use of technology aimed at both facilitating learning and ensuring digital competence for her students. Her use of Microsoft Word to create vocabulary lists is a simple yet effective way of combining language learning and digital literacy. By having students translate and organize their personal vocabulary lists, she is not only reinforcing new language concepts but also ensuring that the students are comfortable with digital operations. This dual focus is crucial in a world where digital skills are as important as academic knowledge. Moreover, the use of vocabulary lists while reading was shown by Izabella Kojic-Sabo and Patsy Lightbown (1999) to be an efficient way of learning new vocabulary. The results from Kojic-Sabo and Lightbown (1999) showed that students who made lists and personal dictionaries had a more efficient vocabulary acquisition, which Teacher IV does not mention, but surely is a pedagogically sound reason to continue with such lists.

The engagement with digital platforms also reflects Teacher IV's pedagogical strategy to aid impendent learning and self-preparation among students. This could be because these platforms often include features that encourage students to plan and prepare for upcoming lessons and assessments autonomously.

The diverse digital tools selected by the teachers reflect a deep pedagogical intentionality aimed at enhancing students' engagement, personalizing learning experience and preparing students for a digital future. Every tool has been chosen not only for its functionality but for its potential to contribute significantly to the teacher's pedagogical goals. This included fostering collaborative skills, enhancing multimodal literacy, and accommodating diverse learning preferences and needs.

5.3. Other observations

5.3.1. Digital literacy

The integration of digital literacy within the LK-20 English curriculum is crucial for preparing students to navigate in a digital world. This curriculum emphasizes the role of digital tools in enhancing language learning and facilitating the acquisition of cultural knowledge. According to the LK-20 guidelines, English education involves not only traditional learning objectives but also the development of digital competencies. These digital competencies should enable students to effectively use and evaluate digital content in English. These skills are important

for students to engage with authentic language resources, promoting a deeper understanding and practical application of the language in real-world settings (Norwegian Directorate for Education and Training, 2019).

Furthermore, the pedagogical approach that allows teachers, such as Teacher I, to encourage students to utilize digital tools like the Google Search Bar, supports the curriculum's goal of fostering independent learning and critical thinking. By actively engaging with digital resources, students learn to critically assess the quality of information and adapt their language use accordingly. This method of instruction aligns with the curriculum's objectives, helping students not only to improve their language skills, but also become critical users of digital information, thereby enhancing their overall academic and personal development (Norwegian Directorate for Education and Training, 2019).

The education goals of English and Norwegian school subjects are comparable. English is one of the core literacy subjects. The curriculum in both languages includes goals related to critical evaluation of sources, effective engagement with content, and text reading and comprehension. In order to accomplish this, English teachers use a range of digital tools to help students improve their receptive (reading and comprehension) and productive (writing and speaking) skills. These digital tools are an essential part of the LK-20 English curriculum. They improve traditional language instruction by introducing techniques that let students communicate in a modern and interactive way with texts and other media. This method encourages digital literacy in addition to language acquisition, enabling pupils to function competently and with confidence in a digitally-driven world.

5.3.2. Gamification

Teachers I's implementation of tools such as Blooket and PowerPoint can be viewed through Kapp's lens as efforts to create gamified learning experiences. For instance, Teacher I's use of Blooket introduces a competitive element into learning activities and subtly incorporates precision and assessment through game-based dynamics. This method mirrors Kapp's assertions about the motivational benefits of gamification, as students are likely more engaged. Moreover, the immediate feedback provided by Blooket aligns with Kapp's principle: enhancing motivation through rapid feedback and visible progress indicators. This immediate reinforcement of point boards and feedback serves to validate students' efforts, which one can argue is happening in the lessons regarding Blooket.

5.3.3. TPACK

The integration of digital tools in the English language classroom among primary and lower secondary school teachers in southern Norway, as observed in this study, exemplifies the practical applications of the TPACK framework. The framework suggests that effective technology integration in teaching requires an understanding of the connections between technology, pedagogy, and content knowledge (Koehler and Mishra, 2009). The findings from this research highlight not only the individual teacher's technological competencies but also their pedagogical strategies and content understanding. All of this is to enhance the learning experience and outcome.

Looking at the results, Teacher I's use of PowerPoint and Google Docs highlights a strategic approach to integrate technology that enhances visibility and accessibility for students. This adaptability in using digital tools aligns with the TPACK framework. Where technology serves as a way to better address students' learning needs. The choice of tools like YouTube and the Students Channel further supports diverse learning modalities, catering to visual and auditory learning preferences, which one could argue is a core aspect of effective pedagogical strategies. In addition, these resources allow for easy differentiation providing engaging content for the students who are already done with their original task.

Moreover, Teacher II's use of Mentimeter and Quizlet in her lessons underscores the pedagogical intent to make learning interactive and engaging. These tools help facilitate a dynamic learning environment where students are not passive recipients but active learners. This method aligns with TPACK's emphasis on using technologies to transform traditional pedagogies into more engaging, student-centered experiences.

Additionally, the frequent use of Google Docs for collaborative writing and feedback reflects a significant integration of technology to foster communication among the students. This approach is an important part of language learning, where writing and peer feedback can be helpful. Here, technology not only supplements but also enhances the pedagogical process. The collaborative learning outcome and peer assessments are all key indications of TPACK's effective integration.

The TPACK framework is present in the teachers' motivations behind their digital tool integration as represented in their reasonings. For instance, the results show that the teacher's motivations to use digital tools frequently stemmed from the desire to make educational resources more accessible and teaching more efficient. For instance, teacher III's use of digital

platforms like "My School" and online dictionaries facilitated instant access to educational content and support materials, which were crucial in their digital learning environment. This motivation aligns with TPACK and its emphasis on understanding the operational aspects of technology to enhance content delivery.

Part of the TPACK framework also focuses on using TPACK to make learning more enjoyable and relevant to students. These motivations can be seen when teachers use Blooket and Minecraft, where they want to use these tools to enhance student engagement and motivation, and to support the students' learning outcomes.

Lastly, regarding TPACK, it is worth mentioning the teachers' reasonings for diverse learning needs. The use of audio files and adaptive quizzes, as exemplified by teacher II and IV, demonstrates an understanding of the diverse needs of students, including those with learning difficulties such as dyslexia. Employing technology to cater to these needs underscores the TPACK regarding aligning technological tools with pedagogical strategies to support learners effectively.

5.3.4. The economic and technological barrier

According to Norhagen, Krumsvik, and Røknes (Norhagen et al., 2024), the Norwegian government has made a substantial investment in the Norwegian educational sector, specifically in digital technologies. However, the results may present differently than intended, as one can think that the investment in the Norwegian educational sector primarily was used on devices. After investing in devices, there may not have been enough money left to invest into pedagogical digital tools.

Economic and technological barriers play a significant role in teachers' ability to integrate and effectively utilize digital tools in teaching, as illustrated by Teacher III, Teacher IV, and Teacher II. From the results, one can see that Teacher IV expressed frustration with a constant flow of new digital tools that require subscriptions or payments, limiting her ability to explore and integrate new digital tools into her teaching. This points to a larger challenge of economic access that can hinder even technically competent teachers from fully using the potential of digital solutions. Teacher IV experiences similar challenges, where she highlights that economic constraints at the school affect the choice of digital platforms and tools that can be used. These barriers are both technical and economic, showing how the lack of resources can slow educational innovation and prevent teachers from providing modern and engaging lessons. These observations underscore the need for institutional support and investment in

technological resources to give access to digital education and promote a more uniform technological integration at all educational levels.

Teacher II mentioned another economic barrier. In the landscape of educational resources, the integration of digital platforms and traditional textbooks is often shaped by economic realities. For example, Teacher II points out one challenge: the lack of physical textbooks due to budget constraints, which underscores the important role of digital resources. These tools become essential as modern alternatives and practical solutions when financial barriers limit access to traditional books, ensuring that all students have access to the necessary educational materials.

Moreover, while digital tools can offer cost-effective alternatives with their ability to provide up-to-date content and a broader range of accessibility, traditional textbooks have other benefits that are also important. Teachers, aware of these dynamics, often prefer a blend of both digital and print resources to compensate for economic limitations while enhancing the learning experience. This approach not only highlights the teachers' abilities to make pedagogic decisions amid financial constraints but also supports the argument for giving educators the autonomy to choose the most suitable tools based on their professional judgment and the specific needs of their students. This balanced approach aids in a more adaptable and inclusive educational environment where economic barriers do not dictate the quality of education.

6. Conclusion

This master's thesis has explored the integration of digital tools by primary and lower secondary school teachers in Southern Norway within English language instruction. It highlights their pedagogical motivations and the ways these tools are embedded in their teaching methods. The research was driven by the contemporary digital landscape in education, emphasizing the necessity for teachers to adapt and innovate to enhance learning outcomes amidst increasing digital infusion in the classroom.

The findings from this study shed light on several key aspects of digital tool utilization in the classroom. Teachers are using these tools to facilitate traditional learning objectives and strategically use them to enhance engagement, promote inclusivity, and cater to diverse learning needs. For instance, tools like PowerPoint and Google Docs were utilized not merely as functional aids, but as integral parts of teaching strategies aimed at increasing student

interaction and collaboration. Moreover, digital tools such as Blooket and YouTube have been used to create a dynamic and interactive learning environment where students can engage with content in a multimodal and appealing manner.

Pedagogically, the motivations behind using these tools are deeply intertwined with the principles of constructivist learning theories. Teachers aim to create environments where students can actively construct their knowledge through engagement and interaction facilitated by digital technologies. This aligns with the TPACK framework, where the integration of technology is seen as an enhancement of pedagogical practices rather than a mere addition to the traditional teaching arsenal.

Furthermore, the study highlighted a conscious effort among teachers to use digital tools to meet the curriculum requirements and prepare students for a digitalized world. This involves teaching critical digital literacy skills, enabling students to navigate and use digital information effectively and responsibly.

However, the study also points to challenges, such as the economic barriers to accessing certain digital tools, which can hinder the full realization of technology-integrated pedagogy. Despite these obstacles, teachers have demonstrated the ability to adapt and innovate with the available resources, underscoring the critical role of teacher agency in the successful integration of digital technologies in education.

In conclusion, this thesis contributes to the academic discourse on digital tool integration in education by providing empirical insights into the pedagogical practices of primary and lower secondary school teachers in Southern Norway.

6.1 Implications for future research

Future research could explore the longitudinal impacts of digital tool integration on student outcomes and further investigate the barriers to technology adoption in educational settings. With this in mind, it would be of interest to replicate this study from the students' perspectives by interviewing students or collecting students' output with or without digital tools. Through such continued exploration, we can foster a hopeful vision of harnessing the full potential of digital tools to revolutionize educational practices and outcomes.

This study only involved two schools and four teachers, which might not be representative of teachers. Because of this, it could also be of interest to conduct a study involving more teachers and schools to give a broader and more representative discussion.

Lastly, one thought that came to mind through this writing process was the mention of dyslexia and reading skills. Although this thesis did not highlight this, it could be of interest to see how digital tools were used to aid students with these types of difficulties.

7. References

Bada, S. O., & Olusegun, S. (2015). Constructivism learning theory: A paradigm for teaching and learning. *Journal of Research & Method in Education*, *5*(6), 66-70.

Beach, R. (2012). Uses of digital tools and literacies in the English language arts classroom. *Research in the Schools*, *19*(1), 45.

Cameron, L. (2001). Children learning a foreign language. In L. Cameron (Ed.), *Teaching Languages to Young Learners* (pp. 1-20). Cambridge University Press. https://doi.org/DOI: 10.1017/CBO9780511733109.002

Christoffersen, L., & Johannessen, A. (2012). *Forskningsmetode for lærerutdanningene*. Abstrakt forlag.

Creswell, J. W., & Guetterman, T. C. (2021). *Educational research : planning, conducting, and evaluating quantitative and qualitative research* (6th ed.). Pearson Education Limited.

Fadda, D., Pellegrini, M., Vivanet, G., & Zandonella Callegher, C. (2022). Effects of digital games on student motivation in mathematics: A meta-analysis in K-12. *Journal of Computer Assisted Learning*, *38*(1), 304-325.

Fjørtoft, S. O., Thun, S., & Buvik, M. P. (2019). *Monitor 2019-En deskriptiv kartlegging av digital tilstand i norske skoler og barnehager*. (821406404X).

Genlott, A. A., & Grönlund, Å. (2016). Closing the gaps – Improving literacy and mathematics by ict-enhanced collaboration. *Computers and education*, *99*, 68-80. https://doi.org/10.1016/j.compedu.2016.04.004

Hadianti, S., & Rohmah, D. W. M. (2021). English Teachers' Perception on Using Digital Tools in the Classroom. *EXPOSURE JURNAL PENDIDIKAN BAHASA DAN SASTRA INGGRIS*, *10*, 234-241. https://doi.org/10.26618/exposure.v10i2.5769

Jelstad, J. (2023a). Lærere om foreldre mot skjermbruk: - Hvis foreldre skal få definere hvordan lærere skal jobbe, undergraver det hele læreprofesjonen. https://www.utdanningsnytt.no/digital-kompetanse-digital-undervisning-digitalisering/laerere-om-foreldreoppror-mot-skjermbruk-hvis-foreldre-skal-fa-definere-hvordan-laererne-skal-jobbe-undergraver-det-hele-laererprofesjonen/360764

Jelstad, J. (2023b). Lærere om foreldreopprøret mot skjermbruk: - Vi bruker skjermen for å gjøre undervisningen bedre, og vi bruker det med måte. https://www.utdanningsnytt.no/digital-kompetanse-digital-undervisning-digitalisering/laerere-om-foreldreoppror-mot-skjermbruk-vi-bruker-skjermen-for-a-gjore-undervisningen-bedre-og-vi-bruker-det-med-mate/360750

Jelstad, J. (2023c). Lærerne må få være med å bestemme før noe rulles ut. https://www.utdanningsnytt.no/digital-kompetanse-digital-undervisning-digitalisering/skjermbruk-i-skolen-laererne-ma-fa-vaere-med-a-bestemme-for-noe-rulles-ut/361526

Kanno, Y. (2007). ELT policy directions in multilingual Japan. In *International handbook of English language teaching* (pp. 63-73). Springer.

Kapp, K. M. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. John Wiley & Sons.

Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary issues in technology and teacher education*, *9*(1), 60-70.

Kojic-Sabo, I., & Lightbown, P. M. (1999). *Students' Approaches to Vocabulary Learning and Their Relationship to Success* [176-192]. Madison, Wis. :.

Kress, G. (2001). *Multimodal discourse : the modes and media of contemporary communication*. Arnold Hodder.

Kristiansand kommune. (2020, 13.06.2023). *Kristiansand kommune. ICT and School [In Norwegian: IKT og skole]*. Kristiansand kommune.

https://www.kristiansand.kommune.no/navigasjon/barnehage-og-skole/skole-og-sfo/ikt-og-skole/

Li, L. (2019). *Language Teacher Cognition: A Sociocultural Perspective* (1 ed.). London: Palgrave Macmillan UK. https://doi.org/10.1057/978-1-137-51134-8

Norhagen, S. L., Krumsvik, R. J., & Røkenes, F. M. (2024). Developing professional digital competence in Norwegian teacher education: a scoping review [Review]. *Frontiers in Education*, *9*. https://doi.org/10.3389/feduc.2024.1363529

Norwegian Broadcasting Corporation. (2024, 02.02.2024). Støre lover mindre skjerm i skolen. .

Sugano, S. G., & Mamolo, L. (2021). The Effects of Teaching Methodologies on Students' Attitude and Motivation: A Meta-Analysis. *International Journal of Instruction*, *14*, 827-846. https://doi.org/10.29333/iji.2021.14348a

Norwegian Directorate for Education and Training. (2019). *Curriculum in English (ENG01-04)*. Established as regulations. The National curriculum for the Knowledge Promotion 2020.

8. Appendices

Appendix 1: Classroom Observation Form

Teacher: _____   Course
_____
Observer: _____ Date and
Time_____

Tool Used	Purpose of Tool – quiz, drawing, writing, etc.	Time used with Tool

Observation Categories	Description/Comments

1. **Subject of lesson, apparent learning outcomes, approx. number of pupils.**	
2. **Types of activities involved in lesson as a whole (reading, group work, iPad, drawing, etc)**	
3. **Types of instruments – both digital and non-digital – used in activities (include frequency of use in this category)**	
4. **Teacher talk – When does teacher speak? For what reasons? In which language?**	
5. **Pupil talk – when do pupils speak? Whom do they speak to? For what reasons? In which language?**	
6. Tools used individually or in groups?	
7. Pupil Attentiveness during tool use?	
8. **Is there a discussion after digital tool use about the activity?**	
9. **Were there any problems with the activity implementation?**	

Additional Observations:

Appendix 2: Intervjuguide Digitale verktøy i engelskundervisning

Bakgrunnspørsmål (brukes kun i den første samtalen med hver lærer)

Hvor lenge har du jobbet som lærer?

Har du studiepoeng i engelsk? (evt. hvor mange?)

Hvilke andre fag pleier du å undervise i?

Har du tatt noen videreutdanning eller kurs etter avsluttet lærerutdanning? (Hvis ja, hva slags?)

Hva tenker du om digitalisering av skolen generelt, f.eks. at mye av læring og samhandling skjer på skjerm?

Mener du at du selv har gode digitale ferdigheter som bruker?

Mener du at du har profesjonsfaglig didaktisk kompetanse? (Evt. hva legger du i begrepet?)

Hvor ofte pleier du å bruke digitale verktøy i undervisning i en gjennomsnittlig arbeidsuke? (f.eks. (nesten) hver time jeg underviser, i minst en time om dagen, ikke hver dag, men flere ganger i uka, en gang i uka eller sjeldnere)

I hvilke sammenhenger ser du at digitale verktøy er (mest) hensiktsmessige?

Hva tenker du er den/de største ulempene med digitale verktøy

Hvor ofte bruker du digitale verktøy i engelsk?

Hva slags verktøy pleier du å bruke?

Timen i dag (brukes etter hver observerte time)

Hvor fornøyd er du generelt sett med timen i dag?

Hva var ditt hovedmål i timen i dag? Evt. var det noen andre mål?

Mener du at målet ble nådd? Evt. gikk alt etter planen? Hvis nei, hva skjedde?

Hvilke tegn ser du etter når du vurderer om målet ditt for timen ble nådd?

Hvilke verktøy og/eller ressurser valgte du å bruke i dag i timen (alt fra fargeblyanter og saks til spesifikke apper kan nevnes)?

Hvorfor valgte du å bruke det du brukte?

Fungerte det etter planen?

Var det noen andre verktøy/ressurser du vurderte å bruke i dag, men bestemte deg til å droppe dem? Evt. hva slags og hvorfor droppet du dem?

Pleier du å bruke de verktøyene/ressursene du brukte i dag eller var dette første gang.

Hvis du brukte digitale verktøy/ressurser: Hva mener du er tilleggsverdien med de verktøyene/ressursene du brukte sammenlignet med en analog alternativ?

Kunne samme læringsmål nås uten de verktøyene/ressursene du brukte? Hvis ja, hvordan? Hvis nei, hvorfor?

Har du noen avsluttende kommentar?