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Adult teaching with digital technology

A qualitative study on how teachers in adult education centers facilitate learning work using digital technology for adult participants with little or no school background

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Abstract

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Abstract

The rapid growth of digital technology, particularly in education, has created a gap between the skills and competencies needed to wholly participate in education and the realities of adult participants with little or no reading, writing and digital skills. To bridge this gap, teachers in adult education centers are faced with a daunting task- how do they facilitate learning work using digital technology for adult participants with little or no school background? To answer this question, I conducted a qualitative study where I interviewed and observed six adult education teachers in three different adult education centers in Norway. By triangulating two qualitative research methods, I gathered unique data about the teachers' personal experiences in facilitating learning work and acquired knowledge through first-hand experiences by observing them in their classroom practice.

I found that digital technology is a helpful mediating tool in facilitating learning work for adult participants with little or no school background. It creates opportunities for teachers to connect teaching and learning goals to participants' experiences, provides language, repetition and variation opportunities, aids teachers in developing differentiated and adapted teaching content and assists teachers in facilitating individual and collaborative learning. However, this study revealed that although digital technology is an important teaching and learning tool, it will remain a tool until it is filled with the *right* content that fits the needs and the learning prerequisites of adult participants with little or no reading and writing skills. Hence, to succeed in facilitating learning work with digital technology, teachers should have the necessary digital competencies and skills, not only on how to handle the technicalities of digital technologies but, most importantly, how to integrate digital technology to create effective teaching and learning contents.

Although the study findings should be considered indicative and exploratory, I argue that they have important implications. It provides additional empirical knowledge and contributes to the little research dedicated to adult education and teachers' practical work in adult education centers. It gives a deeper insight into the advantages and disadvantages of digital technology as a teaching and learning tool and encourages teacher reflection on the necessary skills and competencies needed to effectively integrate digital technology into their teaching practice.

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"Technology will not replace great teachers, but technology in the hands of great teachers can be transformational."

George Couros

1. INTRODUCTION

1.1 Background of the study

How do teachers in adult education centers facilitate learning work using digital technology for adult participants with little or no school background? This question is the starting point of this study and is aimed to address the knowledge gap brought by the rapid growth of digital technology in teaching and learning and the realities of adult participants with little or no reading, writing and digital skills. To close this gap, teachers in adult education centers are confronted with the challenge of effectively facilitating learning work using digital technology that fits the needs and prerequisites of these participants.

The extent to which teachers adopt digital technology in their teaching practice is not a new concept in research. In Norway, the first political report on the use of information and technology in education was launched 29 years ago through a parliament report "about information technology in education" (St.meld. nr.24 (1993-94)). Since then, digital technologies have continued to impact all areas of the educational system. The centers for adult education (Voksenoppl ring/VO) have about 3612 teachers spread throughout the country (SSB, 2020). Still, there is little available research about how their didactical approaches and practical teaching and learning work are impacted by digital technology, especially when the participants concerned are adult immigrants with minimal or no reading and writing skills from their native countries.

According to Lodgaard et al. (2001), adult immigrants with a minimal formal educational background are a group that must have special treatment when it comes to education. They argue that this group is traditionally the most resistant and anxious about formal learning situations because of the lack of fundamental belief that education or training can be helpful to their life situations. While Norway is considered one of the world's most digitized countries, with the majority of the population with good basic digital skills, immigrants, especially those with low education, are among those with the weakest digital skills (Kommunal- og moderniseringsdepartementet, 2021; Bj nness et al., 2021).

Ever since the curriculum Kunnskapsl ftet (LK06) was introduced in Norwegian schools, digital skills were also added as the fifth basic core competency in addition to the four basic skills of oral, reading, writing, and arithmetic skills ( sterud & Schwebs, 2009). Incorporating digital skills in the curriculum meant that all students (children and adults) should also learn

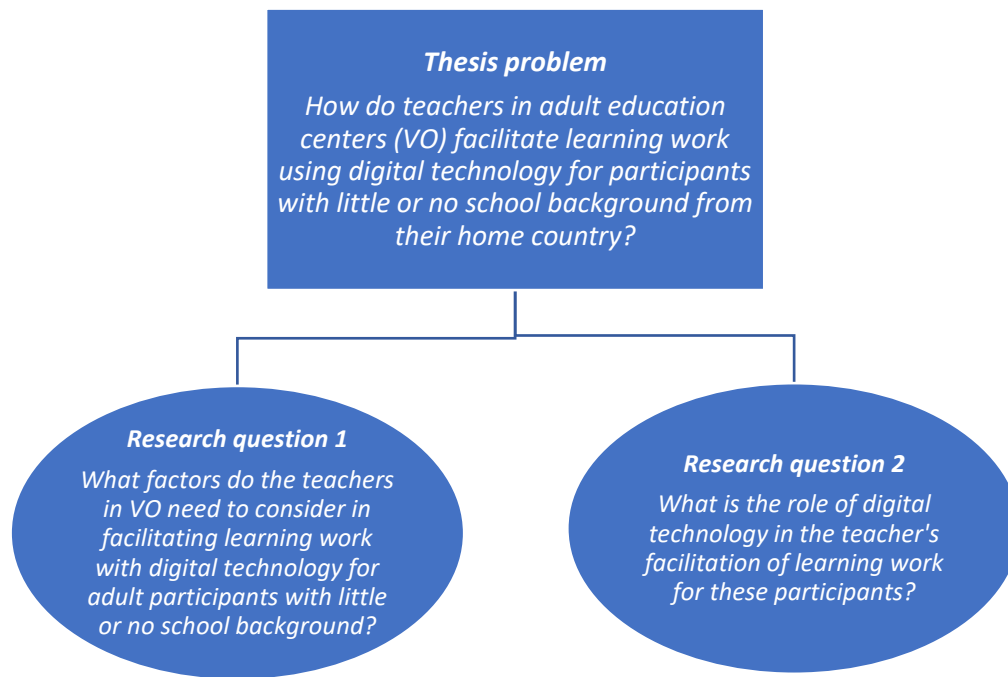
digital skills in addition to the other four fundamental skills. Further, teachers could no longer resist the use and integration of technology into their didactical practice (Østerud & Schwebs, 2009). It is also the curriculum of LK06 that sets the premises for the teaching content and defines the school's approach to using digital tools and the societal challenges that come with it. Moreover, the curriculum also provides guidance on what competence the teacher must have to facilitate student learning (Giæver et al., 2014).

In the book *adult learning in the digital age*, Selwyn et al. (2006) point out that although new technologies may have the potential to overcome education barriers, the use of digital technology is just as capable of introducing new forms of challenges to full participation in education. Selwyn et al. (2006) argued that technology-based learning for all does not reflect the reality that not all people have the same access and knowledge of digital technology. Even in technologically developed countries, specific social groups still do not have access to or have poor digital skills due to social and economic status, age, income, ethnicity, educational background, and gender factors (Selwyn et al., 2006). This situation applies specifically to adult immigrants with little or no school background. Therefore, in an academic context, teachers have complex tasks to facilitate teaching and learning using digital technology that considers their students' different digital skills, needs, and prerequisites.

1.2 Purpose of the study, the thesis problem and research questions

This thesis describes a qualitative study of six highly experienced adult education teachers in three different adult education centers in Norway. My aim is to explore new and additional knowledge on how these teachers facilitate learning work using digital technology as a tool for teaching and learning for adult participants with little or no school background. This study does not focus on finding the “right or wrong” way of facilitating learning work for these adult participants. Instead, I am interested in exploring the factors teachers need to consider when facilitating learning work and the role of digital technology in their teaching practice.

The visualization table below shows the thesis problem and research questions that were formed to help guide the study:



1.3 The scope of the study and the outline of the thesis

Teaching adults could come from different contexts, formats, settings, processes, and purposes (Rogers, 2002). In this study, I focus on the context of adult teaching and education within the wall of educational institutions, which Rogers (2002) refers to as the *formal* adult education sector, including courses and classes managed by the center for adult education in Norway.

The center for adult education (VO) is an educational institution that provides adult courses in different areas, such as Norwegian courses, social studies, primary school for adults, upper secondary, and special education (Utdanningsforbundet.no, 2022). VO is politically mandated, and the responsibility is divided between municipalities and counties. Adult education is regulated by the Adult Education Act (1976) and the Education Act (1998) (Kunnskapsdepartementet, 2021). To limit the scope of my research, I only focus my study on teachers in VO responsible for teaching adult participants with little or no school background. These participants belong to the lowest levels in primary school and the lowest levels in Norwegian courses. I chose the teachers in VO as my target group because adult immigrants with little or no formal education are usually participants in these institutions. I have, therefore, excluded other adults education providers such as universities and colleges (private and public) and similar institutions. Further, the respondents included in this study are teachers who teach

Norwegian courses and primary school for adults. It does not include teachers from social studies, upper secondary, and special education.

This study is divided into six main chapters with corresponding subchapters to provide an exemplary thesis structure. Every chapter briefly explains the chapter contents and their relevance to the study. *Chapter 1* contains the introduction and describes the background and purpose of the study, the thesis problem and research questions, the study's scope and the overall structure of the thesis. *Chapter 2* comprises the theories relevant to the study; the key aspects of the andragogical approach to adult learning, the sociocultural learning theory with its subsections focusing on the zone of proximal development, scaffolding and adapted education and didactics and technology with its subsection on professional digital competence. *Chapter 3* presents the research design and the methodological approach used in the study. It includes information about the data collection using semi-structured interviews and observation and how they were conducted. This chapter also provides information about the research respondents, the transcription process, data analysis, trustworthiness and quality of the research, ethical considerations, and the study's limitations.

Chapters 4 and 5 present the results based on a thematic analysis of the data collected. Chapter 4 will attempt to answer my first research question and chapter 5 aims to answer my second research question. The findings from these two chapters focus on answering my thesis problem on how teachers in VO facilitate learning work for adult participants with little or no schooling. Both chapters include direct quotations from the respondents, interpretation and analysis of the findings and a discussion section where the empirical results are discussed in light of the theoretical foundation presented in chapter 2. *Chapter 6* summarizes the main findings based on the empirical, theoretical, and methodological contributions outlined in this study. The implications of this study to the research field, its limitations and possibilities for further research endeavors will also be highlighted in this chapter.

2. THEORY

This chapter aims to account for relevant theory and research that will shed light on the thesis problem of how teachers in VO facilitate learning work using digital technology for adult participants with little or no school background. This chapter consists of four main topics. First, I will discuss Malcolm Knowles's (1970) concept of Andragogy which argues that adults have different learning needs and prerequisites than children. I will focus on the role of adult experiences, self-concept, and learning orientation as essential factors that could be relevant for teachers in facilitating learning work. Further, I will examine sociocultural learning theory to explain learning that takes place through social interaction and activities. Here, I will highlight the importance of mediating tools and artifacts in light of Vygotsky's (1978) and Säljö's (2001) theories on learning and development. Further, I will examine the concept of the zone of proximal development, adapted education and scaffolding and how these concepts can be relevant to teachers learning work using digital technology in the classroom.

Third, I will discuss the term didactics and its importance in teaching and draw attention to the contemporary challenges of didactics concerning the rapid growth of digital technologies. Moreover, I will discuss the importance of professional digital competence to explain how teachers can best integrate digital technology into their teaching practice. Teacher competence frameworks TPaCK (technological, pedagogical and content knowledge) and PfDK (professional digital competence for teachers) will be highlighted to describe the complex knowledge teachers require to successfully integrate digital technology in teaching.

2.1 Andragogy

The question of whether adults learn differently from children has been a subject of debate and research. One of the prominent discussions about how adults learn involves a concept called Andragogy, popularized by American adult educator Malcolm Knowles. The primary assumption of Knowles's concept of Andragogy is centered on the belief that adults learn differently from children and therefore need a different pedagogy, hence the name Andragogy (Knowles, 1970). Knowles's andragogical concept of adult learning is based on several assumptions meant to guide educators on how they can facilitate the planning, management and evaluation of adult learning (Knowles et al., 2005; Lodgaard et al., 2001).

One of Knowles's andragogical assumptions involves the role of *learners' experience* as a resource for learning. Knowles et al. (2005) claim that in an adult learning environment, the richest resources for learning reside in the adult learners themselves. Hence, it is quite common in adult education to utilize teaching techniques that consider the learners' experiences, such as group discussions and problem-solving activities. Knowles et al. (2005) also argued that the teachers' role in adult education involves helping adults apply new learning and understanding based on their prior experiences and exploit these experiences as a resource for learning. Rogers (2002) argued that adult learners bring with them a *package* of experience and values into the learning situation, and teachers should be able to apply the implications of these packages into their approach to teaching. According to Rogers (2002), the learners' package of experience and values determines what meanings the learners create in the different learning situations, which means that learners see all new material they encounter through the lens of their existing experience and knowledge. "For unless the new learning is related to this existing reservoir of experience and knowledge, it cannot be fully absorbed into the person." (Rogers, 2002, p.74).

Another essential assumption of Knowles's andragogy concerns adults' sense of self-concept or being self-directed to make their own decisions in life and learning in general (Knowles et al., 2005). When adults develop self-concept, Knowles claimed that adult learners would have a deep psychological need to be seen and treated by others as someone capable of self-directing. However, adult learners are not a homogenous group. While some adult learners exercise significant autonomy for their own learning, others are more dependent on their learning process. Lodgaard et al. (2001) argue that adult learners' ability to be self-directed in the learning situation hugely varies because they often have different levels of education, quality of life, and level of independence. This can be problematic in adult education because there can be a conflict between adults' psychological *need* for self-concept and their *ability or skill* to be self-directed in the learning situation (Knowles et al., 2005). Based on this argument, it is established that *not* all adults are necessarily self-governing just because they are adults, but it is a goal that needs to be realized (Lodgaard et al., 2001). Therefore, Lodgaard et al. (2001) point out that teaching adults to be self-directed should be the overall goal of adult education.

Another characteristic of adults in learning situations is their problem-centered orientation to learning (Knowles et al., 2005). This implies that adults are motivated to learn new knowledge and skills when they perceive learning content as helpful to their life situations (Knowles et al., 2005). For example, when adult participants want to learn the Norwegian language to look for jobs or continue schooling, they would also like to be presented with teaching content relevant

to their goals and real-life situations. Another example could be that adult participants would be motivated to learn digital tools because they want to help their children with their homework or wish to learn how to communicate with people from their home countries. Following this assumption, it is argued that learners will benefit most from practical and problem-centered learning activities, and teaching content should contribute to solving problems and challenges they face in everyday life (Lodgaard et al., 2001).

Based on the andragogical assumptions discussed above, how can adult educators and teachers facilitate learning work based on the learners' experiences, self-concept, and orientation to learning? According to Knowles et al. (2005, p.93), adult educators must ensure that "the learning environment is characterized by physical comfort, mutual trust and respect, mutual helpfulness, freedom of expression, and acceptance of differences." We can argue that when those conditions are being met, it will be easier for adult participants to share their experiences, acknowledge the things they still need to learn and be aware of their learning needs. Drawing on Knowles's andragogy concept, Loeng (2004) also argues that adult educators must ensure physical comfort where each adult learner is provided a learning experience that gives them a feeling of growth and safety in the learning situation. This implies developing a teacher-student and a student-to-student relationship in the learning process.

With the presence of digital technology in the classroom, adult teachers and educators are presented with new opportunities for learning following the andragogical concept (Knowles et al., 2005). For instance, digital technology can be a tool for teachers to develop learning contents that cater to the participants' different experiences and learning needs. Further, it can also be used to build adults' need for self-concept as they are given the freedom to manage their own learning with technology. Teachers can also access digital resources that benefit participants' life situations through digital technology.

2.2 Sociocultural learning theory

The theory of sociocultural learning, also referred to as sociocultural constructivism, was introduced by Lev Vygotsky, a Russian psychologist who emphasized that human cognitive development is fundamentally social in nature (Vygotsky, 1978). Although it does not entirely ignore the cognitive aspect of learning, the sociocultural perspective of Vygotsky views learning as fundamentally acquired through social interaction with other people. In an educational setting, sociocultural learning theory means that a student or a participant can learn

from interaction and support from their teachers, peers, classmates, friends, and other individuals in the same environment. This theory implies that we absorb knowledge and become increasingly competent as learning individuals when we continually expose ourselves to a social context (Elstad, 2021).

Another critical figure behind social learning is Roger Säljö, a Swedish psychologist known for his excellent research on the sociocultural perspective on human learning and development. Säljö (2001), in his book *learning in practice- a sociocultural perspective*, argues that human learning should be understood using a communicative and sociohistorical lens. As a supporter of the works of Vygotsky, Säljö believed that knowledge begins with the interaction between people before it becomes an integral part of individual thinking and action. Säljö's (2001) view on how people learn is centered on the belief that people, as part of a social world, are born to interact with each other and are mutually dependent on each other when it comes to learning and development.

However, Säljö's (2001) view on how people learn does not focus on interaction alone. One of the pivotal points for a sociocultural perspective of learning centers on how individuals and groups acquire and utilize physical and cognitive resources. These resources can be tools and objects, intellectual or material, that we have access to and use when trying to understand our world and act in it. This perspective is also closely related to a classic sociocultural perspective of, for example, Vygotsky (1978), where artifacts have a central role in *mediating* cognitive activity and development that are deeply entwined into our social activities and practices.

According to Säljö (2001), there are three different but interacting factors in understanding the sociocultural perspective of learning. The development and use of intellectual or linguistic tools, the development and use of physical tools and artifacts, and the importance of communication and collaboration activities. The first interacting factor highlights the importance of *language* in how people acquire knowledge and skills. Säljö (2001) points out that through language, people have a unique ability to share experiences with others. Teachers who follow a sociocultural constructivist view on learning will actively use language to allow students to be active, including working and collaborating in their knowledge construction and development (Øzerk, 2019).

The second interacting factor is the development and use of physical tools and artifacts (Säljö, 2001). Essential to this development is understanding *culture*, which is the collection of ideas, attitudes, knowledge, and other resources we acquire through interaction with the world (Säljö,

2001). In one given culture, artifacts can be made and developed. This includes all the physical tools and artifacts we use in our everyday lives (e.g., pen, measuring tape, calendar, etc.).

Prompted by the rapid development of modern technology, digital technologies have become a primary classroom teaching tool. For example, in Norwegian schools, it is common for primary and secondary school students to have access to one-on-one digital tablets. Classrooms in Norway are also equipped with digital affordances and tools such as Smartboards, computers, iPads, etc. (Utdanningsdirektoratet, 2021a). The promise of digital technologies as a tool for learning is also the basis of much research. For example, Abbasova and Mammadova (2019) studied the role of digital technology in teaching the English language. They found that digital technologies were interconnected with language teaching and can be considered inseparable parts of the language learning process. Bećirović et al. (2021) also studied the affordances of digital technology as a tool in language learning and found positive effects of technology-based language-learning among high-school students.

Säljö (2001) highlights the word *appropriation*, where individuals can learn to master an intellectual tool (e.g., learning the Norwegian language) or physical tool (e.g., learning to use an iPad) in the sense that one can use these tools for specific purposes and in certain situations. More often, appropriation is a gradual process in which individuals become acquainted with and find ways to learn specific tools and artifacts while gaining more experience on how these tools can be used effectively.

The third essential factor of sociocultural theory highlights the importance of *communication* and how people develop forms of *collaboration* in different collective settings (Säljö, 2001). A concrete example is the learning that can result in communication and collaboration in educational settings such as schools and institutions. According to Säljö (2001), learning in educational institutions has a primarily linguistic character where people can communicate through writing, reading, and talking while using a specific written language tradition for communication.

I chose the sociocultural learning perspective of learning as one of the study's theoretical foundations because it highlights three different yet interacting factors in how people learn that also fit in the context of learning in adult education centers. First, the use and development of language (both mother tongue and Norwegian) in acquiring knowledge and skills. Second, the use of digital technology as a physical tool for teaching and learning basic skills like reading, writing, and digital ability. Third, the communication and collaboration between the teachers

and the adult participants with little or no school background. Following the sociocultural theory, these three factors are interrelated and should be accentuated together to present a more holistic view of how teachers can facilitate learning work for adult participants using digital technology.

2.2.1 Vygotsky's zone of proximal development

Lev Vygotsky (1978) believed that learning is an *active process*. To learn, according to Vygotsky (1978), one would require help and support from more knowledgeable people. In an educational context, teachers often take on this role (Scales, 2013). However, it is essential to determine what an individual can do alone, without the assistance of others. Vygotsky (1978) refers to the individual's learning here and now as the *actual development level*. This level represents what an individual can do in solving problems independently without the help of others. A student does not learn anything new but depends on the knowledge accumulated through earlier experiences and education. According to Vygotsky (1978), every individual has a development potential extending from the actual development level. The area between what a student can master alone and what one can achieve with a bit of help from others is called the *zone of proximal development (ZPD)*.

The zone of proximal development is defined as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p.86). Within the ZPD area, students cannot solve problems independently but need help from teachers and capable peers who are more competent than themselves. The importance of determining the actual development level and the zone of proximal development is to ensure that what the individual learns with assistance today can be independently done tomorrow.

Vygotsky's (1978) concepts of actual development level and zone of proximal development are a good starting point in understanding the crucial role of teachers in VO as more competent individuals that could help and support adult participants with little or no reading and writing skills. By understanding how to determine and use the participants' actual knowledge and the participants' ZPD, teachers can plan a more targeted approach that fits the learning needs of these participants.

2.2.2 Scaffolding- supportive learning

The core idea of learning occurs through dialogue and interaction with someone more competent than the person learning (Vygotsky, 1978). Based on this concept, student learning will be more effective if teachers are to support them by asking questions, giving hints, and helping students in their learning attempts. The role of more competent individuals while supporting students learning process is called *scaffolding*, introduced by Wood et al. (1976). Scaffolding involves teachers extending a helping hand to provide students with enough support in the initial stages of learning (Øzerk, 2019), for example, by learning a new language or a digital tool. Peer and McClendon (2002) refer to scaffolding as a *connection-making process* because it can connect old and new information in a social and active environment. Teachers and instructors can, for example, create supported situations where students can extend their current skills and knowledge.

Constructing scaffolding presupposes a zone of proximal development (Lyngsnes & Rismark, 2020). In an educational context, scaffolding means that teachers support their students in learning something they do not master before. When this process continues, the actual development level (what the students can do alone) and the zone of proximal development (what the students can achieve with the help of others) of students also increase. We can take learning a foreign language as an example. At the beginning of the learning process, individuals have very little knowledge of the language. They might know some simple words, but understanding sentences and conversations may be difficult. However, when a person starts to go to a language school and begins to construct knowledge through the help and support of their language teachers, their knowledge repertoire increases, and effective learning may occur. As students learn to master a specific language level, they can continually learn a more complex level, and teachers should constantly support their students in learning these new levels. However, in building scaffolding for students, teachers create a cognitive structure for students to grow and develop, but this structure should gradually be removed when students manage to learn independently (Lyngsnes & Rismark, 2020).

While the actual development level and the zone of proximal development of Vygotsky are theoretical concepts that aim to capture the cognitive side of the student's learning process, the idea of scaffolding is a continuation of these concepts and is an attempt to build a bridge from learning theory to didactic work. Combining these concepts bridges the relationship between the teachers/educator and the person learning (Lyngsnes & Rismark, 2020). Tharp and

Gallimore (1988) highlight the idea of *assisted performance* and its relationship with ZPD. They argue that with the help of students ZPD, teachers, as more capable individuals, can provide an assisted performance to students until they are capable of assisting themselves.

The use of digital technologies has been the subject of research to encourage and strengthen scaffolding practices in the classroom. In a study, Bourbour (2020) studied the preschool teachers' use of interactive whiteboards to support children's learning and development and found that scaffolding, as a teaching method, can be utilized with almost any task using digital technologies. In an article entitled *playing with digital tools with explicit scaffolding*, Kang (2018) highlighted some possibilities for teachers to apply the concept of scaffolding using digital tools. Kang argues that scaffolding is an excellent way for students to acquire a deeper understanding of a task, especially if teachers are willing to explore, experiment, and play with digital tools. Scaffolding with digital tools, according to Kang (2018), can provide new opportunities for students and teachers to co-construct meaning and learn from one another. Kang (2018) adds that although investigating digital tools may be a new concept for both students and teachers, scaffolding can be good support for students who eventually complete tasks independently with a bit of help in the beginning. In scaffolding, it is vital that teachers thoughtfully model and play with digital tools alongside students.

2.2.3 Adapted education

In a Norwegian educational context, the actual development level and the ZPD can be understood by the concept called *adapted education* (tilpasset oppl ring). According to Elstad (2021), adapted education facilitates teaching based on students' abilities and prerequisites irrespective of their educational background, gender, interests, culture, and disability. In a classroom setting, teachers are required to adapt instruction according to the diversity of the student group. This means that work assignments, learning materials, instruction organization, and working methods can vary depending on what the students already know and what they can potentially achieve (Utdanningsdirektoratet, 2022b). Bjarn  et al. (2017) share the same thoughts about adapted education. They argue that teaching should start from a level that students already master while giving them additional teaching inputs to further develop their knowledge and skills.

However, in a classroom reality, students can have various knowledge bases. While some students struggle to keep up with the lessons because they lack the necessary knowledge

prerequisites, others may find teaching highly dull, especially if it starts at a lower level than some students already master. For example, a student who can already read and write in Norwegian may have different teaching needs than those who can neither read nor write in their own language. Elstad (2021) argues that the more significant the difference in students' prior knowledge, the more demanding it is to teach in a way that fits everyone. One practical solution for this challenge is for teachers to offer students a menu of different tasks with varying difficulty depending on students' learning potential, motivation, and knowledge level. This teaching adaptation is called *pedagogical differentiation* (Elstad, 2021).

According to Bjarnø et al. (2017), digital technology is an adequate tool for adapting education and differentiating the lesson content for students with varying needs and prerequisites. In an article, Lacina (2006) highlights different digital websites teachers can use to teach students reading comprehension. With the availability of the internet, one can easily search for websites that offer a variety of choices like oral narration, word pronunciation, animation, and visualization that fits students' varying needs. McGlynn- Stewart et al. (2018) studied the use of open-ended iPad applications that provide alternative visual and auditory tools for children who have special learning needs. They found that iPad apps effectively support literacy learning for children, particularly for children with special learning needs. It encouraged children to follow their interests and creativity and to collaborate with each other.

However, it is argued that the concept of adapted education is easier in theory than in practice. In a research study, Damsgaard and Eftedal (2015) found that several teachers consider adapted education a vague and theoretical concept that is difficult to translate into practical classroom reality. Large classes with students with different needs, teachers who are often alone in a class with many students, and the scarcity of resources in schools were described as obstacles in facilitating an adapted education. Hence, creating a gap between the theoretical intentions of the concept and its reality in classroom practice. Damsgaard and Eftedal (2015) add that to realize the goal of adaptive education, teachers need to manage to meet students where they are and facilitate what they can do to develop their competence based on their prerequisites and their level of mastery. At the same time, teachers should give students an experience of having control over their own learning and encouragement that what they do has purpose and meaning.

2.3 Didactics and technology

Historically, the term didactics comes from the ancient Greek word *didaskein*, which means "to teach, be a teacher, to educate" (Hillen et al., 2011, p. 10). Different definitions illustrate the different approaches to the field of didactics, and the understanding of the term has developed over time. Traditionally, the concept of didactics is generally limited to teaching and teacher's work. However, it does not give equal importance to other factors that revolve around teaching. One of the issues of traditional didactics is that it is difficult, if not impossible, to guarantee learning outcomes by solely focusing on teaching alone. Uljens (1997) points out that although institutional education is both an intentional and interactive process, it does not necessarily mean that it always leads to learning. Other important issues such as classroom management, teaching methods, pedagogical content, and the learners in a teaching situation are also essential elements of the teaching process. A concept called *Allgemeine didaktik* understands teaching as a meeting between the autonomous teacher, the autonomous student, and the teaching content (Hillen et al., 2011).

A contemporary understanding of didactics includes theoretical and practical teaching and learning aspects (Lyngsnes and Rismark, 2020). Hultman (2011), for example, refers to didactic as a *situated practice*. For Hultman, didactics is something practical, implying that as the situational approach becomes the focus, one would look more at teaching and learning as to how it actually looks in practice. He argues that didactic involves the contextual here-and-now aspects of teaching and learning and involves seeing teachers and students in actual situations in a classroom setting. Lodgaard et al. (2001) share the same thoughts about didactics. He points out that didactics focuses *not* only on theoretical concepts but also on the problems, challenges, and considerations one faces concerning the field of practice. Thus, as a teacher, one can plan the instruction by formulating learning goals and choosing working methods, content, and assessment forms while basing them on the students' learning needs. In modern-day teaching, didactic is still considered the fundamental aspect of the professional practice of school teachers. "In their day-to-day work, teachers refer to didactical knowledge and concepts that structure their teaching routines" (Hillen et al., 2011, p. 9).

The rapid growth of digital technologies in education has also become one of the inevitable challenges to contemporary didactics (Hillen et al., 2011). Similarly, Selwyn (2008, p. 2) writes that "within the general spectre of the knowledge society, the emergence of digital technology and increased digitization of everyday life is seen by many commentators as constituting a key

challenge and opportunity for didactics in contemporary society." Therefore, it is imperative that teachers critically reflect on digital technology's opportunities, possibilities, and challenges in teaching (Hillen et al., 2011). This suggests that teachers should possess a complex competence to integrate technology into their didactical practices. According to Bjarnø et al. (2017), teachers should be able to teach *with* technology, *about* technology, and *in* technology. Teaching *with* technology involves using digital tools and applications as an aid to learning other things. Teaching *about* technology concerns communicating to the student the social significance of technology, for example, in the daily interactions between the teachers and students. Finally, teaching *in* technology requires teachers to use digital tools and applications to facilitate the acquisition of students' digital skills (Bjarnø et al., 2017).

2.3.1 Professional digital competence

Erstad (2010) pointed out that although digital technology gives us new possibilities for communication, interaction, and knowledge development, the rapid growth of technology also presents several challenges in terms of the *competence* needed to handle the enormous access of information made available to us. In teacher education, Instefjord (2015, p.155) defined digital competence as the "knowledge, skills and attitudes required in order to use digital technology critically and reflectively in the process of building new knowledge." In the light of Instefjord's (2015) definition of digital competence, there is an unspoken pressure for teachers to adequately use digital technology and fill teaching and learning with didactical content that can lead to new learning.

One of the most popular frameworks describing the knowledge and competence teachers need to integrate technology into their teaching practice is TPaCK, or Technological Pedagogical and Content Knowledge (Mishra & Koehler, 2006). The TPaCK model was initially based on Lee Shulman's research on teachers' practice combining pedagogical skills and professional knowledge as one area of expertise (Shulman, 1986). It was later developed in 2006 when Mishra and Koehler (2006) added technological knowledge as the third domain. At its core, TPACK is a framework that explains the *relationship* between content knowledge (CK), pedagogical knowledge (PK), and (TK) technological knowledge (Koehler et al., 2007). "Effective technology integration for teaching subject matter requires knowledge not just of content, technology and pedagogy, but also of their relationship to each other" (Koehler et al., 2007, p. 740).

In Norway, several efforts were made to ensure that teachers have the necessary knowledge and competence in handling digital technology in the classroom. One of these efforts is the introduction of a framework called *professional digital competence for teachers* (PfDK) (Utdanningsdirektoratet, 2021b). This framework highlights teachers' critical and complex roles in developing their professional and practical competence, first in their initial teacher education and later, through the continuation of their professional education and development, during their teaching career and profession (Kelentrić et al., 2017).

The PfDK framework for teachers comprises seven competence areas; each describes the knowledge, skills and competence teachers need to integrate technology into their teaching practice (Kelentrić et al., 2017). I will not discuss each component in detail but will shortly describe some competence areas I see most relevant to the teachers' facilitation of learning work for adult participants with little or no schooling, namely, subjects and basic skills, pedagogy and subject didactics, leadership of learning processes and change and development.

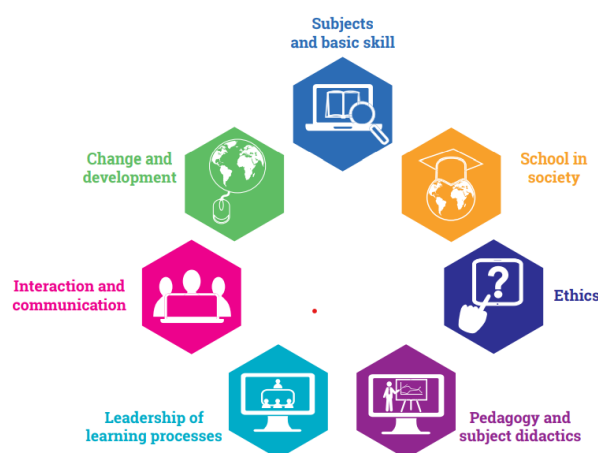


Figure 1: Visualisation of the Professional Digital Competence Framework for Teachers

The *subjects and basic skills* competence area describes how a professional, digitally competent teacher understands the process of incorporating digital resources and materials into learning processes to achieve the competence aims of the subject and support the development of the five basic skills (Kelentrić et al., 2017). The *pedagogy and subject didactics* emphasize how professional, competent teachers incorporate digital resources in their planning, organization,

implementation and evaluation of teaching to promote students learning and development (Kelentrić et al., 2017). The *leadership of learning processes* competence area highlights guiding learning work in a digital environment where teachers embody the opportunities inherent in digital resources to develop a constructive and inclusive learning environment and adapt the teaching to the diversity of student groups and their individual needs (Kelentrić et al., 2017). Finally, the *change and development* area describes teachers' competence in developing their own professional digital competence and how they can contribute and share knowledge and skills with students, colleagues and other teaching professionals (Kelentrić et al., 2017).

Taking the TPaCK and PfDK framework as a theoretical basis, teachers are provided with a guide on the complex competencies needed to adequately integrate digital technology into their teaching practice. The knowledge acquired from these frameworks will not only help teachers what to know and how they should teach their student groups but also provide guidance on how to use technology that fits the individual learners. The components of TPaCK and PfDK will also guide teachers in assessing the areas they have already mastered and those that need development.

As established in the earlier sections, the rapid development of digital technology places new demands on competencies needed to incorporate technology in teaching practice. Teachers are expected to update their knowledge continually and have a relevant knowledge repertoire. Båtnes (2015) points out the importance of nourishing one's personal knowledge and competence. According to Båtnes (2015), knowledge can be blurred, uncritical and ingenuous. It can lose its value and actuality if the person who owns it does not do something to maintain it. Båtnes (2015) argues that having an education does not guarantee that everything you have learned will stay relevant if you are not nourishing it. According to Båtnes (2015), nourishing knowledge does not only involve gaining new and fresh learning, but it is also all about carefully maintaining one's old knowledge and skills. Based on Båtnes's argument on strengthening and nourishing one's personal knowledge, we can argue that as digital technology rapidly develops, teachers should also put subsequent effort into acquiring, developing and sustaining their digital skills and competence.

2.4 Summary of the theories presented

In the previous sections, I had considered the background for choosing my research topic and accounted for the relevant literature and theory in answering my thesis problem. Knowles's (1970) theory of andragogy gives teachers insight into understanding how and why adults learn. Following an andragogical perspective, teachers are more likely to consider that adults have different experiences, motivations, and reasons for learning than children. Furthermore, the sociocultural learning theory of Vygotsky (1978) and Säljö (2001) accounts for learning that occurs in the social context and how physical or cognitive tools and artifacts mediate learning. By regularly determining students' actual development level and their zone of proximal development, it would be easier for teachers to plan a more targeted instruction for students with different needs and prerequisites. Similarly, teachers can facilitate various activities that encourage collaboration where a more competent person can support and scaffold for others.

The didactics theory emphasizes the relationship between the teacher, the subject content, and the learners. The didactical perspective underlines that teaching is not the only single element to consider in a classroom setting. Teachers should also focus on other essential factors, including the practical considerations and challenges in their field of practice. Because of technology's rapid development, teachers were given various didactical opportunities and challenges in handling digital technology, and they need to develop complex competencies to successfully incorporate technology in their teaching and learning practice. Conceptual frameworks like TPaCK and PfDK are examples of these competencies. Further, teachers are also expected to acquire, maintain and nourish their digital competence and skills to manage a technology-driven classroom.

3. RESEARCH METHODOLOGY

One of the most important practical considerations in social research is choosing a research strategy, design, or method tailored to the research question being investigated (Bryman, 2016). This chapter will explain the research methodology I used to collect and analyze the data material and why I view this method as the most suitable approach for my study on how teachers in VO facilitate learning work for adult participants with little or no schooling. Further, this chapter contains information on my data collection, such as information about my respondents, my role as a researcher, the transcription process, and the thematic analysis of data. Issues of validity, reliability and ethical considerations will also be highlighted in the latter part of this chapter.

3.1 Research strategy and theoretical positioning of the study

There are generally two types of research strategies, quantitative and qualitative (Bryman, 2016). While quantitative methods emphasize the prevalence and quantification of data, qualitative methods seek to go in depth and emphasize meanings (Thagaard, 2009). In this study, I am interested in the respondent teachers' experiences and reflections on their classroom practice, how digital technology impacts their teaching and learning approaches, and insight into the relationship between teachers and their participants. Based on the manner of data needed for this study, it was a suitable choice to adopt a qualitative approach to research.

Qualitative research has traditionally been an inductive approach, wherein the theoretical perspective is developed based on the analysis of data (Thagaard, 2009). However, Thagaard (2009) argued that a qualitative approach could also have a deductive character which means that research is centered on hypotheses from previous theories and is characterized by alternating between inductive and deductive phases. In working with this thesis, I have adopted a deductive-inductive approach, which means that I went back and forth between developing ideas from the overall theoretical perspective and the analysis of data.

3.1.1 Hermeneutics as the scientific theoretical basis of the study

Hermeneutics emphasizes the importance of interpreting people's actions by focusing on a deeper meaning content than what is immediately noticeable (Thagaard, 2009). It emphasizes

that there is no absolute truth and that a situation or an experience can be interpreted in several ways. Further, it brews on the principle that meaning can only be understood in the light of the context one studies (Thagaard, 2009). In working with the thesis data, I obtained an extensive description of the respondents' statements about their actions in the classroom, their interpretations of these actions, and the interpretations I drew from those statements. Therefore, interpretations that were drawn from the data are based on the meaning conveyed in the text, which provides me with an in-depth understanding of their experiences as teachers in VO. It is imperative to emphasize that this study aims to understand the individual teachers meaning in how they facilitate learning work for adult participants. I do *not* focus on finding one "right" way of facilitating or teaching participants. Instead, I am interested in interpreting and understanding the meaning of the respondent's answers and actions in the context of adult education and learning.

3.1.2 Research design and methods

Qualitative empirical research emphasizes data derived from key respondents' opinions, self-understanding, intentions, and attitudes and is often based on participatory observations, conversations, verbal expressions, and the dynamic interaction between the researcher and the respondents (Befring, 2007). In this study, I collected data materials by conducting qualitative, *semi-structured research interviews* and *observations*. While semi-structured interviews allowed me to reflect on the teacher's responses, for example, on their didactical practices and how they integrate digital technology in facilitating learning work for adult participants, observation gave me the opportunity to acquire knowledge through first-hand experiences on how these teaching practices and integration of technology actually worked in practice. According to Thagaard (2009), interviews and observation are good starting points for understanding how individuals *experience and reflect* on their situations and how people *relate* to each other in their natural environment. Thagaard (2009) also points out that interviews as a research method will provide the researcher with information about the person's experiences, views, and self-understanding, while observation is a well-suited method for obtaining information about people's behavior and how people relate to each other. A detailed description of how I collected data from interviews and observations is presented under section 3.2, data collection.

In addition to qualitative interviews and observation, I have also collected relevant information and literature from books and articles already available in the field. This method was used to acquire a specific overview of pertinent theory and knowledge that already exists. The literature search was mainly carried out through the University of Oslo search engine-Oria and other relevant government publications and websites.

3.2 Data collection

3.2.1 Research respondents

In qualitative research, researchers often select informants through strategic sampling, a qualitative method in which researchers choose respondents with the characteristics or the qualifications that are strategic to the research problem and its theoretical basis (Thagaard, 2009). To answer my thesis problem on how teachers in VO facilitate learning work using technology for adult participants with little or no school background, I selected my key respondents based on two categories: **1.** Respondents should be teachers in VO centers in Norway who teach primary education for adults or teachers who offers Norwegian courses to teach basic skills like reading and writing, and **2.** Respondents should use a form of digital tool/application in their teaching. To ensure that the selection of respondents is based on the above categories, I use *convenience sampling*- a form of strategic sampling where respondents represent characteristics relevant to the research problem at hand, and the procedure for selecting informants is centered upon the availability of the respondents (Thagaard, 2009).

My respondent's recruitment process started when I had the opportunity to join and was accepted into OXLO- mentor program in Oslo. The OXLO mentoring program is specially created for master's students with multicultural backgrounds and starts when students are in the last year of their studies. Its goal is to increase the recruitment of employees with multilateral backgrounds to management positions and positions requiring higher education (Oslo.kommune.no, n.d). The OXLO program provides master's students with a mentor who works in districts, agencies, companies, and city council departments with which the municipality owns or collaborates. The mentors will then provide professional and practical assistance to their mentees (master students). I was accepted into the program because the topic of my master thesis involves challenges and research questions that are of interest to the municipality. I first met with my mentor in October 2021, where I was introduced to VO and to two teachers who would later be my key respondents.

I knew that finding people willing to participate in the research study could be challenging, so I expected to generate a snowball sampling from the first teachers I contacted through the OXLO mentor program. Snowball sampling occurs when the first sample participants propose other participants relevant to the research project (Bryman, 2016; Hennink et al., 2020). Due to Covid- restrictions and the unpredictability of the pandemic, it was very demanding for the first respondents to suggest other teachers that could be relevant to my study. I emailed other adult education centers in the same municipality and neighboring municipalities to continue recruiting respondents. I luckily received an immediate response from some of these VO centers, while others were skeptical about joining the project. I continued communicating with the leaders of the interested schools and succeeded in finding six teachers from three different municipalities.

In retrospect, I am happy that the snowball sampling did not work out. Although it could have been a more straightforward process for me, I could also end up with respondents within the same network and environment, thus potentially limiting essential data from other VO. The local and county municipalities are responsible for the resources of individual adult education centers. Having key respondents from three municipalities gave me a more comprehensive view and understanding of the differences between these municipalities and how teachers use the digital resources available to them. In the end, I gathered two key respondents in the first municipality, three in the second, and one in the third municipality. Due to the scope and time issues of the study, I reason that it is sufficient to have six respondents so that enough time will be allocated for the data collection and analysis. The table below presents the pseudonyms of the study respondents and a general description of their teaching background and experience.

Table 1:

Description of the study respondents

Study Respondents	General description of teacher's teaching background and experience in VO
Agnes	Agnes has been teaching primary school for adults in one VO center for a couple of years. Before that, she spent many years teaching children. In VO, she mainly works for adult participants with little or no school background.
Nora	Nora has been a primary school teacher for adults for a couple of years and has always worked with students at the lowest levels- meaning, participants with no school background from their home countries. Before working in VO, Nora was a teacher for children for decades.

Linda	Linda has worked in VO for many years and taught Norwegian courses at different levels for adult participants with little or no school background. Linda also taught children for decades before she decided to work for an adult education center.
Camilla	Camilla has worked in VO for over a decade and is responsible for the Norwegian courses in the lowest levels or participants who cannot read or write in their own language. Like other respondents, Camilla had taught children in primary school for decades.
Katrine	Katrine has spent her entire professional career working in adult education and taught students Norwegian as a second language. She has worked in the current VO for a couple of years and teaches a Norwegian course for adult participants with little school background. Prior to teaching in VO, Katrine had decades of experience working in different adult centers in the country.
Julie	Julie has worked in VO as a teacher in Norwegian reading and writing courses for several years. Her participants are adult immigrants who had no or have minimal reading and writing skills. Julie had taught children in preschool and elementary school for many years before she started working in the adult education center.

3.2.2 Semi-structured interviews

In this study, I considered that one of the appropriate data collection methods to address my thesis problem is *semi-structured* qualitative interviews. The semi-structured qualitative interview is a method of data collection wherein the researcher has a list of questions to be covered, but the interviewee has a great deal of freedom to answer the questions directed to them (Bryman, 2016). The relatively unstructured nature of the semi-structured interview gave me insights into how teachers used digital technology as a learning tool and allowed me to gain information and data while imposing very few limitations on the response of the teachers I interviewed. Furthermore, conducting a semi-structured interview enabled me to maintain a certain openness while ensuring I received the necessary information from my key respondents. Semi-structured interviews also allowed me to ask questions not included in the interview guide, especially when I captured answers that can be helpful in-depth. Because the interviews were semi-structured, it allowed for spontaneity, facilitating accurate descriptions of the individual teacher's experiences.

To get a richer dataset, I interviewed teachers in VO from three municipalities with years of experience teaching adult immigrants with little or no school background. Interviewing teachers from different municipalities gave a more nuanced picture, especially on the differences in the access to resources that could be important to teachers' didactical approaches and attitude to

digital technology, contributing to more insight and understanding of my thesis problem. Moreover, I interviewed teachers with varied age ranges and teaching experience to investigate how teachers in VO differ in facilitating learning work with digital technology in the classroom, the challenges they face, the digital tools they utilize, and the didactical approaches they follow.

My data collection was orchestrated in two separate ways. First, I conducted a one-on-one semi-structured interview with all of my respondents. According to Ryan et al. (2009), a one-to-one interview allows the interviewer to elucidate non-verbal cues through observation of body language, facial expression, or eye contact, which can help intensify the researcher's understanding of what is being said. I chose individual interviews because I was interested in the teacher's personal reflections and experiences in answering questions, such as how they use digital technology in scaffolding and the importance of their digital competence in teaching immigrants with limited language and digital skills. Interviewing them individually made it easier for me to ask follow-up questions for more detail and accuracy.

Although group interviews could allow me to elicit various opinions from other respondents, it could also limit the respondents' answers because not everyone is comfortable sharing their thoughts and perspectives with others, especially to questions that may seem personal (Bryman, 2016). Furthermore, my respondents had various teaching hours and worked from different municipalities, making a group interview very time demanding. At the time of my data collection, there were still local covid restrictions we had to follow, thus creating a group interview problematic.

The individual interviews lasted between 45 and 90 minutes each. Before the interview, I prepared an interview guide that I used to guide the conversation on relevant topics of my study. I began with comprehensive questions before narrowing them down to more specific follow-up questions. The questions on the interview guide were not asked in the same order in all of the interviews as I considered what can come naturally along the way and built further on what the interviewees answered. With the support of the interview guide, some questions were repeated to look into the same areas of the other individual interviews. The goal was not to lead the interview discussion but to gain consistent insight and a common thread throughout the interviews.

I planned to conduct all six face-to-face interviews, but because of the restrictions brought by the Covid-19-pandemic, I had to organize two digital interviews via the Zoom platform. Based on Archibald et al. (2019), Zoom is highly satisfactory and predominantly rated as a good

alternative in collecting qualitative data because it is relatively easy to use, cost-effective, and has data management features and security options. Although this was the first time I conducted a digital interview via Zoom, I was remarkably familiar with its features because it was the digital platform we used in all of our digital seminars and lectures at the university. Like all the other interviews, I also used the diktafon app to record the digital interviews instead of the Zoom recording feature to ensure data security.

The limitations I experienced with the digital interviews were the reduced quality of my recordings and the limited access to other observational movements such as body language, facial expression, and eye contact. I only saw their faces, focusing more on what they had to say than their facial expressions. The quality of my audio recording was also significantly better during the face-to-face interview compared to the digital interview recordings. However, I saved ample time in the digital interviews because I did not have to travel far and instead used the time to prepare for the interviews

3.2.3 Observation

The second part of my data collection consists of observations in each respondent's class. "Observation is a research method that enables researchers to systematically observe and record people's behaviors, actions and interactions" (Hennink et al., 2020, p. 170). According to Hennink et al. (2020), researchers use observation to obtain a detailed description and understanding of people's behavior within their social setting. As an ethnographic method, Baker (2006) describes observation as a complex method that allows researchers to study people in their natural environment. Thus, it often requires the researcher to play several roles and use various techniques to collect data. Furthermore, observation involves selection where the researcher can ultimately decide the extent of their participation and which situations they will focus on during the fieldwork (Thagaard, 2009). In addition, Thagaard (2009) points out that the thesis problem should determine which relevant topics to focus on during the observation.

Because of the restrictions brought by the corona situation in Norway, I was not sure if conducting a class observation would be possible. After the individual interviews, I was lucky that many restrictions were lifted, giving me the green light to push through the observation. In total, I had 12.5 observation hours with my respondents. These observations lasted a minimum

of one and a half hours and a maximum of four hours. Table 2 summarizes the type of interview and the duration of the data collection on each of the respondents' classes.

Table 2:

Type of interviews and duration of the data collection

Key respondents	Type of Interview	Duration of the interview	Duration of observation
Agnes	Face-to-face interview	45 minutes	2 hours
Nora	Face-to-face interview	45 minutes	2 hours
Linda	Face-to-face interview	1 hour and 10 minutes	1.5 hours
Camilla	Face-to-face interview	1 hour and 10 minutes	1.5 hours
Katrine	Digital interview	1 hour	1.5 hours
Julie	Digital interview	1.5 hours	4 hours

It was a conscious choice to begin my data collection with semi-structured interviews before proceeding with the classroom observations. This method made me aware of what I am looking for in the field and what I am interested in, and it gave me a more precise focus and goal after the individual interviews. For example, through the teachers' responses in the interviews, I gathered initial data on how digital technology was used as a scaffolding tool in the classroom. During my observation, I then had the opportunity to look into how teachers execute these scaffolding practices using digital resources in a classroom scenario.

3.2.4 Fieldnotes from the observation

Another critical part of the observation concerns the use and handling of field notes. According to Silverman (2017), field notes are necessary to understand the field one wishes to investigate. He points out that the way the researcher registers data is of great importance because it is directly related to the quality of the data analysis. Bryman (2016) argues that because of the infirmity of human memory, researchers should write detailed summaries or notes of events

and behaviors. Using field notes, researchers can register their initial reflections on the field and identify critical aspects of what they observed or heard (Bryman, 2016). However, Hammersley and Atkinson (2004) point out that taking field notes is an integral part of the research process and should be carried out with accuracy and attention to detail. They add that writing field notes require constant assessment of the purpose and priorities and the advantages and disadvantages of different strategies.

In this study, I prepared an observation form beforehand to guide the aspects I wanted to observe in the classroom. Examples of these aspects include how digital technology was used to ensure adapted training for all the participants, the relationship between teachers and adult learners, teachers' leadership in the classroom, etc. I actively wrote brief notes using the observation form and wrote a full version of field notes containing data about my respondents, events and situations, and information about topics or problems after each interview. Writing a full fieldnote after each interview gave me a fresher memory of the observation period, and it was easier to remember my initial interpretations and impressions.

3.2.5 My role as a researcher

Hammersley and Atkinson (2007) point out that there are several roles the researcher can choose to take on in the field, and all have their advantages and disadvantages, opportunities and dangers. In this study, I decided to undertake a role and participate in the observation as a *partially participating observer* (Bryman, 2016; Fangen, 2004). According to Bryman (2016), a partially participating observer is an excellent method to combine with other data collection methods, for example, interviews. Fangen (2004) underlines that a partially participating observer is the most common research role one can have in the fieldwork. It involves researchers participating in the social interaction but not in the environment-specific activities. The ideal situation for this research role is that the researcher's presence should not be a nuisance to the participants.

Before starting each observation in my study, I made sure that I discussed and asked all of the teachers what role they wanted me to undertake in the observation period. This is to ensure that my presence is comfortable and not intrusive for teachers and participants in the classroom environment. Furthermore, I made sure that they knew the purpose of my research and that my presence was not to evaluate their performances as a teacher. Fangen (2004) points out that as

a researcher, one must assess whether your role as an observer in the field has consequences for those you study. To lessen the possible effect of my presence in the classroom, I made sure that my role as an observer was in line with what was previously agreed with the teachers.

In the first municipality with Agnes and Nora, I had the opportunity to initially observed their class the day my OXLO-mentor introduced me to the Leap Learning room/lab. Leap Learning is a new and innovative method combining digital technology with hands-on materials found in a Leap Learning room (leaplearning.no, 2020). This learning technology was mainly designed for children but was later adopted by some adult education centers in Norway, especially those offering language training for participants with little or no school background. Because of the initial meeting, I had the unique opportunity to interact with teachers and participants, giving me an initial idea of what to expect in the official Leap Learning room observation period.

During the Leap Learning room observation, Agnes and Nora wanted me to interact with adult participants to see and understand the participant's language and digital skill levels. Further, I had the opportunity to observe how participants utilized hands-on materials and digital tools and how they comprehended and understood the teacher's instruction. In the same manner, I observed how the teachers communicated and helped individual participants and became aware of the teaching approaches they mentioned during the interviews.

The two first teachers in the second municipality, Camilla and Linda, wanted me to start the observation as a quiet observer in the classroom. I took this opportunity to write short notes in my observation form and observe, for instance, how teachers use their digital competence and skills in teaching adult immigrants. As I did in the first municipality, I was allowed to roam around the classroom and observe how the students used digital tools to learn how to read and write. I closely watched how teachers interacted and guided their participants in reading, writing, speaking, and using digital tools. The third teacher, Katrine, wanted me to take on a role of a quiet observer in class. I was introduced initially, but I was a passive observer throughout the entire observation.

This role is similar to what I had in Julie's class in municipality three. I had minimal interaction with the students but had adequate time to observe the interaction between Julie and her student participants. Because of this, I wrote a much more detailed observation than I did with the previous municipalities. It was also significantly easy for me to notice non-verbal reactions from both the teacher and their participants because I did not have to use time roaming around.

Further, it was relatively more straightforward for me to write a full version of the field notes because of a detailed observation gathered from the class. On the other hand, quietly observing the class reduced my opportunity to look closely into the participants' varying digital skills and how teachers dealt with these differences.

I had the opportunity to take on an active role in the first four observations. As I roamed to see if participants understood teachers' instructions and looked closely at how they use digital tools, participants quickly assumed that my role in the classroom was "*like that of the teacher*." They actively asked me for help, assistance, and confirmation if they had done the exercises correctly. By taking on this role, I had a unique experience of being "a teacher," taking the teacher's perspective on facilitating and guiding adult participants with minimal language skills. In the last two observations, where I passively sat down and observed from one of the participants' desks, I had an excellent opportunity to experience how to be "a participant" and understand from the participants' point of view. Although all teacher respondents did not have any issues regarding my presence in the classroom, it is imperative to consider the possible impact of my presence on, for example, the teacher's interaction with the student and their use of digital technology.

3.2.6 Transcription of the interviews

In qualitative research, researchers are often interested in what people say and how they say it (Bryman, 2016). It is, therefore, necessary to have a complete account of the series of exchanges between the researcher and the respondents through transcribing data from interviews. Bryman (2016) adds that by transcribing the interviews, researchers can thoroughly examine the interview data, allowing a repeated analysis of the respondent's answers.

I initially transcribed my interviews using Word 360- automatic transcribe before manually checking all the transcriptions carefully to ensure that the written text reproduced what the interviewee said word-for-word. Transcribing the interviews word-for-word made it easier for me to discover parts of the interview that were unclear in the audio recording. As I manually checked the transcription, it brought me closer to the data, thus making me aware of the similarities and differences in the participant's answers to the questions. Further, it helped me identify critical themes that were helpful in my data analysis.

The transcription process was a lengthy and time-consuming task. To remember each interview with fresh impressions of the interview situation, I consciously chose to transcribe the interview continuously after they were completed. Personal notes of my experiences and other information about each interview were also written separately. The sound quality of the physical interviews was good, but it took me a little longer to transcribe the digital interviews due to some connection problems and unclear wordings. These challenges were resolved by listening to the interviews multiple times.

3.2.7 Data analysis

In research, there are different methods and ways to analyze data. Based on the data collected from interviews and observation, I conducted a thematic analysis to highlight themes, patterns, and commonalities of the teacher's responses about their experience facilitating learning work for adult participants with little or no school background. "Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 79). Doing thematic analysis in research involves reading the data several times to become better acquainted with the data and establish a link between theory and empirical data. According to Braun and Clarke (2006), data analysis is a recursive rather than a linear process. It is recursive because the researcher needs to go back and forth throughout the phases of data analysis.

I followed Braun and Clarke's (2006) six phases of thematic analysis; familiarization of the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. I began *familiarizing* my research data by going through the time-consuming task of transcribing data from interviews. Through this process, I had the unique opportunity to acquaint myself and generate an initial list of ideas about what is interesting in relation to my thesis problem. According to Braun and Clarke (2006), transcribing your data will help the researcher develop a more thorough understanding of the data and inform the early stages of analysis.

I then printed out all transcripts, started the data analysis by reading the transcripts line-by-line, and began manually generating initial codes for the different topics of the data. I did this by writing notes on the other side of the printed transcripts and using post-it notes and highlighters to indicate potential patterns across data. I continued the data analysis by *searching for themes* based on the initially generated codes. This was an exciting phase because I began to see the

relationship between codes and analyzed if they could be combined to form a theme. In this phase, I started listing themes in the Microsoft word table because of the overwhelming amounts of codes generated in my printed data. I made sure to label the table with the respondents' names and write the page number on which the themes and codes are located. This way, analyzing both my printed and my manual data was more straightforward.

Using the Microsoft word table, I *reviewed the themes* from the initial set of themes that I accumulated. This phase involved coming back and forth to my printed data, ensuring that the theme I had listed had enough data to support them. This was also a very time-consuming process because this involved rereading the data set and examining if my collected extracts for the theme formed a coherent pattern. To continue my data analysis, I started *naming and defining the themes* I had collected by writing a description of the content of each theme. Out of preference, I visualize this phase by making a map using post-its notes containing the themes' names and descriptions. Through this phase, I identified the essence of each theme that was relevant to my thesis problem. Finally, I *produce the result* of the thematic analysis, which will be presented in chapters four and five: presentation of the results from data analysis and discussion parts 1 and 2.

However, It is imperative to highlight that I am not an expert in thematic analysis. I may have missed essential codes and themes that may also be vital in answering my research questions. By following the six phases of thematic analysis, it is possible that I unconsciously used more time on one chunk of data over the other without realizing its overall effect on answering my thesis problem.

3.3 Trustworthiness and quality of the research

As in any research, the issues of validity and reliability are something the researcher needs to address. In qualitative research, however, validity and reliability are often criticized because it presupposes the idea that there is an absolute truth about the social world and that it is the researcher's job to reveal them (Bryman, 2016). Lincoln and Guba (1985) are among those who are critical in applying the concept of validity and reliability in qualitative research. They introduced an alternative concept called *trustworthiness*, or the truth value of qualitative data, analysis, and interpretations (Lincoln & Guba, 1985). The authors outlined four criteria necessary to pursue a trustworthy study: credibility, transferability, dependability, and confirmability. These four criteria work as a parallel perspective with analog to quantitative

standards, where credibility is an analog for internal validity, transferability for external validity, dependability for reliability, and confirmability as an analog for objectivity (Shenton, 2004). Using these criteria, I will describe how I considered validity and reliability in my study.

Credibility refers to confidence that the data and its interpretations are truthful and that the study is carried out to enhance the believability of the findings (Lincoln & Guba, 1985). It is often understood as the internal validity in quantitative research. There are several strategies qualitative researchers can use to ensure a study's credibility; one of the most effective is *triangulation*. Triangulation refers to combining more than one method or source of data to cross-check the findings of the phenomenon being studied (Bryman, 2016; Fangen, 2004).

By conducting semi-structured interviews, I had the opportunity to ask respondents in-depth questions, such as their individual teaching experiences and their utilization of technology in the classroom, providing me with a more detailed and personal answer. Conversely, the data from observation allowed me to confirm and comprehend what the teachers were talking about during the interviews. I was able to examine how the classroom environment worked in practice and how the teachers and participants interacted with each other. The data from the observations were significant for validating and cross-checking the data from the semi-structured interviews and vice versa (Fangen, 2004).

Taking different roles in the observation provided me with more comprehensive and holistic data on the respondents' perspectives on the topic. For example, when adult participants viewed my presence as an extra teacher, It helped me understand the *teacher's perspective* in the classroom practice. However, quietly sitting at a participant's desk helped me understand the *participant's perspective* of the learning process. Another kind of triangulation may involve using a wide range of informants, also known as triangulating via data sources (Shenton, 2004). By acquiring respondents from different municipalities with extensive teaching experiences, I was able to verify individual viewpoints and experiences against each other and, ultimately, obtained a more holistic view of teachers' perspectives and approaches to teaching adult immigrants with limited language and digital skills.

According to Lincoln and Guba (1985), *transferability* is another essential criterion for a trustworthy study. In qualitative studies, research findings usually involve a small number of respondents from a small portion of a group, culture, or population, making it very difficult to apply the results and conclusion to other situations and settings (Bryman, 2016). This is why external validity in qualitative research is a questionable concept. Lincoln and Guba (1985)

argue that researchers could carefully describe the context of the phenomenon by producing a rich account of the details of the studied environment (also called thick description) to increase transferability. Although it is challenging to transfer or generalize the study findings into other VO centers based only on the teachers who participated in the interviews and observation, the nature of the data collection, the thematic analysis, and the study findings generate a thick description of the study context. These thick descriptions could provide data and evidence for other researchers to help them make judgments on the possibility of transferring the findings to other settings.

Shenton (2004) presented additional information that the researchers can use to address the transferability issue in their qualitative inquiries; a) the number of organizations taking part in the study, b) restrictions on the type of people who contributed data; c) the number of participants involved in the fieldwork; d) the data collection methods that were utilized; e) the number and length of the data collection and f) the period over which the data was collected. Taking the ideas of Shenton (2004) into consideration, I have provided transparent data about the municipalities that joined the study, along with the particulars of the six respondents (for example, educational background and teaching experiences). I also made a table containing the type of collection methods and the duration of both interviews and observation.

Another criterion of trustworthiness is *dependability*, a parallel concept to reliability in quantitative research (Lincoln & Guba, 1985). To achieve dependability, researchers should ensure that data is subjected to the auditing process to establish the merit of trustworthiness (Tobin & Begley, 2004). In practice, this means that the researcher keeps an audit trail and ensures a complete record of all the phases of the research process, from problem formulation to data analysis (Tobin & Begley, 2004). To address the dependability issue more directly, Shenton (2004) emphasizes that the processes in the study should be reported in detail, thereby enabling a future researcher to replicate the study. Since the beginning of this study, I kept notes of the different stages of my research, for example, by writing logs of the meetings I had with my OXLO-mentor and writing the experiences I had right after each interview. Moreover, field notes were also written during and after each observation session, including a detailed description of my respondents, their relevant educational backgrounds, and their experiences teaching adult participants with no or limited school backgrounds.

The concept of *confirmability* is the qualitative researcher's similar concern to objectivity (Shenton, 2004). To establish confirmability, the research findings must result from the respondents' experiences and ideas rather than the researcher's characteristics and preferences

(Shenton, 2004). To ensure confirmability and objectivity in this study, I asked interview questions based on the interview guide, allowing key respondents to answer questions relevant to my research topic. As the interviewer, I asked open questions, consciously avoiding inquiries that may influence the respondents' answers. It was also a deliberate decision *not* to give the interview questions to the respondents ahead of time. This guaranteed that the answers they provided were not practiced, which decreased biased and dishonest responses from the respondents.

In the events where interview answers were unclear (for example, when respondents mentioned a digital app that I am not familiar with), I made sure to ask respondents what it is and let them explain how they use this digital app or tools in the classroom. In addition, I utilized tape recordings throughout the interview to ensure that the respondent's statements came correctly during the transcript and thus in the data analysis. According to Thagaard (2009), audio recordings from interviews provide a basis for developing data that are, in principle, more independent of the researcher's perception. It should also be noted that although I was alone in working on this thesis, I had a supervisor (veileder) who had contributed to a critical evaluation of the research approaches, which I believe strengthens the confirmability of the study.

3.3.1 Ethical considerations

According to Bryman (2016), ethical issues in research cannot be disregarded because they relate directly to the study's integrity and the disciplines involved. A primary rule in research ethics involves providing information and obtaining consent from everyone who participates in a study (NESH, 2021). Similarly, Hammersley and Atkinson (2004) argued that the people to be studied should receive comprehensive and accurate information about the research and give their unreserved consent before data collection could occur.

In this study, the provision of informed consent was considered through the consent form I sent to the respondents before the interviews. The letter contained information about the thesis, how I would safeguard their anonymity as a master's student, and how data will be correctly stored. Further, the consent letter also contained information that participation in the project was *voluntary* and that the respondents could withdraw from the research study anytime without having to justify their choice and without worrying that it may have negative consequences on them. On the day of the interviews, the consent form was handed out in written text for the

participants to sign. Oral repetition of the consent form was provided, emphasizing my responsibility to anonymity and data protection.

The Norwegian Centre for Research Data has given ethical clearance to this study (see appendix 1). This research does not investigate sensitive personal information or reveal personal details that can be used to identify the research respondents. The principle of confidentiality pertains to the informant's right to protect his/her privacy (Hammersley & Atkinson, 2007). In working with this thesis, the respondent's right to privacy was safeguarded by making sure that the writings were designed so that the informant's identity was obscured for the readers. Furthermore, I have transcribed all the interviews and executed scripts without using the respondents' dialects, mainly because I have thesis respondents who work at the same adult education center. All of the respondent's identities were, therefore, kept anonymous, and the information was stored according to the University of Oslo's framework for safe data storage. It is also important to underline that the matter of interest in this research is not the individual persons but their point of view about the thesis problem. In the analysis, anonymity is assured by coding the names of participants and their municipalities.

3.3.2 Limitations of the study

Although I had triangulated two research methods of interviews and observation and obtained respondents from three different municipalities, my sample size is small, consisting only of six teacher respondents. With a small sample size and the qualitative nature of the data, caution must be applied as to what interferences and interpretations are possible to take from this study. It is also crucial to emphasize that this study is not meant to be a "recipe for success" for teachers on how they can successfully facilitate the learning work using digital technology for adult participants with little or no school background. Instead, this study can be a good starting point for new knowledge or serve as an addition to other research focusing on the same issues from different angles.

3.4 Summary of the methodology chapter

In this chapter, I presented that a qualitative approach to research is the adequate research strategy for my study on how teachers in VO facilitate learning work with digital technology for adult participants with little or no school background. I utilized two qualitative methods to

collect data, semi-structured interviews and observation. I started my data collection with semi-structured interviews where I interviewed six teachers in VO in three different municipalities. Four interviews were conducted face-to-face, and two were administered through the digital platform Zoom. While semi-structured interviews provided me with data based on teachers' personal experiences about facilitating learning work for adult participants using digital technology, observation gave me a unique opportunity to observe and record their behaviors, actions, and interaction in the classroom.

After data collection, I manually transcribed my data, which gave me the unique opportunity to become familiar with the teachers' responses before starting my data analysis. Based on the data collected, I used thematic analysis (TA) as a method for analysis and followed Braun and Clarke's (2006) six phases of TA. These phases served as my guide, from data familiarization to generating and searching codes and themes. With hermeneutics as the scientific theoretical basis of the study, interpretation of meanings was drawn from the data gathered in interviews and observations.

I consider the reliability and validity of this study by applying the concept of trustworthiness in the light of four criteria: credibility, transferability, dependability, and confirmability. I used triangulation, provided a thick description, made an audit trail of the study process, and safeguarded objectivity to address the issues of validity and reliability. Ethical factors were considered by ensuring that all guidelines from NSD were followed. Respondents signed the consent form, which contained important information about their anonymity, confidentiality, and how data are safely stored. To protect the respondents' identities, I used pseudonyms for their names and ensured that I did not reveal personal details that could disclose personal information.

4. PRESENTATION OF THE RESULTS FROM DATA ANALYSIS AND DISCUSSION PART 1

This study aims to examine how teachers in VO facilitate learning work using digital technology for adult participants with little or no formal school background. The presentation of the result has been divided into chapters four and five. In these two chapters, the findings of the study based on the thematic analysis conducted from interviews and observation with corresponding analysis and discussions will be reported. To accentuate the findings, I used direct quotations from the teachers' answers but omitted unnecessary sounds and incomplete sentences in the text to make quotes more accessible and precise for the reader. However, it does not change nor affect the meaning of the citations. The total amount and richness of data from the interviews and observation were quite overwhelming; therefore, only feedback that was found to be the most useful to consider and apply based on the study's thesis problem were included.

This chapter contains two sections. Section 4.1 includes the findings related to the teachers' facilitation of knowing their participants based on their experiences, needs and other prerequisites. Section 4.2 presents the various teaching strategies found in the data analysis, such as active use of the participants' mother tongue, repetition and variation, active participation, and learning how to learn. I present the findings of each teaching strategy, followed by corresponding analysis and discussions. This chapter will attempt to answer the first research question:

What factors do the teachers in VO need to consider in facilitating learning work with digital technology for adult participants with little or no school background?

4.1 Teachers' facilitation in knowing their participants

When teacher respondents were asked which approaches they used to facilitate learning work for participants with little or no school experience from their home country, teachers often indicated that they typically begin by asking questions about their participants' lives.

Nora answered that she uses a form of "life CV" to get to know her participants better. She added that whenever she had a new participant in class, she sat down with them and asked them questions about their lives before arriving in Norway. Where were you born? Where did you

live before coming to Norway? Do you have a family? Did you go to school? How old were you when you started schooling? These simple questions were, according to Nora, beneficial to know the participants on a deeper level, as well as to inform which teaching methods should be adopted best to fit the needs and skills of the individual participants.

Like Nora, Camilla highlighted the importance of knowing who the participants are and what knowledge and experience they bring to the class. She emphasized that, as teachers, one should focus on what the participant can do and *not* on what they cannot do:

[...] it's about trying to find out who they are! What have they done before? So even if they cannot speak Norwegian, we have something. I know something about who they are, and then it's about communicating in a language [...] we do not have a common language, but I still try to communicate what is relevant and essential to them as early as possible. You can convey some things even if you have limited language skills.

Similarly, Julie explained that she invested a lot of time and effort in getting to know her participants at the beginning of the course and emphasized the importance of considering the participants' experiences prior to arriving in Norway. She also underscored the vitality of building trust in the classroom:

I often spend a lot of time starting a course and getting to know my students, and then, of course, we have to build trust because when they come here, they don't know anything about Norway [...], it is essential that my teaching is related to their experiences and relevant challenges they have in everyday life [...].

For example, Agnes described how she frequently started her class with a music video connected to the Smartboard. She added that she used music related to the specific topic for that day or period and claimed that music helped set the class's mood and helped participants relax, calm down, and then gather attention to what was happening in the classroom. Katrine, in her interview, also explained the importance of creating a safe environment and ensuring that the participants know that they are capable of mastering something. She explained that, as a teacher,

one would eventually learn more about their participants, and it would be easier to know their actual knowledge and varying language and digital skills.

Linda underlined significant differences between younger participants compared to older ones regarding participants' actual knowledge of using digital tools. She claimed that younger participants (age 16 plus) were familiar with smartphone usage, making it easier for them to learn other digital functions, such as Google Translate, to translate a Norwegian word into their own language. Conversely, Linda described that some older participants had never experienced using digital tools, making it extremely difficult to adapt to a digitalized society like Norway:

[...] everything is digitalized in Norway. We have come a long way compared to many countries, and it can be good for many, but for our level 1 participants, it can present quite a lot of problems. Just using the Ruter app. It is very, very difficult [...].

Camilla and Katrine also mentioned that older participants could have health issues like headaches, poor eyesight, and hearing problems, leading to challenges in learning basic reading, writing, and digital skills. For example, Camilla explained that participants with poor eyesight and hearing problems would find using an iPad very challenging. Thus, as a teacher, one must consider participants' needs and health prerequisites.

Camilla presented a concise description of factors that have great significance in teachers' facilitation of learning work in the classroom:

I need to know when I get them into class. Have you gone to school, or have you not? Have you learned another language or not? [...] but adapting training to this group is about much more. Health? great significance! Experiences, trauma, great significance! Age? Huge significance [...], the family situation here in Norway, very important! Do you have your family here, or not? Do you expect to get your family here? Great significance!

To summarize, teacher respondents described adult participants with little or no school background as participants with a wide range of experiences. They have different language and

digital skills and have additional learning prerequisites. Because of these, the teachers pointed out the importance of knowing their participants by asking questions about their lives, creating a safe environment, and letting them know that they are capable of mastering something.

Discussion

The findings from the study revealed that when adult participants with little or no school background are concerned, it is not enough to facilitate learning work based only on their varying school backgrounds and different language and digital skills. An equally important factor to consider is that they are adults with different experiences, needs, and learning prerequisites, including age differences, health issues, and life situations that could impact their learning.

Adults learn differently than children. This is the primary argument of adult learning theories, primarily Malcolm Knowles's andragogical theory of adult learning (Knowles et al., 2005). Knowles et al. (2005) argue that adults enter an educational institution with greater volume and a different quality of experience than children. By having lived longer, adults have accumulated more knowledge and experiences. They write, "any group of adults will be more heterogeneous in terms of background, learning style, motivation, needs, interest and goals than is true for a group of youths" (Knowles et al., 2005, p.66). As a result, adult education should emphasize individualization of teaching and learning strategies and techniques that tap into the learners' experiences, such as group discussions and other peer-helping activities (Knowles et al., 2005).

In the same way, Lodgaard et al. (2001) point out that, through adult experiences, educators can find factors that either inhibit or promote learning. They argue that teaching and learning should be related to the learner's experiences because it serves as a starting point for a meaningful learning situation. The teachers' way of knowing their participants through a life CV or asking questions about their situations before coming to Norway are examples of approaches and strategies that provide teachers with a unique opportunity to know about them and their actual knowledge. Ryen & Selj (2008) support the same argument and point out that teachers should have a particular insight into the student's experience, background, and prior knowledge and link teaching materials to what the student already knows. With the teachers' efforts to understand their participants' experiences and learning prerequisites, it could be easier for teachers to learn about their actual knowledge. Following a constructivist perspective on learning, Øzerk (2019) also argues that, in creating school-based learning for minority language

learners, it is vital for teachers to base their teaching on students' experience and prior knowledge. In practice, this means facilitating teaching and learning that builds on what the students already know and what they should learn in the subject.

Linking teaching materials to what the student already knows is complimentary to Vygotsky's ideas on the actual development level. Vygotsky (1978) argues that educators should determine the actual development level of the individual to know what they can do alone *without* the help of more competent others, leaning only on the knowledge and skills they have accumulated from earlier experiences and education. Once the actual development level is determined, it will be easier for educators to decide which areas participants need help in and how teachers can facilitate effective learning work for participants.

Based on the adult participants' varying language and digital skills, we can assume that taking their actual development level was a continuous task they must undertake in the classroom. By continuously considering participants' actual development levels, teachers could also determine what participants could potentially achieve with the help and support of teachers and their fellow participants. This is the central idea of Vygotsky's (1978) *zone of proximal development*. Determining individuals' ZPD is beneficial for teachers to properly facilitate scaffolding activities for the learners. According to Erstad (2010), the learner's mastery at one level presupposes that the teacher can foster a learning environment that would provide students with challenges that take them to new levels in the development process.

However, based on the teachers' description that some adult participants have significantly minimal Norwegian reading, writing, and oral skills, I argue that understanding the participants' experiences and actual knowledge is *not* a straightforward process for teachers in VO. Achieving this would require a constant teacher-participant dialog and the students' willingness to share their experiences, especially on difficult topics such as family situations, health issues, etc. On the other hand, it is also essential to ask questions about whether teachers have enough multicultural competence to understand the complexity of the participants' experiences and challenges before they begin their adult education journey. In a Norwegian study on adult education, Dæhlen et al. (2013) found that although approximately nine out of ten teachers in adult education have an approved educational background, relatively few teachers have academic backgrounds in adult pedagogy, multicultural pedagogy and Norwegian as a second language.

The findings from my analysis also showed that facilitating learning work for adult participants with little or no school background should be carried out in parallel to creating a safe learning environment and building trust in the classroom. Creating a safe learning environment and building trust is similar to what Lodgaard et al. (2001)

describes as creating a learning climate that minimizes the feeling of fearlessness and fear so that adult participants with minimal schooling can gradually build up their self-image to learning. Students' learning ability is, according to Prashanti and Ramnarayan (2020, p.550), "deeply influenced by the safety and comfort of the learning environment..." They argue that the most crucial aspect of creating a safe and positive environment for learning is the relationship between students and teachers. Prashanti and Ramnarayan (2020) suggest ways for teachers to create a safe learning environment for their students, such as being approachable and patient, establishing open communication, building mutual trust, providing positive feedback, and showing respect to the student's views and thoughts.

Similarly, I noticed the same learning environment and participant-teacher relationship that Prashanti and Ramnarayan (2020) described in their study. During my classroom observations in VO, I observed that the class environment was characterized by open communication, whereby teachers offered constructive feedback and were patient with the participants' differing learning needs. For example, teachers were patient in listening to what participants had to say even if it took some time because of their minimal Norwegian skills to communicate. However, it is worth mentioning that my class observations were short, and I am aware that I cannot draw general conclusions about the classroom environment based only on those observations.

To summarize, the need for variation in participants learning needs and individual assessment is not entirely because of their varying educational backgrounds but also due to other factors like age, health, and experiences. A group or class could consist of people of different ages and life experiences. Whilst younger people can acquire language and digital skills faster, older people could possess additional health issues and have negative experiences from their previous schooling and learning situations that are entirely different from what is known to the teacher. All respondents agreed that these are other equally important factors that should be considered before they could adequately differentiate, support and adapt training that caters to the individual participants.

Taking the andragogical view of adult education, I argue that the teachers in this study were consciously aware that their participants, despite their lack of reading, writing, and digital skills,

are adult people with different prerequisites, life situations, experiences and orientation to learning. The teachers' ways of knowing their participants' actual development level through life CVs, start packages and their continuous effort to learn more about their participants are examples of classroom practices that coincide with andragogical or adult pedagogical thinking on education. Facilitating teaching instruction that adapts to the diversity of the student group regardless of their cognitive level, gender, ethnicity, and disability is also the primary goal of adapted education in Norway (Fasting, 2013).

4.2. Teaching strategies in the classroom

In the data collection, I asked the teacher respondents about teaching strategies that they found helpful in their learning work with adult participants and how digital technology impacted these strategies. The most common teaching strategies found in the data analysis were as follows; active use of the participant's mother tongue, repetition and variation, active participation, and learning how to learn. I will first present the results based on the teachers' answers to each teaching strategy, followed by corresponding discussions.

4.2.1 Active use of participants' mother tongue

One of the teaching strategies that shined through in the data analysis involves *actively using the participants' mother tongues*. Linda mentioned the term translanguaging to illustrate the idea of setting together participants with the same language group. By definition, translanguaging or pedagogical translanguaging refers to the "theoretical and instructional approach that aims at improving language and content competences in school contexts by using resources from the learner's whole linguistic repertoire" (Cenoz & Gorter, 2021, p. 1). However, using translanguaging with participants with minimal or no school background is a more straightforward concept. It involves arranging a language group together to help and support each other using their native language.

In Julie's class, she had strategically placed adult participants who speak the same language next to each other. This is made visible by putting nametags and country flags to mark participants' places in the classroom. Her class is composed of participants from different countries with minimal literacy and participants who cannot read and write even in their mother tongue. In the observation, I noticed that Julie freely allows participants with the same language

to speak with each other in their native language. They actively translate a Norwegian word or a sentence back to their mother tongue before they eventually translate it again using the Norwegian language.

I have observed the same scenario in Katrine's class. I noticed that participants mixed languages when answering Katrine's question, drawing on whatever knowledge and vocabulary they already knew. Whenever one of the participants did not understand a Norwegian word or sentence, other participants who speak the same language will translate it into their own language and interpret it for others. It is easy to perceive that Katrine actively took advantage of the participant's mother tongue because it is the simplest way to engage them in the discussion. They could quickly help each other translate words and thus motivate each other to use their native language to learn how to read and write. I asked Katrine if it had been a challenge that adult participants quickly use their native language instead of practicing Norwegian. She explained that letting their participants speak freely in their native language is an excellent way to acquire a new language. Katrine also accentuated that participants' languages are essential aspects of their identity and culture, and using their linguistic abilities is necessary for students' development as learners.

The concept of translanguaging was also visible in Camilla's class. Participants who spoke the same native language were strategically placed next to each other. During the observation, I noticed that this strategy was helpful because participants could quickly help and support each other, especially in translating words and discussing what to do in a specific task. They quickly turned to their seatmates to ask for help and support whenever they were in doubt or needed confirmation that they understood the lessons correctly.

Linda also emphasized the importance of actively using participants' mother tongue and explained that it is building a bridge between participants as it allows them to help each other, and it happens naturally between them:

[...], I think we do it in all the courses. We have talked about how we should try to put language groups together, those who speak the same language, so that they can help each other with the use of their mother tongue.

Linda also expressed that not all participants have a language group in a class. She explained that with this scenario, she would deliberately put participants who do not have a language group in the same grouping so that she could offer them extra help. She would preferably place them closest to her, for example, in the front of the classroom, enabling her to give immediate support and help to these participants.

According to respondents, actively using the participants' mother tongue is about believing and accepting that the different languages in the classroom can work together and that mixing languages should not be considered incorrect. Instead, participants should be allowed to choose how to communicate based on their cultural and social contexts. By letting participants use their native language, it would also be easier for the teachers to support their students by building their learning through one language and transferring it to another.

Digital tools and applications were also used to strengthen the concept of translanguageing in the classroom. For instance, whenever Julie noticed that her participants did not understand a Norwegian term or word, she would automatically use her mobile phone or iPad to search for a picture pertaining to that term or word. The participants would then repeat those words in their own language and relay them back to Julie, making her a co-learner with her students. I also noticed that applications like Google Translate were actively used in the classroom, implicitly showing that students' language has value and is a significant resource in the classroom. Even if Julie was unfamiliar with the languages spoken by her students, digital technology had made it possible for her to become a co-learner alongside them.

Linda also utilized the affordance of digital technology to strengthen Norwegian language acquisition by using the participants' mother tongue. Like Julie, she also used Google Translate as a translation program so she could explain words or sentences in different languages and supplied these terms with pictures from the internet. She described:

[...] so there will be a lot of Googling, we have had a topic about food, for example, and then new types of spices and vegetables would come out that I do not know, and maybe they do not know, and then we Google it together and find pictures in several languages. We would ask each other what do you call this picture in your language? How do you use it, and how do I use it?

To summarize, teachers in this study considered the participants' mother tongue as a resource for language acquisition and an essential tool for communication and collaborative activities. Furthermore, the participant's native language is also viewed as an important aspect of their identity and culture. Through the availability of digital technology, teachers had access to digital tools and applications that provided language functions that could strengthen the participants learning of the Norwegian language.

Discussion

Based on the data analysis, active use of the participants' mother tongue is considered by teachers in VO as a language acquisition resource for adults with little or no school background. *Language* as a cognitive tool is a central component of sociocultural learning theory (Vygotsky, 1978; Säljö, 2001). In facilitating learning work for adult participants, teachers and students require a *common* language to properly communicate with each other. Although adult participants possess intellectual and linguistic skills in their own language, they have minimal language skills in Norwegian, making communication difficult for both parties. According to Strandkleiv and Lindbäck (2005), language is not only a means of communication but also a crucial factor in all learning. This means that students with good language skills meet the school with a robust and flexible learning tool. Unfortunately, not all students starting school have developed good language skills. This is particularly true for adult participants with little or no school background. Because of their minimal school experience, they often lack language awareness to benefit from the beginner's training in reading and writing and usually have a weak understanding of concepts and vocabulary to sufficiently benefit from oral activities using the Norwegian language.

However, because of the teachers' openness to letting participants utilize their linguistic resources, which are, in this case, their mother tongue, combined with the affordances of technology, such as Google Translate, teachers and participants were provided new and innovative opportunities to communicate and collaborate with each other. The participants' multilingual resources and the opportunities that lie in digital technology should be utilized in the organization and facilitation of education and training (Lovdata, 2021).

By embracing the participant's mother tongue and strategically arranging participants with the same language to sit beside each other, teachers can create collaborative activities that strengthen the learning process of participants with little or no school background. The

significance of the individual's mother tongue in learning another language is not a new subject in research. Totibadze (2018), for instance, found that the student's mother tongue possesses essential relevance in learning a new language. She found in the study that students who were actively encouraged to use their mother tongue demonstrated considerable improvement in learning a new language. They were also most likely to feel safe, relaxed, and produce better results because when they use their mother tongue, they feel they bring a little piece of home with them (Totibadze, 2018).

Another author that considers the mother tongue a powerful tool in second language learning and development is Cummins (2001). He argues that utilizing and accepting children's use of their mother tongue should be a priority in educational institutions and society in general. Cummins (2001) argues that teachers could help children retain and develop their mother tongue by encouraging positive talks about the value of bilingualism and its effect on children's linguistic and intellectual accomplishments.

The use of the mother tongue to learn a new language is also rooted in the Norwegian educational system. Mother tongue instruction (*morsmålsopplæring*) is offered to children and adults to strengthen their language prerequisites for mastering the Norwegian language (Utdanningsdirektoratet, 2022a). A well-developed mother tongue provides a good basis for learning other languages and is considered an essential tool for learning, especially for participants who have not learned to read and write in any language (NAFO, 2021).

The teachers' method of strategically placing participants with the same language together also prompted scaffolding activities whereby they would translate for each other and their teachers, especially when Norwegian words were difficult to understand. I noticed the same trend in the Leap Learning room. For instance, I observed participants who constantly used their native tongue in trying to learn, help and support others in solving different tasks. Conversely, I argue that this classroom practice could also potentially slow their progress in learning the Norwegian language. Participants could, for example, become too dependent on their mother tongue and on the people that help them. Participants who do not have a language group could also feel socially excluded. Most research dedicated to the positive effects of using the mother tongue in education involves children (Cummins, 2001; Totibadze, 2018). Hence, it is difficult to determine if the effects of using a mother tongue in the learning and development of a second language could produce the same results in adult participants with little or no reading and writing skills.

Although teacher respondents generally have a positive approach to participants' use of their mother tongue in VO, it is difficult to determine if it has a significant effect on their acquisition of the Norwegian language. Zhao (2019) points out that using the mother tongue can also lead to a negative language transfer because, more often, two languages have differences in aspects like pronunciation, vocabulary, grammar, etc. Zhao (2019) argued that educators should understand these differences so that students' mother tongue can be used as an effective tool for second language acquisition.

4.2.2 Repetition and variation

Another common teaching strategy that was found in the data analysis is *repetition and variation of teaching contents*. Katrine highlighted that one of her teaching strategies is often repeating the contents of a topic and varying the ways in doing so:

My strategy is repetition with variation because there is a lot to be repeated many times and in different ways. While doing so, there should also be structure and stability so that they feel safe and familiar and understand the tasks.

Like Katrine, Camilla elucidated that several participants in her class do not have school experience and have not acquired any learning strategies. By constantly repeating the topics they work on, participants could learn the value of repetition and continue applying it to learn new things. Moreover, Camilla explained that digital tools played a significant role in the repetition and variation of learning activities in her class enabling participants to receive automatic feedback on their speaking and pronunciation skills because of the audio support functions embedded in the digital tools:

With audio support, they can get feedback and repeat the task without me being there, giving me time to focus on other participants who need one-on-one help [...]. When they read a book at school, I can do it with them, but if I am not there and they don't remember, they can turn on their iPad and repeat it as many times they want.

In Julie's class, repetition was also a familiar strategy. She spent ample time in the beginning, during and end of a lesson repeating the topic they had for the day. She frequently repeated new words but emphasized the importance of using a variety of examples. For instance, Julie used an iPad and a touch TV to listen to sound recordings. This way, participants could hear and repeat words and sentences together in the plenary. She then supplemented this action by handwriting the word or words on another board and visualizing these words and terms.

Agnes, in her interview, explained that digital tools and applications could provide teachers with many variation opportunities. One could easily connect to the internet and find relevant teaching materials. She added that participants could easily record their voices and check if their pronunciation was correct and that unlimited repetition could be offered because of digital technology. Correspondingly, Linda had a similar experience with digital technology regarding repetition and variation opportunities. She explained that it was easier to repeat and vary lessons because they have digital tools like Apple TV and other digital resources open for recording, reading, hearing and writing opportunities.

Discussion

In addition to active use of the participants' mother tongue, repetition and variation were also found to be common teaching strategies that teachers in VO used to facilitate learning work for adult participants. Bruner (2001) argued that repetition is a crucial element of learning as it can accelerate and deepen the engagement process. "If one cares about quality of learning, one should consciously design repetitive engagement into courses and daily teaching" (Bruner, 2001, p. 1).

In a qualitative study of English language teachers and learners in an adult language center, Ahmadian et al. (2017) found that task repetition is more effective when tasks are presented in variation. In the study, both learners and teachers suggested that repeating slightly altered tasks rather than precisely the same ones is better for language acquisition. It was recommended that repeating the same topic in different contexts using varying materials can ensure content repetition and enhances creativity in language use. Further, repeating tasks in other contexts is said to be cognitively and effectively more engaging for language learners (Ahmadian et al., 2017). In VO, I noticed the same practice. Teachers repeated the same topics in different ways, such as using the Smartboard to repeat the topics in plenary, visualizing to repeat lesson contents and giving participants tasks through their iPad devices to repeat the same lessons

individually. With the Leap Learning room in Agnes and Noras' class, repetition through variation was also imminent as the contents in the Leap Learning room were the same as what is found in the Leap Learning app. Hence, because of the availability of digital tools and applications, teachers had access to countless tasks, automatic feedback and audio support that they could use in repeating and varying their teaching content.

In another study, Taguchi et al. (2016) claim that repetitive reading effectively improves second language reading fluency. They found that listening to an audio model of a text acts as scaffolding that enhances reading comprehension when combined with reading the text on the paper. In VO, the utilization of digital resources for repetition, such as audio support and automatic feedback, also acted as scaffolding aids for adult participants. This means that they had access to additional scaffolding support in addition to their teachers because of digital technology.

It is important to emphasize that repetition of teaching content is entirely possible without the help of digital technology. Teachers can, for example, read passages in a book and then ask students to repeat the same sentences over. However, adult participants, especially those with no written language skills, will not benefit from just mere repetition of words and would require other learning variations of the teaching contents. With the affordances of digital technology in the classroom, such as visualization and audio support, teachers can make a complex word/task more understandable for this group of participants.

4.2.3 Active participation

Another frequently repeated teaching strategy found in the data analysis was the teachers' emphasis and encouragement of participants' *active participation* in the learning process.

Although some of her participants did not have any educational experience in their home countries, Julie described that they had a strong notion about what a school is and a very traditional idea about how teachers should be. This conventional belief involves that teachers' job is to lecture while students are passive recipients of information:

[...]. They [participants] sit happily in their respective chairs, behind their own desks, and passively wait to get a book, pencil, and paper [...]. I don't think that is a good

learning environment, at least not for my students. They have to be active in their learning!

To motivate her class to participate actively, Julie explained that she ensured her topic contents were relevant to her participants, relating the teaching content to the participant's culture, background, family, interests, and experiences. For example, on my observation day, the class topic was about different types of celebrations. I noticed that Julie intentionally showed pictures on the touch TV to demonstrate different cultural bridal gowns used in the countries participants were from. By doing so, the participants became automatically interested and wanted to actively participate in the discussion.

Camilla, who also teaches participants at the lowest level, pointed out the importance of active participation in the classroom. She explained that participants should always be involved and engaged in their learning, whatever activities they did in the class:

[...] so almost all the time, it is the participants who should be active, either alone, or in interaction with each other, or interaction with me on the Smartboard, or interaction with me, so I think this group here must be active in their own learning.

Comparably, active interaction was equally apparent in Linda and Katrine's class, where participants had some school background and could read and write in their own language. They encouraged active participation by asking questions, varying tasks, and relating topic content to what they thought was relevant for the class.

Discussion

In facilitating learning work for adult participants, teachers in VO emphasized the importance of active participation in the classroom. They pointed out that participants with minimal language skills would not learn anything if they sat passively in their own seats. This finding is similar to several studies that support that active learning increases student performance compared to traditional lecturing (Freeman et al., 2014; Armbruster et al., 2009). Active participation involves a two-way interaction between students and instructors, also referred to

as a *conducive* classroom environment (Abdullah et al., 2012). This type of classroom environment will stimulate learning and satisfy both the instructor and students, eventually leading to an effective learning process (Abdullah et al., 2012).

Ahmad (2017) refers to the active interaction between students and teachers as *learner-centered teaching*. Learner-centered teaching focuses more on how teachers can improve their students' learning and how they can help students with active and assist problem-based learning. This is similar to what I found in my study. Teachers in VO recognized the importance of two-way interaction where both parties can easily communicate with each other. They also believed that adult participants who were active in their learning process had better learning progression than passive learners.

Active participation in learning is also a central idea of sociocultural learning theory that builds on the concept that individuals learn when interacting and collaborating with the people around them (Vygotsky, 1978; Säljö, 2001). Vygotsky's ZPD draws upon the same idea, pointing out what a person can potentially achieve when they collaborate and receive help and support from more competent individuals (Vygotsky, 1978). In my observations, I noticed that teachers actively engaged adult participants in all areas of their teaching, for example, by asking their participants questions and arranging collaborative tasks using the Smartboard and other digital tools. This process, however, is dependent on the individual participant's willingness to engage in these joint activities. We can argue that when adult participants do not actively participate in group work and collaborative activities with their language teachers and co-participants, their actual knowledge of reading, writing, and digital skills will remain stagnant. This means that the idea of ZPD will only work when individuals, in this case, adult participants, actively collaborate and interact with other participants and teachers that are more knowledgeable and competent than themselves.

Similarly, Peer and Mcclendon (2002) point out that effective scaffolding is dependent on the student's active participation in their learning process and is critical to student development and learning. However, it is also essential to consider that adult participants may have different personality traits in a social setting. While some are outgoing and extroverts, others are more self-conscious and shy. Not to mention that these participants may have a very traditional notion of schooling where they are expected to be silent, passively taking all the information. Therefore, active participation and effective scaffolding among adult participants in VO depend largely on teachers creating and facilitating learning interactions that would encourage them to

participate actively. Julie, for example, made sure that her teaching content was related and visualized according to the participant's culture, background, family, interests, and experiences. This strategy made a lot of sense, considering adult participants' language skills and understanding of the Norwegian culture are minimal, and centering their teaching on something foreign may be very ineffective and tedious for these participants.

In addition, we can also argue that it will be easier for adult participants with little or no school background to actively participate in the learning process when teachers are approachable and uncriticized to their participants. Abdullah et al. (2012) found that instructors' positive traits as one factor that could motivate students to actively participate in classroom discussions. They found teacher traits such as being friendly, cheerful, approachable, teachers who know their students, and teachers who do not criticize as positive attitudes that encourage students to be unafraid to speak up in class.

4.2.4 Learning how to learn

Learning how to learn is another teaching strategy found in the data analysis. Teachers argued that teaching participants how to learn are vital in facilitating learning work for adult participants with little or no school background. Learning to learn is a well-known educational concept. The Norwegian Directorate for Education and Training emphasizes that learning to learn requires guiding and helping students to realize their ability to understand their own learning process and development in subjects and tasks (Utdanningsdirektoratet, n.d).

Camilla pointed out that, because she teaches participants with no school background, she always had to consider that they do not have any experience in learning to learn languages nor had learned any particular learning strategies. For example, when it comes to using a digital tool, Camilla accentuated the importance of teaching participants *techniques* to use the iPad as a learning tool. Participants should know how to use it to learn and remember. As a teacher, Camilla added that it is her job to teach participants effective learning techniques and always have a reflective and critical attitude on how she can teach her participants effectively:

We are fortunate to have digital tools, but we must be careful [...], for example, due to the sound support, the participant may stop doing the reading job themselves. So it is about showing them some strategies[...]. We need to use digital tools consciously.

Julie pointed out that for her participants to learn strategies for using specific digital tools, she only utilized digital tools that were more straightforward for her participants:

I have deliberately decided not to use a computer in the classroom because I want that as long as my students use their iPad, I will also do the same [...]. I want them to see the same feature when I connect my iPad to the Touch TV. The more they see that I use a tool, the more they think it is important, and the more they use it.

However, Nora explained that it is essential for teachers to understand that the concept of "knowing something" is often equivalent to the word *memorizing* among other adult participants. She explained that some of her participants often think they know something because they can memorize it, and teachers should address this belief. Nora emphasized that our understanding of learning a new word, for instance, is not only being able to read and write that word but also understanding the meaning and using it in relevant sentences. Nora added, "if they just memorize what we serve them here, then they have not learned anything."

Linda also experienced that the pedagogy participants with little or no school background often know is learning through memorization. This pedagogy, according to Linda, is highly *ineffective* when the participants have to learn a new language and do not have enough reading and writing comprehension in their mother tongue. Camilla described that it is not enough to ask a participant if they understood something; as a teacher, you have to exert effort to ask *what* they understand and follow-up questions:

[...] when they look at a teacher and smile, you think they understand, but there are many things they do not understand, but they nod, trying the best they could, and when we ask, do you understand? Then they say yes. Sometimes we forget to ask follow-up questions.

To sum up, this study's findings indicated that teachers acknowledge that adult participants with little or no formal schooling lacked strategies in learning how to learn. They pointed out that

memorization pedagogy is ineffective for these participants, and teaching them strategies to learn, remember and understand meaning is necessary.

Discussion

The study findings showed that teacher respondents emphasized the importance of learning adult participants' strategies on how to learn. Teacher respondents described that most of their participants had no school experience and had not acquired learning strategies like others. Learning to learn is often referred to as metacognition, or the knowledge and ability of learners to be aware of their own learning process (Pintrich, 2002). According to Pintrich (2002), students are often presented with new tasks and lessons that require knowledge and skills that they have not learned before. Students will then rely on their prior knowledge and skills to help them solve the problem at hand. However, when students do not have prior knowledge and experience, they would need to learn general strategies that could help them solve new and challenging tasks.

Black et al. (2006) point out that learning how to learn has become an essential concept because it has the potential to promote lifelong learning. They argue that students should not only "learn" but also develop strategies and habits that will enable them to continue learning throughout their adult life. However, although adult participants had little or no formal schooling in their home countries, it does not mean that they have not learned strategies on how to learn. For example, teachers mentioned that the pedagogy that adult participants were familiar with is often memorization, which means they frequently equate memorizing to learning. As Nora pointed out, if adult participants with minimal reading and writing skills simply just memorize everything, they have not learned anything. We can argue that in learning a new language, mere memorization of the words will not do the trick; one would need to understand the meaning of the words.

The Norwegian Directorate for Education and Training also underlines the importance of learning how to learn. It states, "the teaching and training shall fuel the pupils' motivation, promote good attitudes and learning strategies, and form the basis for lifelong learning." (Utdanningsdirektoratet, n.d). This implies that teachers play an essential role in teaching students how to learn. Pintrich (2002) argues that one strategy instructors can implement to enhance students' metacognitive knowledge or their ability to learn is through modeling, meaning that instructors *model* how to use a learning strategy to solve real problems or discuss

why a particular technique is used to solve a specific problem. In VO, Camilla, for example, emphasized the vitality of supplementing the question “do you understand” with “*what* do you understand”? In this way, adult participants reflect on their understanding of the topic and not just simply receive information.

During my observation, I noticed that some participants had learned simple learning strategies using digital tools. For example, while doing individual reading tasks on their iPad, one participant used a paper guide containing a copy of their own alphabet with the corresponding letters in Norwegian. Another student took pictures of the task she was working on the computer to continue working on the same tasks at home or use them as a reference for the next day. In another class, I noticed some participants who used their mobile phones to translate Norwegian words into their language and vice versa.

Through these observations, we can also argue that digital technology served as a teaching aid in strengthening the participants' ability to learn how to learn. Digital technology, for instance, offers visualization images and helps relate teaching content to life-centered topics to ensure that students understand the topic at heart, not just memorize it.

4.3 Summary of chapter four

The findings from this chapter showed that there are essential factors to consider in facilitating learning work for adult participants. First, teachers need to consider the actual development level of the participants when it comes to language and digital skills. However, adapting teaching and learning based on participants' educational backgrounds is insufficient for participants with little or no formal schooling. Knowing and considering the participants' experiences, needs, ages, and health prerequisites combined with establishing a safe and healthy classroom environment are also essential factors.

Further, teachers in VO should consider teaching strategies that could be particularly helpful for adult participants with little or no school background. These strategies include active use of the participants' mother tongue, repetition and variation of the teaching content, active participation, and learning how to learn. Not all teaching approaches that apply to literate adult learners are suitable for this group of participants. Whilst literate adults do not have to use their mother tongue in their learning, passively listen to a lecture, and have developed learning strategies on how to learn, adult participants with little or no school experience face a different

reality. Therefore, teachers must choose didactical strategies that fit these participants' needs and learning prerequisites. However, it is imperative to emphasize that this study does not measure how effective or ineffective these teaching strategies were or if they can lead to participants learning.

Digital technology was also found to be a beneficial and valuable tool for teachers in implementing these strategies in practice. It helped teachers translate different languages, offered repetition and variation opportunities, and provided visualization alternatives for active learning. The role of digital technology and teachers' digital competence in facilitating learning work will be discussed in the next chapter.

5. PRESENTATION OF THE RESULTS FROM DATA ANALYSIS AND DISCUSSION PART 2

How do teachers in VO facilitate learning work using digital technology for adult participants with little or no school background? This question is the thesis problem that guided this study. This chapter is a continuation of chapter four and will be presented in four sections. Section 5.1 will present findings on the role digital technology plays in teachers' differentiation, adapted education, and scaffolding practices in the classroom. Section 5.2 will consist of the results connected to teachers' opinions regarding digital technology in facilitating learning work. Section 5.3 introduces study findings concerning the importance of teachers' digital competence. Lastly, section 5.4 will present results related to lack of resources and number of participants in the classroom as factors that could affect the learning work of teachers using digital technology. Each of the four sections mentioned has a corresponding analysis and discussion based on the finding of the data conducted from interviews and observation. The findings from this chapter will attempt to answer my second research question:

What is the role of digital technology in the teacher's facilitation of learning work for these participants?

5.1 The role of digital technology in teachers' differentiation, adapted education and scaffolding

All the teacher respondents in this study agreed that adult participants with little or no school background vary in their language and digital skills even if they belong to the same language level. According to Katrine, although participants belonged to the same class, they had different learning progression, and she had to assess and adapt her teaching and training according to the participant's needs:

I have participants who have been in the country for a long time and speak a little Norwegian, but they struggle with reading and writing, so I make sure they work predominantly with it [...] some are better at writing and are good at reading, but they have difficulties speaking Norwegian.

Correspondingly, Julie's class was composed of a vast mixture of people with different literacy levels. Because of these differences, Julie highlighted the importance of planning individual activities for participants. In Agnes's class, she also experienced that although participants belonged to the same level, they had different learning needs and required individual assessment:

In my class, some adult participants learn fast, and others take a lot of time to learn something [...]. Sometimes, I had to make two sets of tasks, one that was easier and one for those with a faster learning pace [...].

Because of the participants varying learning needs and prerequisites, all respondents acknowledged the role of digital technology as a teaching tool in creating and facilitating a differentiated, adapted and supportive learning environment. According to Katrine, digital technology gave her countless access to numerous tasks to customize and generate new and relevant teaching content. She explained that because of digital technology, she could adequately support participant learning:

I feel like I have more to work on. We have a bigger toolbox! I get help to create learning topics where I can put sound, text, and images into an app [...]. It generates many tasks that could help participants work with listening, reading, writing, and pronunciation. I could not produce that many learning tasks alone. No! but with digital apps, you get a lot of help.

Teacher respondents also highlighted that in facilitating learning work for participants with little or no school background, they needed to select which content was relevant and straightforward for their participants, and digital technology provided them with these selection opportunities. Katrine, for example, explained that using digital tools and applications provided her with a lot of teaching opportunities and access to authentic digital applications that were not only simple but also relevant to their daily lives. Yr.no, Google Earth, and Ruter.no were

some of the applications mentioned during the data collection. The respondents utilized these applications because they are good language learning tools and offer visualization opportunities. Further, digital technology allowed Katrine to select different digital learning tools depending on which areas participants needed to work on. For example, participants who struggled in reading could use a different digital application than those that had to improve their oral and speaking comprehension.

Camilla explained that digital technology allowed her to make teaching plans at different levels and gave her opportunities for one-on-one teaching. She added that because all her participants had access to individual iPads, it was easier for her to provide individual help and support while others completed other activities.

Moreover, Linda explained that digital technology gave teachers and participants more choices and opened up new possibilities to support student learning even if they were not in school. It enabled her to provide assignments for participants who could not be present in her class. This was explicitly visible during the pandemic lockdown. The fact that their participants had iPads that they could take with them made it possible for teachers to communicate, and participants could continue learning at home. Using the Leap Learning app, Nora had a similar experience. She described that adult participants could still access different learning tasks wherever they were because the application could be downloaded on other digital devices like mobile phones, iPad, and computers, thus, providing excellent opportunities for own learning.

However, teachers should be reflective and selective in choosing which digital applications to use. As Nora pointed out, teachers should be especially picky when using digital applications for participants with no reading and writing skills. She underlined the importance of using websites that were easy to orient and from which participants could obtain helpful information. Julie also highlighted the importance of being selective in her teaching topics. She explained that being a teacher for adult participants with little or no school background is an arduous task because they need to spend an incredible amount of time choosing which subject contents should be included and which should be excluded. She explained that digital tools are not worth much until they are filled with the right content. Julie also pointed out that it is highly challenging to find digital applications specifically designed for adults who cannot read and write.

The digital applications I have an overview of at the moment are not made for people who are not literate [...]. Digital developers are so literate that they don't fully understand how adult participants structure or maneuver [...]. It is challenging to use an app that is not intuitively designed so that participants understand it.

To summarize, digital technology provided teachers with access to a more extensive toolbox that could help them differentiate instruction, support participants learning in and out of school, and give participants opportunities for their own learning. Further, digital technology gave teachers selection opportunities and one-on-one teaching and learning possibilities. However, alongside these digital opportunities, teachers highlighted the importance of selecting relevant and straightforward content and being selective about tools and applications that fit the adult participants' needs and learning prerequisites.

Discussion

The study's findings showed that teachers considered digital technology an essential learning tool that could help facilitate a differentiated, supportive and adaptive learning environment for adult participants with little or no formal schooling.

As teachers described, adult participants with little or no school background have varying reading, writing, oral and digital skills. While some could read and write in their native language, others could not understand and comprehend what an alphabet is. Some adult participants in VO had also been in Norway for a long time and acquired some Norwegian speaking skills. In contrast, others who had just arrived in the country may not have the same understanding of Norwegian as other participants. When students' learning is at two different levels, one at a more advanced level and another that lacks basic knowledge of the subject, it is important to differentiate instruction to cater to different learning needs (Elstad, 2021).

Differentiation or pedagogical differentiation is a strategy that teachers could use when the students' knowledge base is very different (Elstad, 2021). Through digital applications like Leap Learning, teachers could offer various tasks depending on participants learning needs. For example, participants who had acquired some basic oral skills in Norwegian but had weak reading and writing skills could begin with tasks that would help them strengthen their reading and writing comprehension. In the same way, participants who have learned basic reading skills

but lack oral and pronunciation skills could use the audio support embedded in digital applications. According to Elstad (2021), it is essential that teachers offer a menu of different types of tasks and instructions with varying degrees of difficulty.

It is essential to imply that differentiation is also possible without digital technology. A teacher can, for example, provide two different kinds of paper tasks, a simple one for those who lack the necessary knowledge prerequisite for the subject and a more advanced version for those who are prepared. However, with the help of digital technology as a tool for learning, teachers no longer need to spend hours crafting their teaching lessons by hand because they have access to digital applications that cater to the participants' different learning needs. Based on my observations and teachers' statements, adult participants with little or no school background need as much individual help and support as possible. With digital technology, teachers were given access to digital resources that cater to the participants' different and individual learning levels. In addition, they could focus their time on providing individual support because adult participants also have the same access to digital tools and resources.

Digital technology also played a significant role in teachers adapting education to be relevant to the participants' daily lives. In this study, I gathered empirical data that teachers utilized digital technology to ensure that lesson content was adult-centered and relevant to participants' lives and situations. For example, teachers used simple internet resources such as Yr.no because it helped them check the weather in Norway, especially those who have children in kindergarten and primary schools. Another example was using the Google search engine to show participants pictures and videos related to the latest news that has importance in their lives in Norway and their families in their home countries. One possible explanation for this approach was to capture the attention of adult participants. If teachers only use teaching content with no relevance to the life and experiences of their participants, it would be easy to lose interest because participants have a very minimal language understanding.

The teachers' way of relating teaching to what is relevant to their participants' lives is complimentary to Knowles's andragogical assumption that adults are motivated to learn when they perceive teaching lessons as *life-centered or problem-centered*. A life/problem-centered orientation means that “adults are motivated to learn to the extent that they perceive that learning will help them perform tasks or deal with problems that they confront in their life situations” (Knowles et al., 2005, p. 67). Moreover, the teacher respondents' competence in utilizing digital tools and applications to adapt relevant and problem-centered teaching approaches reflects the competence area *leadership of learning processes* of the PfdK

framework. This competence area emphasizes the knowledge and competence of teachers in creating a constructive and inclusive learning environment that encourages interaction, engagement, and motivation to learn (Kelentrić et al., 2017).

Because the language and digital skills of adult participants were minimal, the teachers in VO made sure that the digital applications they used were simple, relevant, differentiated and adapted to the varying knowledge levels of these participants. This teaching method also complements the competence area called *subjects and basic skills* of the PfDK framework, highlighting the teachers' knowledge to integrate digital resources to help students learn the five basic skills (Kelentrić et al., 2017). Understanding the level of students' digital skills and how they can be fostered in learning other subjects is an example of this competence area (Kelentrić et al., 2017). The teachers' knowledge and competence in ensuring that digital technology is used to mediate learning that fits adult participants with little or no education also reflects Säljö's (2001) idea of *appropriation* wherein teachers master a cultural artifact, in this case, digital technology and are able to appropriate it in different contexts in adult learning and training.

In the Norwegian educational context, one of the teachers' most critical jobs is ensuring that education and training are adapted to the student regardless of their learning prerequisites. Adapted education means using varied assessment forms, learning resources, learning arenas, and learning activities so that every student (children and adults) gets the best possible benefit from education training (Utdanningsdirektoratet, 2022b). Further, adapted education must take place through variation and adaptations to the diversity of the student group.

This study also found that digital technology was vital in strengthening classroom scaffolding practices. Scaffolding is based on the idea of building temporary support placed around new buildings to enable builders to access the impending structure as it rises (Hammond, 2001). Once the building can sustain itself, the support is then gradually removed. Taking into account the concept of scaffolding, teachers in VO provide temporary yet significant support to assist participants in developing basic reading, writing and digital skills. For Nora, Julie, and Camilla, who work primarily with participants who cannot read and write, scaffolding requires simplifying the training content to a level they understand. For instance, at the beginning of the course, participants could have extreme difficulties understanding a word or sentence in Norwegian. However, when teachers help and support them by constantly repeating the words and adding pictures and visualization, participants could start to understand and construct simple and relevant associations of these words to other contexts. Furthermore, through a

Smartboard or Touch TV, teachers could easily show the participants the step-by-step process of navigating through their individual devices. Hence, Smartboards were used as a scaffolding tool that helped participants learn how to digitally navigate their own digital tools and created collaborative opportunities in the classroom.

However, the scaffolding practices for adult participants with little or no school background may take some time before teachers can begin to gradually remove their support and introduce new learning tasks. Teachers had, for example, mentioned in the interviews that adult participants, especially parents, had many recorded absences due to personal and family matters; they had a lot of responsibility on their hands, and going to school was often compromised.

Based on the teachers' responses on the role of digital technology in differentiating, adapting education and scaffolding, teachers considered digital technology a vital tool or artifact that mediates learning for adult participants. The use of tools and mediating artifacts is a central foundation of the sociocultural theory of learning (Vygotsky, 1978; Säljö, 2001). However, tools and artifacts are of little value if not communicated by linguistic tools and are not utilized in situations where people can develop forms of collaboration in different collective settings. Säljö (2001) points out that if we are to understand the sociocultural perspective of learning, linguistic tools, physical artifacts, and communication and interaction settings should be in place. This implies that the use of digital technology as a teaching tool, the language in which teachers and participants communicate and the social and collaborative setting in the classroom are three interacting factors that contribute to adult participants learning.

5.2 Teachers' opinions regarding the use of digital technology in the classroom

I asked teacher respondents about their opinions on using digital technology to facilitate the learning work for adult participants with minimal or no reading and writing skills. They all agreed that digital tools and applications gave them new opportunities that can support students learning and instruction. For example, Agnes described the contributions of digital technology in her practical work for adult participants:

You could go online and find out from all the teaching materials that are available digitally[...], then you have the sound on, and you have the opportunity to record voice and download. You can also get exercises with voice support with pronunciation both with audio and words, everything right in your ear [...].

Nora pointed out that because of the available digital tools, they had excellent access to more customized tasks and functions that suit the needs of their participants. However, Nora highlighted the cruciality of using technology in the right proportions and that it should be complemented by other physical and concrete learning materials like books, paper and pencils. She stated:

I would say there are only benefits to using digital tools, but it will be completely wrong if you cut out everything else. So you have to, you have to choose the proportions [...], and you cannot just say, yes, technology is good, we can drop reading books, we can drop writing by hand, it is an entirely wrong way to go, so the teacher must have the sense to use technology in the right way to the right things and be critical.

Linda had similar thoughts and pointed out that adult participants with little or no school background will benefit from learning digital tools and applications because we live in a highly digitalized country. Still, they also have to experience reading and writing using a physical book they can hold with their hands. For example, it is difficult to read using an iPad because the pages could suddenly disappear and create distractions.

Camilla and Katrine described the same concern about using digital tools. Digital technology could be volatile because of its potential to create distractions and digital distractions were unproductive when the participants involved were adult participants without reading and writing skills. Some participants would have extreme difficulties returning to the task and thus create confusion and frustration among those who haven't learned to navigate the tools. Nora described another challenge using digital technology and explained that although digital feedback is available, it could also be ineffective and rigid for the participants:

[...]. A computer will only give you one answer, correct or wrong, and if you have written a capital letter in the middle of a word instead of a small one, it will be wrong. But if you had written it on paper, then I could say, Yes, you have written a big letter in the middle, but the words you have written here are entirely correct.

On the other hand, Camilla accentuated that digital technology supports learning but is *not* a prerequisite for learning:

Digital tools offer a completely different opportunity to work independently [...]. I would say that it is not a prerequisite for learning. It is not, but it is good learning support. It is a good tool, not learning itself, but it is a good tool.

To summarize, all teachers had positive views towards using digital technology in facilitating learning work for adult participants. Nevertheless, they also pointed out some drawbacks of using digital technology as learning tools for adult participants with minimal or no reading skills. Furthermore, teachers underlined the cruciality of using other physical tools in learning, such as reading a book and writing on paper, which is necessary for adult participants with little or no reading and writing skills.

Discussion

The findings from the study demonstrated that teachers have positive opinions about digital technology in facilitating learning work for adult participants with little or no school background. They agreed that digital technologies offer teachers new opportunities to support students learning, access digital teaching materials, and provide communication and selection opportunities.

Positive benefits associated with digital technologies in education have been a constant topic for research following the rapid development of modern technology. For example, Tiene and Luft (2001) found empirical evidence of benefits associated with working in a technology-rich classroom for teachers and students. These benefits include students working more independently on lessons that interest them, offering individualized lessons to students with

different needs, and providing collaborative learning. Tiene and Luft (2001) also found that because of the technology-rich classroom, teachers could present lesson materials to the whole class prompting more effective teaching and learning than in conventional classrooms without technology. Perrotta (2013) also listed essential benefits of digital technology in education, including enhanced learning outcomes, increased student engagement, and efficient management and organization of learning.

Conversely, the teachers in this study underlined certain drawbacks to using digital technology for adult participants with little or no school background. They mentioned that digital technology could offer distractions following participants' lack of digital skills to navigate the tools. Further, digital technologies could also present rigid and ineffective feedback that can pose a challenge for adult participants with minimal reading, writing and digital skills. In a study, Hussain et al. (2018) found that some elderly people are not motivated to use the internet because they lack the knowledge and skills to use and navigate it. The study of Hussain et al. (2018) also found empirical data that supports the claim that internet use can be confusing and complicated for older adults because it contains a lot of pop-ups that could be frustrating and problematic. In a similar study of older adults in Finland and Ireland, Pirhonen et al. (2020) found that some older adults refrain from using digital technology because of the constant need for upskilling due to continuous changes in digital systems, lack of suitable devices available for older adults with declining functional abilities and feelings of alienation.

Drawing on two studies by Hussain et al. (2018) and Pirhonen et al. (2020), it is unsurprising that teachers in VO found some functions of digital technology distracting and too rigid for adult participants with little or no school background. As mentioned in the earlier sections, these participants have very minimal reading skills and, therefore, will not be able to read everything on a digital screen. Thus, any minor distractions could lead to frustration and helplessness among participants. In addition, some adult participants also have health issues like visual impairment, which could contribute to their frustrations and decrease their motivation to use digital technology.

When adult participants with little or no school background are concerned, teachers' competence to evaluate when it is *not* ideal to use digital technology is crucial. Based on teachers' descriptions of adult participants' digital skills, we can reason that they have various relationships with technology. Some may have never used a digital tool and others may prefer learning with resources other than digital technology. This could also be one of the primary reasons why teachers in VO argued that adult participants with little or no school background

would benefit from alternating digital devices and other mediating artifacts like books, paper, etc. Research shows that not all students learn best with digital technology. For example, Singer Trakhman and Alexander (2017) found that some students learn better from textbooks than digital screens. Therefore, it is imperative for teachers to be reflective and ask themselves *why* and *for whom* digital technology is used in their daily teaching practice. Askvik et al. (2020) suggest that although it is essential to keep up with the digital world, it is vital to maintain handwriting practices in school. An optimal learning environment considers the strengths and support of different resources available for learning.

5.3 Importance of teacher's digital competence and skills

To understand how teachers viewed the importance of their digital competence in facilitating learning work for adult participants, I asked the respondents how they felt about their own ability to use digital tools and applications. Based on the data analysis, teachers pointed out that, to maximize the functions of technology, teachers must have the digital competence to successfully integrate digital technology into their classroom practice. All teachers agreed that as teachers, one should be equipped with the proper pedagogical and didactical knowledge to optimize the advantages of digital resources in the classroom.

Katrine pointed out the importance of being confident with the digital tools one uses in the classroom. Katrine explained that to succeed in facilitating the digital learning work of adult participants, teachers must have the necessary competence and skills to use and apply digital tools and applications in their teaching practice:

I know so much about technology that I feel I can be creative, and I do not feel that technology has control over me, but it is me that controls the technology. I'm not unsure, and when I feel that I have mastered it so well, I become creative. I can see opportunities and limitations, and I can work efficiently.

Similar to Katrine, Julie explained that she felt confident in using all digital tools and she strived to maximize the *content* of digital tools and applications. She added that one should exploit all available digital resources as a teacher- nevertheless, be reflective and selective of what tools and applications best suit the group.

On the other hand, Agnes acknowledged that digital technology rapidly changes and as a teacher, she saw the need to evolve and learn new digital tools and solutions. She also pointed out that personal interest in digital technology had something to do with how willing and motivated teachers were to constantly update their digital competence and skills:

[...], but it is very individual what you are interested in because we get very few courses at school. We ask for it from time to time, then we get updated, but at the same time [...] we feel that we are lagging behind because the digital development is going so rapidly [...] if you are not interested in staying up to date, then it's hard to stay up to date.

Nora explained that she was not equally interested in all the digital developments and only learned digital tools and applications she knew were necessary for her class. She explained that, as teachers, they already had a lot on their hands, and it was challenging to stay up to date because technology develops constantly, and there is always something new to learn. Like Nora, Camilla explained that although it is challenging to keep up with the rapid development of technology, she made sure that she mastered the digital tools and applications she had to use in the classroom.

When asked how teacher respondents update their digital skills and competence, they all pointed out that most of their technological knowledge and skills were updated in the VOs where they work. Linda explained:

It's here at work [...] because we have the digital team, we do digital training in between, and that's very important. It is mostly here at work that we help each other [...] There are constantly updates in the apps that give us new opportunities, and we inform each other and help each other.

In municipality two, where Linda, Camilla and Katrine work, they had what they call digital tutors (digital veiledere) for each department and team. These digital tutors often held meetings and courses and were given reduced teaching hours to update their technical knowledge and competence. In return, they helped assist their colleagues

whenever they had concerns regarding a new digital tool or application. Nora and Agnes also had access to digital help from colleagues, technical experts, and internal courses and training offered to them. On the other hand, Julie stated that she used a significant amount of time learning digital tools and applications and was the one who usually helped colleagues when it came to familiarizing new digital resources. She mentioned that helping others made her even better at maximizing the functions of digital technology. The need for courses and digital support from colleagues was, according to teacher respondents, heightened during the pandemic because teachers generally had varying levels of digital skills and competence.

Discussion

The ability for teachers to see the opportunities and limitations of digital technology requires teachers with professional digital competence to use and create effective learning contents that fit their students' groups. According to Engen (2020), the challenges of today's teachers are, to a lesser extent, about how they handle the technicalities of digital technologies. Instead, the challenge lies in how they can use digital technology to create effective pedagogical and didactical practices in the classroom. Giæver et al. (2014) underscored that a digitally competent teacher is a teacher that makes suitable choices as to when and how technology should be utilized in their teaching practice because of their digital security and digital repertoire.

The teacher respondents' ability to be confident (for example, Katrine, that described she controls the digital technology, not the other way around) and integrate digital technology into their didactical practice complements the competence area called *pedagogy and subject didactics* of the PfdK framework. It underlines the teachers' competence in combining didactical methods with digital technology and using digital materials and learning resources creatively and innovatively (Kelentrić et al., 2017).

Similarly, being reflective of the content of digital applications and their ways of maximizing the content of digital tools are also complementary to the TPaCK framework, which underlines the integration of digital technologies in the teachers' pedagogical and content knowledge (Koehler et al., 2007). For example, teachers utilized digital resources such as Yr.no, Google Earth, and Ruter.no to connect content and topics relevant to their adult participants. This shows

that teachers did not use digital technologies just for the sake of using them; instead, it was employed to strengthen the quality of content that could be helpful to participants learning. According to Engelien et al. (2011), a critical factor in using digital technologies in different subject areas is to know which digital resources can be helpful in teaching and learning. As a teacher, Engelien et al. (2011) argued that one must assess when the digital resource is appropriate to utilize and understand the consequences of this resource in a professional context. For teachers to develop didactical competence in using digital technology, they need to reflect on their classroom practices to assess which kinds of technology are best to use and for which purposes (Sølvberg et al., 2009).

One of the challenges related to using digital technology in the classroom is how teachers can keep up with the rapid development of technology. Båtnes (2015) emphasized the importance of updating, maintaining, and nourishing one's personal knowledge. Based on the empirical data gathered in this study, teacher respondents explained that most of their knowledge and expertise in technology were updated, maintained, and nourished through their work as teachers in VO centers. VO has arranged courses and made specific efforts to ensure that teachers have the necessary technical knowledge and competence to use digital tools and applications in the classroom. For example, by ensuring that teachers had access to digital tutors and technical support in the VO centers.

Shabani (2016) pointed out that Vygotsky's sociocultural approach can also be applied to teachers' professional development. According to Shabani (2016), the zone of proximal development, or the distance between a novice teacher's actual teaching knowledge and what they can potentially achieve with the help and support of other expert professionals, could be realized by participating in social activities, courses and group meetings. According to teachers in VO, there were a lot of digital scaffolding practices among teachers during the pandemic lockdown because they needed to learn a lot of new digital communication platforms. Teachers who lacked digital knowledge and skills to utilize a specific digital platform were forced to learn them and, most importantly, use them effectively in their teaching practice.

The teacher respondents' ways of developing their own professional digital competence by participating in courses and training and helping their colleagues learn new digital tools and applications are examples of the *change and development* competence area of the PfDK framework. This competence area describes that as digitally competent professionals, teachers

should improve their digital competence (alone or with others) and realize that learning and developing such competence is a lifelong and dynamic process (Kelentrić et al., 2017).

On the other hand, *personal interest* in digital technology also played a vital role in how willing and motivated teachers were to update their digital competence. While some respondents made an effort to learn beyond what was needed in their groups, other respondents said they felt less motivated and only spent time learning new digital tools and applications they considered relevant and necessary for their class. Båtnes (2015) argues that for personal knowledge and skills to be continually relevant to the person and the community the individual belongs to, they must be cultivated and nurtured. Båtnes (2015) believes personal knowledge is vulnerable and could lose value if not actively cared for and maintained.

5.4 Lack of digital resources and number of participants in the classroom

The data from the interviews and observation showed that the teacher's ability to facilitate digital learning work using digital technology for adult immigrants was affected by the *availability or lack of digital resources* in the municipalities to which they belong and in their homes. In the first municipality, Agnes and Nora described the problems related to the lack of available computers for their participants. Agnes explained:

Not all participants have a computer at home. Some of them can borrow at school, especially those who belong to a slightly higher module, but the participants from the lowest modules have limited access to a computer[...]. They only have a mobile phone at home that they can use, but it is not a very good working tool for them.

Nora confirmed Agnes's concerns regarding the lack of digital tools available for her participants:

The lowest classes do not get a computer here at school [...]. They often do not have access to a computer at home or an iPad. Sometimes they can borrow a computer here, [...], but many participants cannot continue doing the task at home because they don't

have computers. The participants do not have the opportunity to reinforce what they had learned in school.

According to Agnes and Nora, the lack of digital resources was particularly transparent during the pandemic lockdown. Some participants did not have the financial resources to obtain internet connections in their homes, resulting in participants that had completely fallen off in their learning. They also had participants who barely had mobile phones, and those who had phones could not send a text message because it requires reading and writing skills.

In my interviews with Linda, Camilla, and Katrine, I did not notice the same concern about digital resources as I did with Agnes and Nora. This could be interpreted by the fact that all participants in Linda, Camilla, and Katrines' classes have individual iPad devices and enough computers. During my observation of their class, I noticed that it was easier for the teachers to walk around and help participants because everyone had their own digital devices. Because of the one-to-one iPad, participants also had a better chance of continuing learning outside VO centers. Like Linda, Camilla, and Katrine, Julie's participants also had access to one-to-one iPad devices and a lack of resources was not the primary challenge for technology use.

Aside from differences in resources, there was also a significant difference in the number of participants in each of the respondent classes. While Agnes and Nora had more than twenty participants each, Julie had fifteen, and Linda, Camilla, and Katrine had thirteen, nine, and eight, respectively. Camilla, who teaches participants with no school background, had a significantly lower number of participants than Nora, who teaches participants at the same level. When asked what she thought about the number of participants in one class, Nora said that these numbers were impracticable and that if she could choose an adequate number of participants, it would be between twelve and fifteen. She pointed out that participants with no school background had a lot of learning challenges, and one way of helping them is to have fewer participants in a class. Camilla also highlighted the importance of having fewer participants in the lowest levels. She stated:

We have fought for an optimal group at the lowest level to be between 5 and 8 students, so we try not to have more than that because we see that they need a lot of individual help and need a lot of time. So if you are going to be able to follow it up, then it should

be a small group, and it is also a group that needs to be seen [...], and they need to get direct and concrete feedback.

It is, however, essential to point out that the difference in the number of participants in each municipality could have something to do with the fact that Agnes and Nora are teachers in a primary school for adults. In contrast, Julie, Linda, Katrine, and Camilla are teachers in Norwegian courses for reading, writing, speaking, and digital skills in VO.

Discussion

The findings from the study showed that the availability or lack of digital resources and the number of students in class posed significance in the teacher's facilitation of learning work for adult participants with little or no school background. The lack of computers for participants in the lowest levels and a large number of participants in one class were, according to Agnes and Nora, an existing challenge in their VO center. Based on the teachers' interviews and my observations, adult participants with little or no school background are a group that needs a lot of one-on-one assistance. The lack of digital tools that can support teachers in creating more differentiated and adapted teaching content, combined with a large number of participants in the class, makes it challenging for teachers to facilitate learning work for these participants.

Teachers also acknowledged the fact that going to adult centers is not enough for these participants to learn basic skills; they have to continue learning outside of school. However, some of these participants lacked access to digital technology at home and had poor finances, inhibiting internet connections. According to a strategy called *digital hele livet*, internet access, available digital equipment, and basic digital skills are among the fundamental prerequisites one must have to fully participate in a digitalized society like Norway (Kommunal-og moderniseringsdepartementet, 2021). Unfortunately, the lack of these prerequisites is often attributed to adult immigrants with lower education levels.

It has been argued that if teachers are expected to see, know, and follow up on their individual students, they cannot have too many students in their class. Research shows that students with significant learning challenges are the ones that would particularly benefit from teaching in smaller groups, specifically students from minority languages and students with parents who have a low level of education (Norgård & Harsvik, 2011). Adult participants with little or no

school background may not need the same attention and follow-up from teachers as small children. Still, they most certainly need individual help and support from their language teachers to develop and learn basic skills to continue schooling, look for a job, and participate in society's essential functions. These goals will be challenging to achieve if teachers and participants lack the necessary resources for learning and belong to a class with many participants.

Conversely, teachers who belong to municipalities where adult participants have access to individual iPad devices and had fewer participants said that it was easier for them to instruct individualized tasks in and out of the classroom. Adult participants were given opportunities for their own learning and could independently choose lessons that interest them because they have one-to-one iPad devices that they can take with them at school and in their homes. While there is data that shows primary and secondary school students have access to digital tools like iPad and laptops (Utdanningsdirektoratet, 2021a), I could not find the same data for students and teachers in adult education centers in the country. The differences in the availability of digital resources in adult education centers shows that, although Norwegian schools generally have good access to digital resources, some educational institutions still struggle to provide enough digital tools and resources for their students.

5.5 Summary of chapter five

The findings in this chapter indicate that the pivotal role of digital technology is in differentiating, supporting, and adapting training for adult participants with little or no school background. Similarly, the findings also revealed the crucial role of teachers, as highly competent individuals with digital and didactical skills, to integrate technology into their teaching practice. This also implies being able to know *when* and *when not* to use digital technology.

Digital technology, as results showed, offers teachers access to a more extensive toolbox, selection and visualization opportunities, and relevant teaching content. On the other hand, the findings also suggest that teachers should be mindful of the various drawbacks and pitfalls of digital technology for adult participants with minimal reading and writing skills, meaning that teachers must have the necessary skills and competence to adequately employ digital technology in their didactical and pedagogical practices. Being confident in using digital tools and applications, having personal interest, and updating one's professional digital competence

are some factors that emerged as essential to consider in facilitating effective learning with digital technology. Finally, the study revealed that the lack of digital resources and the number of classroom participants is imperative in how effective teachers can facilitate learning for adult participants with little or no school background.

6. CONCLUSION

The teachers' use of digital technology in their teaching practice is not a new topic in research. However, little attention is given to teachers in adult education centers, especially those responsible for facilitating learning work for adult participants who have little or no basic skills in reading, writing, and using digital tools. To address this gap, I utilized a qualitative approach where I interviewed and observed teachers in VO and focused on their experiences in facilitating learning work and how their teaching practice is impacted by digital technology. In interpreting my data, I used thematic analysis and a hermeneutic approach to determine themes, patterns, similarities and differences and interpret meanings.

To summarize the main findings, the following points are highlighted:

1. Findings from this study revealed that teachers facilitate learning work for adult participants with little or no schooling by considering participants varying experiences. Embracing participants' experiences as a resource for learning corresponds to Knowles's (1970) andragogical view on adult learning. Teachers with an andragogical perspective consider that adult participants have different experiences, motivations, and reasons for learning than children and relate learning goals to relevant, problem, and life-centered teaching contents. Considering participants' experiences is also the starting point for teachers in VO to understand participants' actual knowledge and zone of proximal development, determining what they can do as more competent individuals in the classroom (Vygotsky, 1978). By frequently assessing students' actual development level and their zone of proximal development, teachers can plan a more directed approach for adult participants with little or no schooling.

2. Effective facilitation of learning work is a product of interrelating sociocultural factors. First, digital technology as a physical artifact played a crucial role in facilitating learning work for adult participants with little or no reading and writing skills. It provided new opportunities for visualization, served as an additional toolbox, and was used as a scaffolding tool for teachers to create differentiated and adapted teaching content along with other physical artifacts (e.g., papers, books, and materials from the Leap Learning room). Although teachers acknowledged the pivotal role of physical tools, specifically digital technology as a mediating artifact, it was not the *only* tool teachers used to facilitate learning work. Language, particularly participants' mother tongue and Norwegian, was also utilized as an essential sociocultural mediating tool. Participants with little or no schooling lack language and oral skills in Norwegian, and allowing participants to actively use their mother tongue permitted students to be active in their own

learning process. The use of digital technology as a physical artifact and language as an intellectual tool occurs in a social environment where teachers and adult participants interact, collaborate, and communicate to learn.

3. Through the teachers' appropriation of digital technology in their teaching practice, they were able to strengthen their didactical strategies that could be particularly helpful for adult participants with little or no school background. Digital resources and applications opened opportunities for language learning, repetition, and variation, encouraged active participation, and aided teachers in developing strategies on how participants learn how to learn. Although these strategies are entirely possible without using digital technology, the finding showed that digital tools and applications provided teachers with an additional toolbox and support to effectively implement these strategies in the classroom.

4. Digital technology is an important teaching tool, but it will remain a tool until it is filled with the right content. The teachers' professional digital competence to handle the technicalities of digital technologies and, most importantly, integrate digital technology into their content and pedagogical knowledge is necessary to facilitate learning work for adult participants with little or no schooling. These participants may have significant challenges participating in a highly digitalized country like Norway. Nonetheless, the teachers' continuous efforts, combined with the affordances of digital technology in the classroom, can provide them with new opportunities for learning that could be helpful in their search for better life opportunities.

6.1 Implications, limitations and suggestions for further research

Based on the findings of this study, in line with the chosen theories that support the study's claims, I argue that there are several implications of this thesis. First, it provides additional empirical knowledge and data on important factors teachers should consider when facilitating learning work using digital technologies for adult participants with minimal or no reading and writing skills. This study can contribute to the little research dedicated to adult education, teachers' practical work in adult education centers, and the use of digital technology for adult participants with low educational backgrounds.

Second, this thesis can provide a deeper insight into the advantages and disadvantages of digital technology as a teaching and learning tool for adult participants with little or no school background. It encourages teacher reflection on the necessary skills and competencies needed

to effectively integrate digital technology into their teaching practice. There is still much to learn about the implications of digital technology for these participants, and it is crucial to build upon what we know about the use of digital technology and examine other disciplines and theories related to the learning and teaching of this specific group. Third, this study can be used as the starting point to uncover teaching challenges associated with the lack of digital resources and the number of adult participants per class in the different adult education centers, which can be helpful in the further assessment and efforts directed to VO.

However, using a hermeneutic approach as a scientific basis to interpret data, I have gathered descriptions of teachers' experiences, reflections and practices. This also means that the findings that emerged in this study are based on my understanding of what the respondents tried to convey. These interpretations can, however, be affected by my own experiences and preconceptions as an individual who once studied in an adult education center. As a novice researcher, there were instances where I was quick to agree or comment on the teachers' stories and descriptions. Moreover, being a master's student with no prior experience in using thematic analysis, it can be possible that I oversaw other important themes that could also be relevant to my thesis problem. Nevertheless, with the knowledge I have accumulated prior to and during the writing of this thesis, I argue that all choices made were intended to be for the best of the study.

Furthermore, the findings from this study need to be treated as indicative and exploratory. This study has a small sample size and mainly focuses on the views and perspectives of teachers on how they facilitate the learning work for adult participants with little or no school background. The study did not consider the *students'* experiences and opinions about the didactical approach and the digital tools teachers used in the classroom. I argue that taking the participant's perspectives on the subject would give a more holistic picture of the effectiveness of teaching approaches and the digital technology employed in the classroom. Therefore, further research is needed to focus on participants' views and experiences of teachers' leadership, facilitation, and guidance on learning work. Finally, there is still a lot to know regarding the roles of teachers in technology-driven classrooms, especially for students with minimal language and digital skills. A longitudinal study is suggested to explore in-depth whether using digital tools leads to the effective acquisition of basic skills such as reading and writing for these groups of participants.

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Appendix 1: Approval from NSD (*Godkjenning fra NSD*)

NSD

MELDESKJEMA FOR BEHANDLING
AV PERSONOPPLYSNINGER

Norsk ▾ Jovelyn Catalan Wasil ▾

[Meldeskjema](#) / [Læreres tilrettelegging av digital preget u...](#) / Vurdering

Vurdering

☰ 05.11.2021 ▾  Skriv ut

Referansenummer
120831**Prosjekttittel**
Læreres tilrettelegging av digital preget undervisning for voksne innvandrere med lite eller ingen skolebakgrunn fra hjemlandet.**Behandlingsansvarlig institusjon**
Universitetet i Oslo / Det utdanningsvitenskapelige fakultet / Institutt for pedagogikk**Prosjektansvarlig**
Anne Line Wittek**Student**
Jovelyn Catalan Wasil**Prosjektperiode**
02.12.2021 - 02.10.2022[Meldeskjema](#) 

Dato	Type
05.11.2021	Standard

Kommentar

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg 05.11.2021. Behandlingen kan starte.

DEL PROSJEKTET MED PROSJEKTANSVARLIG

Det er obligatorisk for studenter å dele meldeskjemaet med prosjektansvarlig (veileder). Det gjøres ved å trykke på "Del prosjekt" i meldeskjemaet.

TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 02.10.2022.

LOVLIG GRUNNLAG

Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER

NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:

- lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen
- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke behandles til nye, uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER

Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20).

NSD vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.

Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

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

Dersom du benytter en databehandler i prosjektet må behandlingen oppfylle kravene til bruk av databehandler, jf. art 28 og 29.

For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

MELD VESENTLIGE ENDRINGER

Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde:

https://nsd.no/personvernombud/meld_prosjekt/meld_endringer.html

Du må vente på svar fra NSD før endringen gjennomføres.

OPPFØLGING AV PROSJEKTET

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

Lykke til med prosjektet!

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Appendix 2: Information document (*Informasjonsskriv*)

Hei! Vil du delta i et forskningsprosjekt?

Jeg ønsker å finne ut hvordan lærere på Voksenopplæringen leder digitalt læringsarbeid for voksne innvandrere med lite eller ingen skolegang fra hjemlandet.



Formål

Formålet med dette prosjektet er å se på læreres perspektiv på hvordan de leder digitalt læringsarbeid med særlig vekt på bruk av digitale verktøy i undervisningen, og hvordan det kan ha betydning i læringsutbytte til voksne innvandre med lite eller ingen skolebakgrunn fra hjemlandet.

Jeg har lyst til å snakke med deg fordi du underviser denne studentgruppen. Jeg håper du vil være med! Jeg vil for eksempel stille deg spørsmål som:

1. *Hva gjør du for å lede opplæringen?*
2. *Hvilke strategier benytter du for å lede digitalt læringsarbeid?*
3. *Hvilket digitale verktøy bruker du i klassen?*

Hvem leder forskningsprosjektet?

Dette prosjektet er et forskningsprosjekt fra Universitetet i Oslo.

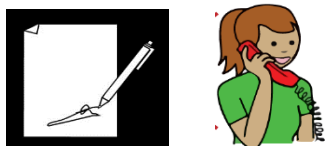
Forskeren heter Jovelyn Catalan Wasil

Jeg er masterstudent i kunnskapsutvikling og læring i arbeidslivet ved Universitetet i Oslo i studieretning pedagogikk.

Hvorfor får du spørsmål om å delta?

Vi spør deg om å være med fordi du er lærer på Voksenopplæring i Oslo og sitter med både kunnskap og erfaring om temaet.

Hvis du har lyst til å være med i forskningsprosjektet, må du skrive under på siste ark i dette brevet, og da vil vi ta kontakt med deg.



Hvis du ikke har lyst å være med, tar vi ikke kontakt med deg.

Hva betyr det for deg å delta?

Hvis du har lyst å delta i forskningsprosjektet, vil jeg ha et **intervju** med deg. Et intervju er en samtale der vi stiller deg forskjellige spørsmål. Spørsmålene vil handle om din jobb som lærer på Voksenopplæringen. Dersom det lar seg gjøre er det ønskelig å tilføye intervju med **observasjon** for å få mer informasjon om hvordan lærere leder det digitale læringsarbeidet for sine voksne deltakere.



Jeg har ansvar under intervjuet, og jeg vil gjøre lydopptak.

Intervjuet vil ta ca. 30- 45 minutter.



Det er frivillig å delta

Det er frivillig å delta i prosjektet. Det betyr at du kan velge selv om du har lyst å være med eller ikke. Ingen andre kan velge dette for deg. Det er bare du som kan samtykke. Samtykke betyr at du sier at du synes noe er greit.



Hvis du vil delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Det betyr at det er lov å ombestemme seg, og det er helt i orden. All informasjon om deg vil da bli slettet.

Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller om du først sier «ja» og så «nei» og det vil ikke ha noe å si for jobben din.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Jeg vil bare bruke informasjonen om deg til å finne ut din ledelse i forhold til det digitale læringsarbeid du gjør i undervisning for voksne innvandrere med lite eller ingen skolebakgrunn.

Jeg vil ikke dele din informasjon med andre. Det er bare forsker Jovelyn Catalan Wasil som har tilgang til informasjonen og min veileder i prosjektet.

Jeg passer på at ingen kan få tak i informasjonen som vi samler inn om deg.

Jeg lagrer all informasjon på en sikker datamaskin/telefon.

Jeg sletter lydopptak fra intervjuet når vi har skrevet ned alt som vi har snakket om.

Jeg passer på at ingen kan kjenne deg igjen når vi skriver forskningsartikler. Jeg vil for eksempel finne opp et annet navn når vi skriver om deg.

Jeg følger loven om personvern.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Jeg er ferdig med forskningsprosjektet senest 01.10. 2022.

Da vil jeg passe på at all informasjon om deg er slettet.

Dine rettigheter

Hvis det kommer frem opplysninger om deg i det som vi skriver, eller har i dokumentene våre, har du rett til å få se hvilken informasjon om deg som vi samler inn. Du kan også be om at informasjonen slettes slik at den ikke finnes lenger. Dersom det er noen opplysninger som er feil kan du si ifra og be forskeren rette dem. Du kan også spørre om å få en kopi av informasjonen av oss. Du kan også klage til Datatilsynet dersom du synes at vi har behandlet opplysningene om deg på en uforsiktig måte eller på en måte som ikke er riktig.

Hva gir oss rett til å behandle personopplysninger om deg?

Jeg behandler informasjon om deg bare hvis du sier at det er greit og du skriver under på samtykkeskjemaet.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål om studien, kan du ta kontakt med prosjektansvarlig Anne Line Wittek (tlf.22 85 85 15)

Norsk senter for forskningsdata (NSD) har sagt at det er greit at vi gjør dette forskningsprosjektet.

Hvis du lurer på hvorfor NSD har bestemt dette, kan du ta kontakt med:

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

Med vennlig hilsen,

Jovelyn Catalan Wasil

Appendix 3: Consent form for data collection (*Samtykkeerklæring*)

Jeg har mottatt og forstått informasjon om prosjektet, *hvordan lærere på Voksenopplæring leder digitalt læringsarbeid for voksne innvandrere med lite eller ingen skolegang fra hjemlandet*, og har fått anledning til å stille spørsmål. Jeg samtykker til:

- ☐ å delta i et intervju.
- ☐ å delta i observasjon.

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

(Signert av prosjektdeltaker, dato)

Appendix 4: Interview guide (*intervjuguide*)

Intervjuguide for lærere på Voksenopplæring

Formålet med dette masterprosjektet er å finne ut hvordan lærere på Voksenopplæringen leder digitalt læringsarbeid for voksne innvandrere med lite eller ingen skolebakgrunn i hjemlandet. Intervjuet er semistrukturert, og vil bli tatt opp med diktafon. Det er en app som vi bruker på Universitetet for å sikre informasjon, opplysninger og samtaler vi kommer til å ha i løpet av intervjuet. Intervjuet skal deretter transkriberes og slettes. Deres identitet vil kun være kjent for meg og min veileder.

Innledende spørsmål: Bakgrunn

1. Hvilken utdanningsbakgrunn har du?
2. Hvor mange år har du undervist på Voksenopplæringen?
3. Hvilken klasse underviser du?
4. Hvor mange studenter har du i klassen?

Generelle spørsmål om undervisning og læringsarbeidet

4. Kan du beskrive hvordan du leder opplæringen til studentdeltakere voksne innvandrere med lite eller ingen skolebakgrunn fra hjemlandet?
5. Hvilke strategier benytter du for å lede digitalt læringsarbeid for denne gruppen?
6. Hvor lang tid bruker du for å forberede undervisningen?
7. Samarbeider du med en annen lærer i tilretteleggingen av undervisningen? Hvordan gjør dere det?
8. Hva synes du om innhold i læreplanen i forhold til deltakeres evner og forutsetninger i gruppen?
9. Når det gjelder voksne deltakere, er det andre underliggende faktorer som må tas hensyn til når du leder det digitale læringsarbeidet?
10. Hva gjør du hvis en deltaker har en annen behov eller læringsforutsetning enn det du opprinnelig planla i timene?
11. Hvordan sørger du for en tilpasset opplæring i klassen?
12. Voksne innvandre som går på Voksenopplæringen er veldig forskjellig og kommer fra ulike bakgrunner, kan du fortelle litt om dine opplevelser i forhold til å lede læringsarbeidet for denne gruppen?
13. I læringssammenheng hvordan støtter du deltakeres læring i klassen?

14. I Norge finnes det ikke egen pedagogikk for voksne, kan du fortelle litt om din egen mening om akkurat dette?

Generelle spørsmål om bruk av digitale verktøy i læringsarbeidet

1. Siden du underviser voksne innvandrere med lite eller ingen skolebakgrunn, hvordan opplever du deres digitale ferdigheter?
2. Hvordan forholder du deg til elevenes ulike digitale ferdigheter?
3. Hva gjør du for å forenkle undervisning til voksne innvandre med ulike digitale ferdigheter?
4. Hvordan jobber du med å forsterke voksne innvandreres digitale ferdigheter?
5. Hvilket digitale verktøy bruker dere i klassen?
6. Hvor ofte bruker du digitale verktøy i undervisningen?
7. Hvor lenge har du brukt (Leap learning, ipad) som undervisningsverktøy i klassen?
8. Hvordan opplever du elevenes engasjement i undervisningen etter at verktøyet ble brukt som undervisningsverktøy?
9. Kan du beskrive litt hvordan du støtter deltakeres læring ved bruk av dette verktøyet?
10. Hvordan har bruk av digitale verktøy bidratt til læring av deltakere?
11. Er det noen vanskeligheter eller utfordringer ved bruk av digitalt undervisningsverktøy? Kan du utdype hvilke utfordringer?
12. Som lærer, hvordan opplever du det digitale læringsarbeidet her på Voksenopplæringen?
13. Hvilke fordeler/ulempes har bruk av digital preget læringsarbeid har for deg som lærer på VO i Oslo?
14. Har undervisningsmålet endret seg etter bruk av digitalt verktøy? Hvordan?
15. Hvordan var studentenes læringsutbytte etter bruk av digitalt verktøy?
16. Kan du fortelle litt om deltakere har gitt uttrykk om de trives eller mistrives bruken av digitale verktøy i klassen?

Generelle spørsmål om læreres digitale kompetanse

1. Føler du at du får brukt din egen digitale kompetanse i å lede det digitale læringsarbeid i klasserommet? Hvordan?
2. På hvilken måte har din digitale kompetanse har hjulpet deg i tilretteleggingen av undervisningen?
3. Som lærer i et digitalt samfunn er utvikling og oppdatering av kunnskap veldig viktig, Hvordan sørger du for at din digitale kompetanse er oppdatert?
4. Hvordan sørger VO for oppdatering og utvikling av kunnskap særlig læreres digitale kompetanse?

5. På hvilken måte din profesjon som lærer på Voksenopplæring fremmer/hemmer din digital kompetanse?
6. Hva slags type kompetanse bør en lærer ha for å undervise voksne innvandrere med lite eller ingen skolebakgrunn?
7. Er det noe annet du ønsker å formidle i tillegg til det som allerede blitt sagt?