# MASTEROPPGAVE

## Digital Skills in English as a Second Language in Early Years of Primary School


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**ABSTRACT**

Since the introduction of computers followed by a recent introduction of the interactive whiteboard, use of technology has influenced all subjects in school. A concern about how computers and other digital devices might benefit language learning has initiated a growing research area. Norway seems to be well equipped when it comes to digital technology for classroom use. Little research has so far been done in the first years of primary school regarding such use. The present study might therefore add a new dimension to available research by focusing on young children and their first years learning a second language. The focus in the present study is on how teachers use the access of new technology in the English as a second language classroom, and on the effect digital competence as one of five basic skills has on teaching practice. This project reports data from interviews with teachers along with background information from a questionnaire and classroom observations in a pilot study. The study sheds light on how teachers let pupils benefit from using digital technology and digital learning material. Teachers in general report a belief in digital technology as positive for second language acquisition, it is however suggested that pupils need guidance from trained teachers.

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# 1. INTRODUCTION

## 1.1. Statement of topic

Digital competence and use of digital technology to enhance language skills in English as a second language (ESL) has had an enormous development the last two decades. The use of this technology has influenced all school subjects; "In the early years of computer revolution, the primary concern was simply attempting to get computers into the system and to find software that 'comfortably fit' into the curriculum"(Hubbard & Levy, 2006, p. 317). With the introduction of the internet there has been a growth in opportunities for communicating in other languages beyond the traditional educational setting (Abraham & Williams, 2009). One has seen remarkable changes in the school system concerning use of digital technology, with a change from a concern to get computers into schools to a concern about how computers might benefit learning.

A recent study published by the European Commission (2013) collected and benchmarked information on the access, use, competence, and attitudes of students and teachers regarding Information and Communications Technology (ICT) in schools from 31 European countries, including Norway. Norway seems to be well equipped when it comes to number of computers, access to fast internet, and use of learning platforms (Korte & Hüsing, 2006; Wastiau et al., 2013). However, to be well equipped is no guaranty for teachers using the technology wisely, hence; "Digital competence is not only about usage of the tools, but using them to support creativity and innovation" (Ala-Mutka, 2007, p. 219). A report from the National Network for IT-research and competence in education (ITU) on the integration of ICT in teaching and learning shows a decrease in the use of this technology in lower secondary school (Ove Edvard Hatlevik, Ottestad, Skaug, Kløvstad, & Berge, 2009). Little research has been done on the use of technology in early years of primary school. By focusing on teaching practise in primary schools this research might therefore provide useful information on the integration of ICT in ELS primary school classrooms and shed light on how teachers let pupils benefit from using digital technology and digital learning material available. Digital learning material is, for the purpose of the present project, material that is designed or used for educational purposes, published in a digital form and intended to be accessed by computer.

This master thesis focuses on teaching practice in ESL primary school classrooms. The investigation is not concerned with evaluating learning outcomes, but rather with examining teacher's conscious preparations and use of digital available learning material with pupils. Schools and teachers are tied to the subject aims established as a regulation by the Norwegian Ministry of Education and Research (UDIR) (2010). Teachers develop educational practices based on these subject aims, their own digital competence and the tools they have available at the school or in the classroom. Through the internet, teachers gain access to material for all kinds of exercises and activities. One might assume that teachers would enhance and incorporate use of digital technology in their ESL lessons. The present study seeks to find answers to the question of how teachers in the first two years of primary schools use the possibilities that ICT in teaching has to offer.

### 1.2. Overview of the study

The present study is based on, first, a pilot study that took place during a spring semester in primary school. In the pilot study language teachers from eight different schools contributed data and 20 teachers responded to a questionnaire. Two teachers were observed performing one lesson each and then interviewed after the completion of the observations.

Second, data from primary school teachers from a random municipality is included in the present study. Teachers teaching the 1st or 2nd grade in four different schools were interviewed during the spring semester of 2013. Key points from these interviews are presented and discussed throughout this thesis.

### 1.3. Background

A pilot study performs, as mentioned in the previous section, as background information for performing the present study. A positive belief amongst teachers concerning the pedagogical possibilities the interactive whiteboard (IWB) has to offer was found and described in the pilot study. The aim of the research was to find out if teachers in primary schools make informed choices in taking advantage of the possibilities the introduction of IWBs might offer. The results from the pilot study showed an increasing use of IWBs as visual and auditory support. It was therefore suggested that it was likely to presume that a connection between the introduction of interactive whiteboards and a change in teaching methods exists (Gully, 2012). The term teaching method is used as a broad cover term for the different activities used in a language classroom. The pilot study serves as background information for

the present study and data from the former study will serve as complimentary data for the present study.

Digital competence in a language classroom is essentially an extension of good teaching practice while using digital technology. Whereas the pilot study concentrated on the use of the IWB, the present study will try to shed light on the pedagogical use of digital technology in general in relation to the subject aims presented in the English Subject Curriculum. The focus of this study will be on teachers in early primary school and the subject aims in English (ESL) after year 2 of primary school.

### 1.4. Research questions

Recent studies (Gunstein Egeberg et al., 2012; European Commission, 2013) have highlighted Norway as a country with high frequency of digital equipment in schools. Previous research (Gully, 2012; S. Higgins, Beauchamp, & Miller, 2007) has shown that the introduction of interactive whiteboards has affected teaching and learning interactions. Based on this knowledge, the aim for this thesis is to shed light on how teachers in the first two years of primary schools use access to the new technology in their teaching of English (ESL). The aim of the study is based on a belief that frequency of ICT use is not a measure for quality. It will therefore be important to see ICT use in relation to the objectives in the English Subject Curriculum (Norwegian Ministry of Education and Research, 2010). Three research questions are developed in order to provide information regarding the aim of the study.

The research questions for this thesis are:

- How do teachers in the early years of primary school implement the use of digital equipment and digital learning material in their teaching of English as a second language?
- How has the introduction of digital competence as one of the five basic skills influenced teaching of English as a second language?
- What influences teachers' choice of use of digital learning material and equipment in their teaching?

An optimal classroom climate for learning is by Hattie (2012) described as one that generates an atmosphere for trust. The research questions are based on a belief that teachers play a crucial role when it comes to the quality of pupil's learning and, that teachers' beliefs and commitments are important factors for influence on learning (Hattie, 2012).

This view is supported by Otnes who claims that;

> The teacher must not abdicate in the digitised school, but rather be a facilitator in the subjects, providing inspiration and guidance. The subject teacher should make conscious decisions regarding the use of digital technology in a project. Pupils should have been taught which academic - inclusive the digital - aspects that are emphasized, and received information on the assessment criteria for attainment of the subject aims as well as the digital aims (Otnes, 2009, p. 16 , own translation).

By focusing on how ICT is implemented in ESL lessons this study may contribute with knowledge of teachers' conscious use of digital technology for the purpose of learning a second language.

### 1.5. Purpose of study

The purpose of the present study is to gather information on how teachers use and take advantage of digital tools and digital learning material available for ESL in early years of primary schools. Pedró (2007) argues that

> Although some studies show that teachers are amongst the most skilled technology users, the fact is that they are unable to take benefit of this competence and to apply it to the way they teach. This can be partly the default of the current configuration of education systems, but also the lack of a clear vision of what teaching in the new millennium should look like and, accordingly, the absence of initial teacher training programs where such a vision is embodied (Pedró, 2007, p. 255).

This study will describe and shed light on how this competence is applied to teaching, and discuss what obstacles might be involved in the use of ICT in ESL.

### 1.6. Relevance

Studies concerning use of ICT in Norwegian schools often seem to be focusing on lower secondary as well as upper secondary school (Gunlaug Egeberg & Wølner, 2011; ITU, 2005). A recent study describes current use and future needs of ICT use in kindergartens (Bølgan, 2012). Bølgan discusses the role technology can have in early childhood (2012). Little research has been done regarding the use of ICT in ESL in primary schools. The ability to use ICT is not a subject, but a skill that has been implemented in almost all subject syllabuses in the 10-year compulsory school system. The National Curriculum contains descriptions of several specific competencies at 2nd, 4th, 7th and 10th grade. "In the Norwegian curriculum, the

ability to use information and communication technology has been considered one of five basic skills since 2006" (The Norwegian Ministry of Education and Research, in Ole Edvard Hatlevik & Arnseth, 2012, p. 56). Teaching in primary school builds the basis for pupils; choices teachers in primary school make concerning use of new technology in their teaching will have impact on the experiences pupils have with this technology.

"There is an inverse relationship between age and the effectiveness of learning many aspects of language – in general, the younger the age of exposure, the more successful the language learning" (OECD, 2007, p. 85). In order to make pupils benefit from this advantage , it is viewed important that early foreign language instruction is appropriately designed for young children (OECD, 2007). The present study, with focus on the first years of primary school, may therefore be highly relevant. Firstly it will describe the integration of digital learning material related to subject aims, and secondly it will shed light on the obstacles primary school teachers experience in their teaching.

### 1.7. Significance

This master thesis may contribute to existing research on the use of ICT in language learning and on integration of digital learning material. The research has the potential to benefit teachers in general by extending their knowledge on how ICT may be used in learning processes. The findings from this research could be generalised to other primary school teachers' experiences regarding difficulties and obstacles experienced with the integration of digital learning material. The study may help to raise awareness on how ICT can be integrated in relation to the English subject aims in the National Curriculum and the development of pupils' digital skills. The study may be of significance to language teachers as it contributes with background information and descriptive research on how ICT is used in ESL classrooms.

### 1.8. Structure of thesis

This paper has been divided into six chapters. The first chapter provided an introduction of the study. This included background information, presentation of research aims and purpose of the study. The significance and relevance of the study was also presented. The following chapters will be structured as follows:

Chapter 2 begins by laying out the theoretical dimensions of the research, and looks at how digital competences are reflected in subject aims. A brief description of learning theories in general and language learning theories is presented followed by a description of Gardener's

(2011) theory on multiple intelligences, and learning styles. A section presents Bloom's (1956) theories on how teachers may categorize educational objectives in their teaching. An overview of digital technology and digital learning material language teachers normally may have access to will be given.

Chapter 3 describes the design of the present study. The aims are presented along with the research questions for the study. Instruments developed for the study as well as the material and methods used are outlined. Research should be done objectively and respectfully, the ethical considerations will therefore be made apparent. Views on how the reliability of the study is addressed are also presented.

Chapter 4 outlines the findings of the study. Results from interviews are described and relevant findings are presented. The results from a questionnaire and classroom observations from a pilot study are presented in brief as these add complimentary information for the present study.

Chapter 5 involves discussion of the findings presented in chapter 4 in relation to the research questions for the present thesis. In order to consider the results of the research and the implications of these, the results will be discussed with and related to the theoretical background described in chapter 2.

Chapter 6 forms a conclusion of the study and identifies recommendations for further research.

# 2. THEORETICAL BACKGROUND AND PREVIOUS RESEARCH

Focus in schools has shifted from learning how to use ICT, to how to learn best using ICT. This shift has been recognised in the framework for basic skills (Norwegian Ministry of Education and Research, 2012) but is also reflected in subject aims in the English Subject Curriculum in KL06 (Norwegian Ministry of Education and Research, 2010). Central to the concept of using digital learning material in school is how this use can relate to the framework and the subject aims. These are therefore presented in turn in this chapter along with a section relating to digital competence in education.

Several learning theories have influenced teaching through the years. Some of the theories have also concerned the use of computer technology for language learning. An outline of this development will be provided in this chapter followed by a brief description of the theory of multiple intelligences (Armstrong, 2009; Gardner, 2011). Blooms' taxonomy (Anderson et al., 2001; Bloom, 1956) outlines how teachers might understand and implement subject aims into their teaching. The taxonomy and how this has been digitised the latest years will therefore also be presented in this chapter.

Children's learning is supported by a wide range of classroom features, for this thesis however, the main features of interest are how access to digital technology in the classrooms is used along with the use of digital learning material. A section describing the most relevant digital technology in classroom will therefore form the closure of this background chapter.

## 2.1. English Subject Curriculum

This subsection relates to the English Subject Curriculum (Norwegian Ministry of Education and Research, 2010) and how the subject aims are presented in subject areas as well as specific aims. According to the limitations of the study, only subject aims of the 2nd year in primary school will be presented. Teachers providing data for the present study are teachers in the first or second year of primary schools; it is therefore sufficient to present only this part of the curriculum concerning year 1 and 2. The subject aims in the English Subject Curriculum (Norwegian Ministry of Education and Research, 2010) have been structured as competence aims in three main areas: language learning, communication, and culture, society and literature. These areas are therefore presented and commented on the next pages.

The area of language learning focuses on "[...]knowledge about the language, language usage and insight into one's own language learning" (Norwegian Ministry of Education and Research, 2010). The competence aims in this main area presents three specific aims the pupils shall be able to do by the end of year 2 in primary school:

- give examples of situations where it might be useful to have some English-language skills
- find words and phrases that are common to English and the native language
- give examples of English terms and phrases connected to personal interests

(Norwegian Ministry of Education and Research, 2010)

Digital skills are, as we can see, not mentioned specifically, but it will be natural to come up with examples such as games, TV, and the internet while discussing examples of situations where it might be useful to develop English language skills.

The second main area concerns communication through oral interaction, listening, reading and writing. Using the English language for communication "[...]requires knowledge and skills in using vocabulary and idiomatic structures, pronunciation, intonation, spelling, grammar and syntax of sentences and texts" (Norwegian Ministry of Education and Research, 2010). New media is considered to be an important part of this area. This is also reflected in the competence aims after year 2 in primary school in the area of communication where the aims are that the pupils should be able to:

- understand and use some common English words and phrases that have a connection with the local community
- use the most basic English phonology and language rhythms through practical-aesthetic forms of expression
- greet people, ask questions and answer simple oral questions
- understand simple instructions given in English
- recognise some words, expressions and simple sentences in spoken and written texts
- use letters and experiment with writing English words and expressions
- use numbers in communication
- use the language through several senses and media

(Norwegian Ministry of Education and Research, 2010)

Use of media is explicitly mentioned in the last point, but one may also assume that new media is implicit when it comes to understanding instructions and experimenting with writing words and expressions.

The third main area is that of culture, society and literature. This area focuses on cultural understanding through various types of expressions: "Working with various types of texts and other cultural expressions is important for developing linguistic skills and understanding how others live, and their cultures and views on life" (Norwegian Ministry of Education and Research, 2010). The specific competence aims are that the pupils should be able to:

- discuss aspects of the day-to-day life of children in some English-speaking countries
- participate in English child culture and children's literature using words, pictures, music and movement

(Norwegian Ministry of Education and Research, 2010)

Various texts and other cultural expressions are specifically mentioned and highlighted as important. New media would therefore be a natural part of this main area. The two competence aims might be viewed as relevant to the use of new technologies as they concern day-to-day life and participation in culture especially through pictures and music.

Through this presentation of the subject aims focus has been to shed light on where it may be relevant to incorporate digital competence as one of the basic skills. The competence aims where media is specifically mentioned for year 2 are more modest, as summarised in table 1.

| Year | Language Learning | Communication | Culture, society and Literature |
|---|---|---|---|
| 2 | | Use language through several senses and media | |

**Table 1: Competence aims where new media is mentioned in LK-06 (Lund, 2009, p. 90, table 5.1)**

Lund (2009) emphasizes that the subject curriculum hereby presents an imprecise view on the connections between language practice and use of technology. According to Lund (2009) focus on technology is modest and does not reflect the more ambitious perspectives described in the definitions of the basic skills in LK06, where, according to Lund, "[...] there is an interesting mutual relationship between English and digital technology" (2009, p. 89). However, this imprecise view acknowledges teachers as professional educators with the freedom to choose the teaching methods best suited for their pupils. Digital competence is an important factor for teachers as well as pupils; technology should therefore be used in and beyond the language classroom. Dawes (1999) supports the importance of pedagogic use of technology and points out that: "without the involvement of a committed teaching force, ICT use by pupils may remain largely in the realms of a leisure pursuit, its wider educational

purposes remaining all potential" (1999, p. 251). Therefore, to make use of this potential, focus on how ICT may be used for educational purposes is of importance.

### 2.2. Framework for basic skills

The framework for basic skills (Norwegian Ministry of Education and Research, 2012) is redefining the five basic skills introduced in the education reform in Norway in 2006 (LK06) where basic skills were integrated in the competence aims of each subject curriculum (Norwegian Ministry of Education and Research, 2010). In 2012 the framework was developed and used as a basis for a revision of the different subject curricula.
The framework defines the skills and describes their functions on different levels through education. Digital competence is, in the framework of 2012, renamed "digital skills":

> Digital skills involve being able to use digital tools, media and resources efficiently and responsibly, to solve practical tasks, find and process information, design digital products and communicate content. Digital skills also includes developing digital judgement by acquiring knowledge and good strategies for the use of the Internet (Norwegian Ministry of Education and Research, 2012, p. 12).

The digital skills are sorted into the following sub-categories; search and process, produce, communicate and digital judgement. Digital skills are viewed as a prerequisite for further learning, and it is argued that many of the conditions for reading, writing and oral forms of expression are changing because of the development in digital technology. "Consequently, using digital skills is a natural part of learning both in and across subjects, and their use provides possibilities for acquiring and applying new learning strategies while at the same time requiring new and increased powers of judgment" (Norwegian Ministry of Education and Research, 2012, p. 12). By integrating digital skills as a natural part of competence aims, the importance of ICT in education is emphasised.

### 2.3. Revised English Subject Curriculum

Based on the framework of competences presented above, a revised version of the English Subject Curriculum has recently been acknowledged by the Norwegian Ministry of Education and Research (2013a) . A brief presentation of changes will therefore be given in this section and later discussed in relation to the results.

The information gathered for the purpose of the present study is based on the subject curriculum from 2010 (Norwegian Ministry of Education and Research, 2010). The school

year of 2013/2014 is set as starting point for implementation of the revised version in school curricula. Though teachers in general are informed of the revised edition, one may assume that the revised version has had none or little impact on the interviewed teachers. Having said that, it might be interesting to discuss whether teachers' implementation of subject aims resembles the revised version more than the current version.

Digital skills in English in the revised version involve "[...]being able to use a variety of digital tools, media and resources to enhance language learning, communicate in English and acquire relevant knowledge of the English subject" (Norwegian Ministry of Education and Research, 2013a, own translation). The opportunity to experience authentic English is emphasised and digital requirements of multimodal texts are described. Also, critical and independent uses of sources are drawn forward as important when collecting material. New technology is viewed as an important tool for language learning and there is a much clearer description of how one might take advantage of the benefits new technologies have to offer.

### 2.4. Digital Competence in Education

The National Network for IT-Research and Competence in Education, now part of the National Centre for ICT in Education presented a definition of the term digital competence (ITU, 2005) that has had an important impact on the understanding of the term, a definition that still is relevant for teachers. Digital competence is defined as: "knowledge, skills, creativity and attitudes everyone needs in order to use digital media for learning and living in the knowledge society" (ITU, 2005, own translation). The same definition was used in a co-operation between ITU and the Norwegian Centre for Foreign Languages in Education (Fremmedspråkssenteret) (2007) which resulted in an online guide regarding digital competence in English. For the purpose of this paper, the understanding of the term *digital competence* is therefore:

*The knowledge, skills, and creativity needed to be able to use digital equipment and digital tools for learning.*

In order to become digitally competent, one has to have access to digital media. Hence, access to ICT is a crucial factor for benefiting from the potential opportunities that technology might bring. In a study carried out for the European Commission Norwegian schools are described as: "Highly digitally equipped schools, characterised by relatively high equipment levels, fast

broadband and relatively high connectedness" (2013, p. 51). In the EU there are between three and seven students per computer on average (European Commission, 2013), a typical feature is that the older the student is, the lower the student to computer ratio is. Norwegian classrooms have amongst the lowest ratios in Europe at all grades (European Commission, 2013). A large number of computers have been installed in schools based on a belief that technology has an important impact on teaching.

Technological changes over the last few years have broadened the view of ICT tools in classrooms. Virtual or digital learning platforms open for a more flexible use of ICT and connect the home and the classroom. The European Commission reports that "high levels of virtual learning environment provision can be seen in Norway" (2013, p. 33); at grade 4, 96 % of pupils in Norway are in schools with a virtual learning environment. The introduction of smart phones and tablets allows a more flexible and accessible approach to the general population. Several devices such as game consoles and digital television allow access to the internet providing pupils and teachers with easy access to online learning material.

The European Commission concludes that there is no overall relationship between high levels of ICT provision and student and teacher confidence, use and attitudes (2013, p. 40). Rather, other factors such as practical support to teachers are factors that influence the use of ICT. In their conference paper Kennewell and Beauchamp (2003) point out that even teachers identified as intensive users of ICT could only find around half an hour a week for each pupil to use ICT to improve literacy. They argue that "If increased ICT resourcing is to help improve standards of attainment, then devoting more time to these features would be expected to make the greatest contribution to learning"(Kennewell & Beauchamp, 2003, Section 1: Introduction, para 5). Other factors rather than pedagogical ones often contribute to how frequent digital equipments are used in education.

### 2.5. Learning theories and second language learning

Pedagogical views on teaching and theories on learning have developed and influenced teaching methods throughout the years (Lundahl, 2009; Skaalvik & Skaalvik, 2005; Svensson, 2008). After the introduction of personal computers (PCs) in schools from the late 1970s, there has naturally also been a development in theories concerning the use of computer technology for language learning as the short historical overview will show. Also, teachers may see different possibilities offered. While some have adjusted their teaching to the computers, others might have developed new activity and adapted existing learning theories.

The earliest use of computers in language learning emerged from behaviouristic theories (Skaalvik & Skaalvik, 2005) that mainly focused on change of behaviour based on mechanical response from the computer (Granath & Vannestål, 2008, p. 133). Workbook tasks were digitised providing pupils instant feedback. Behaviourist theories were, according to Svensson (2008) important for the development of computer based teaching material in general, and language teaching in special. Tasks like cloze-tests or multiple-choice have, after the introduction of the World Wide Web, become common in use though with more interactivity, flexibility, and ability for differentiation.

In the 1980s constructivist and cognitive theories based on Jean Piaget and Jerome Bruner influenced computer based language learning with more emphasis on the cognitive processes (Skaalvik & Skaalvik, 2005). Creative aspects of language learning through problem-based learning were viewed as central (Granath & Vannestål, 2008). There are many variants of cognitive theories on learning, Skaalvik and Skaalvik (2005, p. 44) claim that the cognitive theories are all based on the idea that information is received, processed, interpreted, and stored in the human brain. Constructivism refers to humans constructing their own reality, Svensson (2008) refers to Hein who states that "the term refers to the idea that learners construct knowledge for themselves - each learner individually (and socially) constructs meaning - as he or she learns. Constructing meaning is learning; there is no other kind" (Hein in Svensson, 2008, p. 57). Svensson (2008) also refers to Mergel who states that "One of the most useful tools for the constructivist designer is hypertext and hypermedia because it allows for a branched design rather than a linear format of instruction. Hyperlinks allow for learner control which is crucial for constructivist learning" (Mergel in Svensson, 2008, p. 40). The interaction the World Wide Web offer learners, would therefore benefit constructivist learning.

Socio-cultural theories based on the work of Vygotsky (Lundahl, 2009; Nottingham, 2010; Skaalvik & Skaalvik, 2005; Svensson, 2008) have increased in interest in the last few years and several theories or perspectives have emerged. Vygotsky is first and foremost connected to the theory of the Zone of Proximal Development where he, according to Nottingham (2010), contrasts two levels of intellectual development and identifies the cognitive capacities that:

- are fully developed at a particular time
- are in the process of being developed (2010, p. 92)

This process is dependent on a co-operative interaction between pupils and teachers or other pupils. In order to increase communicative competence in a second language, one has to have the opportunity to practice with others. Web-based communication has increased the opportunities for practising communicative skills. According to Nottingham (2010), Vygotsky's theories justify an emphasis on challenge in teaching and learning where although pupils may struggle, "The struggle itself leads them to strengthen attitudes, develop skills and acquire knowledge that they can use in coping with future challenges" (2010, p. 92). This is supported by Lundahl (2009) who emphasises the importance of scaffolding. Gibbons (in Lundahl, 2009) explains scaffolding as simply another word for help: "It is a special kind of help that assists learners to move towards new skills, concepts or levels of understanding. Scaffolding is thus the temporary assistance by which a teacher helps a learner know how to do something, so that the learner later will be able to complete a similar task alone" (Gibbons in Lundahl, 2009, p. 160). Cook (2008) traces scaffolding in an SLA context and argues that scaffolding has been used in many diverse senses, but questions the goal of language teaching for socio-cultural theory; "[...]it is too vague to give very precise teaching help; it could be used to justify almost anything in the classroom[...]it concerns the process of development, not the end point" (2008, p. 230). Hence, the challenge is to recognize the right kind of assistance for every pupil in every situation.

Complexities of factors are involved when it comes to learning a new language. Gass and Selinker (2008) describe the dynamic and interactive nature of acquisition through apperceived input, comprehended input, intake, integration, and output. Cook (2008) refers to Spolsky who summarises that; "Any theory of second language learning that leads to a single method must be wrong" (Spolsky in Cook, 2008, p. 234). In many ways it is therefore up to the teacher to decide how to use the best of all the different methods, motivating and teaching pupils according to the curriculum, and providing maximum input - and output for the pupils. As Cook argues;"[…]to serve the unique needs of actual students, the teacher needs to do whatever is necessary, not just what is scientifically proven and based on abstract theory" (2008, p. 271). This involves teachers making conscious choices based on their professional training and experience.

Different methods, or language teaching styles, are described by Cook (2008), the first four arranged in chronological order; the academic style, the audio-lingual, the communicative, the task-based learning style, main stream EFL and other teaching styles. This diversity reflects the complexity of language. However, several of the methods share the same foundation with

the same underlying ideas and beliefs. According to Cook (2008) "The range of styles highlights the idea that no single form of teaching suits all students and all teachers" (2008, p. 236), he summarises that "To improve teaching we need to appreciate language learning in all its complexity" (2008, p. 271). As for teachers knowing and practising different styles for teaching, learners might have different ways of learning. This aspect will be presented in the following section.

### 2.6. Multiple intelligences

Focus on learning involves focus on how each pupil may learn best, and one might assume that there are different variables that influence learning. Since the publication of the theory on multiple intelligences (MI theory) in Howard Gardener's book *Frames of mind* in 1983, awareness of the MI theory among educators has grown steadily. Armstrong (2009) has written a resource book for educators based on the MI-theory where he describes the following eight intelligences: linguistic, logic-mathematical, spatial, bodily-kinaesthetic, musical, interpersonal, and naturalist, and how they might be worked with in the classroom. Armstrong (2009, p. 32) states that: "By the time children begin school, they have probably established ways of learning that run more along the lines of some intelligences than others". Knowledge of these intelligences would therefore be of importance as this may help recognising different capacities and abilities amongst learners.

One main issue in second language acquisition is learning the meaning of new words and increase vocabulary. Cook (2008) suggests that pupils draw on different strategies for understanding and learning vocabulary. Gardner (2011) believes that all human beings possess eight different intelligences, and has proposed the possible addition of a ninth intelligence, the existential intelligence. Based on knowledge of the multiple intelligences the teacher might present topics in a variety of ways ensuring that he or she reaches more students and provides them with a more thorough understanding of the specific topic. One of the most useful features according to Armstrong (2009) is that the theory can be explained to young learners making them able to discuss how they learn. Armstrong (2009) suggests that the MI theory posits that each of us has all of these intelligences, some of them are simply more developed than others. By using a variety of activities in language teaching, one might assume that pupils, with strengths in the different areas of intelligences, will benefit of this variety based on their previous knowledge and competence.

## 2.7. Bloom's taxonomy

Bloom's taxonomy, a framework for categorizing educational objectives, was first published in 1956. The taxonomy, presumably well known for teachers, was in 2001 republished in the revised edition by Anderson et al. (2001). This section will be based on the revised edition of the taxonomy and shed light on how the taxonomy can help teachers understand and implement subject aims stated in the subject curriculum. Given the importance of subject aims (Norwegian Ministry of Education and Research, 2010) in education as well as teachers' responsibility in their teaching, it is natural to take a closer look on how subject aims or objectives are presented and how teachers can instruct pupils according to these aims.

Teachers may be viewed as curriculum implementers (Anderson et al., 2001), they are given a number of subject aims and are expected to make pupils able to reach these aims. "Teaching is intentional because we always teach for some purpose, primarily to facilitate student learning" (Anderson et al., 2001, p. 3). The taxonomy (Anderson et al., 2001) provides an overview of the cognitive process dimension and the knowledge dimension objectives may be sorted by. Therefore, it may be considered as a helpful tool for teachers to understand and implement subject aims into their lesson plans.

The knowledge dimension of the taxonomy is defined as;

> A. Factual knowledge - The basic elements students must know to be acquainted with a discipline or solve problems in it
>
> B. Conceptual knowledge - The interrelationship among the basic elements within a larger structure than enable them to function together
>
> C. Procedural knowledge - How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods
>
> D. Metacognitive knowledge - Knowledge of cognition in general as well as awareness and knowledge of one's own cognition
>
> (Anderson et al., 2001, p. 46, table 4.1)

The schooling system has in the past been known for emphasis on remembering. The cognitive process dimension broadens the range and focuses on how pupils remember and make use of their knowledge in new situations. The definitions of the different cognitive processes (Anderson et al., 2001, pp. 67-68, table 5.1) include to retrieve relevant knowledge from a long-term memory, to construct meaning from instructional messages, to carry out or use procedure in a given situation, to analyse, to evaluate, and, to reorganise elements.

Table 2 presents an overview of the revised edition; it has several changes from the original framework which consisted of six major categories: knowledge, comprehension, application, analysis synthesis, and evaluation, each with sub-categories. The categories and sub-categories were presumed to develop from simple to complex and from concrete to abstract (Anderson et al., 2001, p. 263). In the revised edition, the emphasis is on the use of the Taxonomy in planning curriculum, instruction, and assessment. The noun aspect in the original framework has in the revision changed to a verb aspect where knowledge has both a verb aspect, e.g. remember, but is also viewed as a separate dimension with different types of knowledge as presented in table 2. The verbs describe many of the activities, actions, processes and objectives teachers might use in daily classroom practice.

| THE KNOWLEDGE DIMENSION | THE COGNITIVE PROCESS DIMENSION | | | | | |
|---|---|---|---|---|---|---|
| | 1. REMEMBER | 2. UNDERSTAND | 3. APPLY | 4. ANALYSE | 5. EVALUATE | 6. CREATE |
| A FACTUAL KNOWLEDGE | | | | | | |
| B CONCEPTUAL KNOWLEDGE | | | | | | |
| C PROCEDURAL KNOWLEDGE | | | | | | |
| D META-COGNITIVE KNOWLEDGE | | | | | | |

**Table 2: Bloom's taxonomy (Anderson et al., 2001, p. 28)**

Anderson et al. (2001) divide the objectives into three main levels; global, educational and instructional, as presented in table 3. According to Anderson et al. (2001) the general domain of objectives may be best represented as a continuum ranging from quite general to very specific. Accordingly, classifying an object means determining the level in which the object fits best. The subject aims in the English subject curriculum (Norwegian Ministry of Education and Research, 2010) may hence be viewed as global objectives (Anderson et al., 2001, p. 17). Teachers recognise and prepare educational plans for units of the curriculum, as well as plan instructional objectives for their lessons based on these global objectives.

| | LEVEL OF OBJECTIVE | | |
|---|---|---|---|
| | GLOBAL | EDUCATIONAL | INTSTRUCTIONAL |
| SCOPE | Broad | Moderate | Narrow |
| TIME NEEDED TO LEARN | One or more years | Weeks or months | Hours or days |
| PURPOSE OF FUNCTION | Provide vision | Design curriculum | Prepare lesson plans |
| EXAMPLE OF USE | Plan a multiyear curriculum | Plan units of curriculum | Plan daily activities, experiences, and exercises |

**Table 3: Relationships of Global, Educational and Instructional Objectives (Anderson et al., 2001, p. 17)**

According to Anderson et al. (2001, p. 11) the taxonomy may "[...]help teachers make sense of the curriculum, plan instruction, and design assessments that are aligned with the objectives inherent in the curriculum and ultimately improve their teaching quality". Recognising the level of objectives might help teachers plan their lessons according to the knowledge dimensions and the cognitive process dimension of the taxonomy. In addition, four important organising questions are presented as guidance for teachers: the learning question, the instruction question, the assessment question, and the alignment question (Anderson et al., 2001, p. 6). These questions concern what pupils should learn, how instructions are given, how assignments are selected and designed, and how these factors are coherent with each other.

### 2.8. Bloom's digital taxonomy

Since the revision of the taxonomy (Anderson et al., 2001), ICT has emerged into classrooms and become an important and integrated part in many of the activities teachers undertake. To address this development the taxonomy has been revised and digitised amongst others by Churches (2009). Key terms to each of the verbs in the cognitive process dimension presented in the previous section are suggested in order to integrate the new technologies. Churches (2009) also suggests several different digital activities that accordingly might be used in classrooms.

Carrington (2011) has developed a *padagogy wheel* that is based on a taxonomy wheel produced by Artley (in Carrington, 2011) as an adaptation of Anderson et al.'s (2001) revision of Bloom (1956). The idea is to further adapt the taxonomy for the pedagogic possibilities with mobile devices. Carrington's *padagogy wheel* (2011) contains action verbs, activities, and more than 60 iPad apps that relate to the six verbs in the revised taxonomy (Anderson et al., 2001). The action verbs and suggested activities form an overview of what the integration

of new technologies might offer of possibilities to incorporate digital tools and enhance learning. The revisions and adaptations mentioned represent the process of learning, with the new technology as a new tool to improve learning. Interviews with teachers in primary school will therefore be interesting as an input on how teachers make use of the possibilities offered through these new technologies.

## 2.9. Digital technology in classrooms

This section describes and defines digital technology and learning material teachers normally may have access to and use in their teaching of ESL in a primary school classroom.

### 2.9.1. The interactive whiteboard

The interactive whiteboard (IWB) is a touch sensitive electronic presentation device. According to Sharma and Barret (2007) teachers who use an IWB are able to achieve "[...]a truly blended-learning solution - embedding technology[...]into their lessons in new and exciting ways" (2007, p. 82). There are developed various types of IWBs and the amount of software designed especially for IWBs is growing. Textbooks for schools have accompanying software designed to be used on an IWB (e.g. the Norwegian *Tavleboka*). The producers of SmartBoard (one of the IWBs available for schools in Norway) claim that preparing lessons for use with an IWB makes the teachers preparations more effective and more inclusive in the use of ICT in the lessons. Schmid (2008, p. 1566) emphasizes the multimodal opportunities but also "the importance of an adequate methodology in order to exploit the full potential of multimedia resources in the IWB-based language classroom". As the IWB offers new possibilities, teachers may therefore develop changes in methodology when the traditional blackboard is replaces with an IWB.

### 2.9.2. Computers

A computer is defined by the European Commission (2013) as a desktop or laptop, netbook or tablet computer, whether or not connected to the internet, available for educational purposes in school. According to the National Network for ICT in Education (Ove Edvard Hatlevik et al., 2009) there are 3.46 students per PC in the national average in primary school. Computers offer a wide range of possibilities with just a few basic skills needed. Dudeney and Hockly (2007) suggest some basic essential equipment, like computers and internet access, to start implementing technology with young learners. Through basic equipment such as stationary

computers, and laptops with internet access, commonly available in Norwegian classrooms, many opportunities arise. One may write in word processors, use CD-ROMS with educational programs, use information found on websites, chat with people from all around the world, share knowledge on for instance wikis and blogs, and produce own electronic teaching material.

Computers these days come in several forms and shapes, and youth of today live in environments where technology plays a central and sometimes also a crucial role.

> There is no reason why schools should be excluded from this world. Rather schools should be expected to be leaders in this technology-rich world or at least be pervaded by technology in ways that help students to better understand and benefit from the opportunities offered by a networked society and economy. (OECD, 2010, p. 36)

In recent years an increasing number of mobile devices have been sold, and tablets have been tried out in school projects. Research shows that mobile phone usage in Norwegian schools is above the EU mean at all levels (European Commission, 2013). According to Erstad and Quale (quoted in Ove Edvard Hatlevik et al., 2009, p. 16): "The main challenges in using ICT in Norwegian schools no longer concern infrastructure, but how schools and teachers are to use ICT as a didactic tool in education". Though there may be differences in access to computers, there is an assumption that language teachers in overall have access to computers for teaching.

### 2.9.3. Digital learning material

Digital learning material is for this research defined as learning material in a digital form used on any kind of computer or mobile device as a pedagogical tool. Computer Assisted Language Learning (CALL) appeared as a term in the early 1980s (Dudeney & Hockly, 2007). Digital learning material can include web-pages, virtual learning environments, video, podcasts, tasks made by teachers, productivity programs used for language teaching, and different types of software for language learning. Digital material may be found on online (e.g. internet) and offline (e.g. CD-ROM) media. The term TELL (Technology Enhanced Language Learning) appeared in the 1990s (Dudeney & Hockly, 2007), and widened the CALL perspective in response to the growing possibilities the internet has to offer. Digital learning material may according to Dudeney and Hockly (2007) be used to complement and enhance regular classroom work.

The teacher has to decide whether the learning material makes it possible for the pupil and the teacher to achieve their goal, as Gee and Hayes (2011) remind us: "No technology - books television, computers, video games, or the Internet - by itself makes people good or bad, smart or stupid" (2011, p. 4). Analyses in Monitor 2011 (Gunstein Egeberg et al., 2012) show that the use of digital tools and digital competence are gaining a more central place in schools. Moreover the borders between the different types of digital learning tools are blurred, though Marsh (2005) reminds us that "[...]ICTs are being promoted as 'learning technologies' and being brought into primary schools, while television and film continue to be relegated to popular culture and are often excluded" (Marsh, 2005, p. 220). The important aspect is how to use existing technology for learning.

Lavigne and Anderson (2012) state that "[...] the power of television to teach cuts two ways: television can be a source of misinformation and negative behaviours, or it can be a window to the world of education and knowledge (2012, p. 109). This view might be considered transferable to digital media in general. Gee and Hayes (2011) conclude that "Digital media improve and expand abilities language already has and they give language new abilities, or new powers" (2011, p. 9). This view is supported by Silverman and Hines (2012) who refer to the dual coding theory posed by Paivio and the theory of synergy by Neuman (in Silverman & Hines, 2012) and state that "[...]exposure to content through multiple media may have an additive effect on children's knowledge acquisition" (2012, p. 243). These potential positive effects rely on how teachers use technology in their classroom.

Use of ICT in the language classroom may also first and foremost be viewed as a means for communication (Svensson, 2008). Virtual simulations may create a high grade of realism and many digital media are suitable for collaboration. According to Svensson (2008) this serves as a motivating aspect. Svensson (2008) states, that ICT provides the pupils and students the opportunity to write and create for a wider public. The chance to store and publish learner's products in a safe online environment may, hence, be an important factor for the amount of schools with access to a learning management system.

### 2.9.4. Learning management systems (LMS)

Many schools in Norway have access to a Learning Management System (LMS). The respondents in this project have the opportunity to use itslearning (itslearning, 2013) as their LMS. In general teachers actively use an LMS as one of several digital teaching tools

(Gunstein Egeberg et al., 2012). Students who use an LMS for up- and downloading of schoolwork are found to score higher on digital literacy tests (Gunstein Egeberg et al., 2012). Within an LMS teachers might simplify and guide their pupils by providing them with links to web pages chosen from the complexity of the web, and offering digital tasks and assignments.

An LMS combines the features of listening, recording, video and colour, providing a safe environment for documentation of pupils' learning skills. An LMS is available for the pupils both at school and at home and offers therefore an opportunity for parents to easily monitor their child's development in the different subjects. From a teacher's perspective, one would therefore, assume that these features would be valuable in ESL teaching.

Many pupils consider that computer-assisted feedback might be more credible and more objective than feedback from people (Nottingham, 2010). Hattie and Timperley (2007) stated that the most effective forms of feedback "are in the form of video-, audio, or computer assisted instructional feedback; and/or relate to goals" (2007, p. 84). This view is supported by Nottingham (2010) who suggests that "video evidence and computers programmes that offer immediate feedback can enhance learning significantly" (2010, p. 39). Thus, one would therefore assume that tasks provided through the LMS is motivating and provides opportunities to practice at home. Higgins (1995) reminds us that if learners seem to enjoy a task enough to make their own time for it, "[...]it is likely that they are getting relevant exposure and practice" (1995, p. 92). Designing assignments and tasks pupils make their own time for would therefore be a rewarding challenge that motivates for practice.

Gardener's theories on multiple intelligences (2011) as presented in section 2.6 may be implemented through the use of an LMS. A whitepaper describing practical solutions for implementing the theory of multiple intelligences in class (itslearning, 2011) provides teachers with examples of how one might use itslearning to teach according to the different intelligences. Their suggestions are based on a video interview (Edutopia, 1997) where Gardner described the relationship between multiple intelligences and new forms of assessments:

> If we know that one child has a very spatial-- a visual or spatial way of learning, another child has a very hands-on way of learning, a third child likes to ask deep philosophical questions, a fourth child likes stories, we don't have to talk very fast as a teacher. We can actually provide software, we can provide materials, we can provide resources which

> present material to a child in a way in which the child will find interesting and will be able to use his or her intelligences productivity, and to the extent that the technology is interactive, the child will actually be able to show his or her understanding in a way that's comfortable to the child (Edutopia, 1997).

Teachers may by using different approaches bring variety into class. This variety can also be reflected through tasks and assignments distributed through an LMS. By letting pupils use different digital technology to document their learning, they may use activities that reflect their preference within the different intelligences.

# 3. METHODOLOGY

## 3.1. Overview of the study

### 3.1.1. Research questions

The aim of this study is, as briefly presented in the first chapter, to find out if teachers in the first two years of primary school make informed choices in taking advantage of the possibilities new information technology has to offer and how their choices are linked to the subject aims in the curriculum. The research questions are therefore as follows:

- How do teachers in the early years of primary school implement the use of digital equipment and digital learning material in their teaching of English as a second language?
- How has the introduction of digital competence as one of the five basic competences in the English Subject Curriculum influenced teaching of English as a second language?
- What influences teachers' conscious choice use of digital learning material and equipment in their teaching?

### 3.1.2. Instruments developed for the study

The overall aim for this research is, as presented earlier, to study how primary school teachers implement and benefit from using digital learning material based on the subject aims in the English Subject Curriculum (Norwegian Ministry of Education and Research, 2010). Different instruments were developed for the study. For the pilot study a combination of questionnaire, classroom observations, and interviews were used. The pilot study, with focus on interactive whiteboards, is an important contributor of information. The present study is, to some extent, based on the information provided in the pilot study. In addition, interviews with ESL teachers in the first two years of primary school form the contribution of data for this study, along with the information from the pilot study. An interview guide was developed for the present study. The interview questions were arrived at inductively through information provided through the pilot study as well as through own experience as ESL teacher. The interview guide may be found in appendix A.

Teachers were interviewed using a semi-structured format (Kvale, 1996, p. 124) with prepared themes and open-endedness in order to follow up given answers. Following Kvale's framework, the interviews were based on an inter-change of ideas of views between two persons conversing about a theme of mutual interest (1996, p. 125). The observations from the pilot study provided a possibility of a practical insight into teaching practise and were therefore valued as important for the study.

## 3.2. Material

### 3.2.1. Pilot study

The present study is, as mentioned earlier, based on a previous study regarding the use of IWBs in primary schools. The pilot study took place during a month of a spring semester in primary school. Language teachers from eight primary schools in the eastern part of Norway contributed data. 20 teachers responded to a questionnaire and two teachers were observed performing one lesson each. The same two teachers were interviewed. Key findings of the pilot study with relevance for the present study will be presented in chapter 4.

### 3.2.2. Present study

The primary material from this study is information gathered from interviews with six ESL teachers in the first two years of primary school. Considering the low number of participants, observations of all participants in addition to interviews might have been preferable; however, the study focuses on the use of digital learning material for classroom use as well as for preparing lessons. Observation of lessons would therefore only be case studies from a specific moment in time and not provide insight into how teachers consciously and regularly use ICT in their teaching. As the pilot study provides data from observations of teaching practice it is therefore, for the present study, viewed as sufficient and interesting to gather information through interviews.

## 3.3. Method

When researching second language acquisition one might choose from a diversity of approaches (Hesse-Biber & Leavy, 2011; Mackey & Gass, 2012). Determining the appropriate method may, according to Mackey & Gass (2012), be tied to the research questions and the theories they are designed to investigate. Qualitative research is generally based on a research tradition (Friedman, 2012) where case study, conversation analysis, and

ethnography are among the most common. Qualitative research generally involves small sample sizes. Friedman (2012, p. 187) states that the researcher may select individual teachers as focal participants by using either a purposive sample or a sample of convenience.

Quality data was chosen to be collected using open-ended interviews with teachers selected by using a purposive sample. The teachers interviewed in this study are all teaching ESL in the 1st or 2nd grade of primary school with the subject aims established for the 2nd grade by the Norwegian Ministry of Education and Research (2010).

The data discussed in this thesis are, as mentioned in the introduction, gathered through a pilot study in the spring semester of 2012 as well as through interviews in the spring semester of 2013. This means a use of the following methods:

- questionnaire
- classroom observations
- interviews

The research design therefore has elements of both qualitative and quantitative research (McKay, 2006, p. 7), though emphasis is on qualitative information in this thesis. By combining methods one has the advantage of supplementing information (McKay, 2006, p. 9) which also might be a positive feature when it comes to reliability. The reliability of the study will be further commented on in a later section.

The data provided was searched for evidence of change in teaching methods according to the research questions. The data is presented as information from a certain period of time and may only be viewed as a description of random teaching practice.

### 3.3.1. Questionnaire in pilot study

The questionnaire in the pilot study was produced in the learning management system itslearning (itslearning, 2012) and made available online as a *web-based survey* (Dörnyei & Taguchi, 2010, p. 71). Prior to commencing the questionnaire, contact was made with ESL-teachers in eight primary schools and the link was distributed through email. In order to increase the response rate, follow-up letters were also distributed through mail. Due to the external anonymous web-survey, follow-up letters had to be sent to all potential participants, and were consequently sent just once.

From a total of 38 potential respondents, the survey ended up with 20 responses which constitute a response rate of 52%. According to Aiken (quoted in Dörnyei & Taguchi, 2010, p. 67); "A return rate of more than 50% can be considered satisfactory, and response rates higher than 80% are rarely obtained". The response rate for the pilot study was therefore recognised as adequate.

### 3.3.2. Classroom observations in pilot study

The criterion for choosing a class to observe was the permission from the teachers to be observed. Teachers were asked for this permission in the last question of the questionnaire described in the previous section. Of the total number of respondents only two teachers gave their permission to be observed. The observations were therefore viewed as complementary information that provides examples of how the introduction of IWBs affected the ESL lessons. An observation scheme developed for the study was based on the *Communicative Orientation of Language Teaching* (COLT) observation scheme (Allen, Spada, & Fröhlich, 1983) and adjusted to the pilot study. The focus on the observations was on the following four elements; activity type, participant organisation, content and pupil activity. Despite the advantages of in-class observations, there are also limitations. Baker and Lee (2011) describe inaccurate identifications of classroom patterns as being one of them: "In searching for regular patterns in the classroom, researchers may mistakenly identify one or more behaviours, actions or events as typical of a particular teacher when, in fact, they may not be representative of his or her classroom practice at all" (Baker & Lee, 2011, p. 1437). Accordingly, the observations are viewed as examples of teaching practice at a specific moment in time.

### 3.3.3. Interviews in present study

To ensure the completion rate of the interviews, it was first decided to organise the interviews as group interviews. Focus groups can help the researcher inductively figure out what the key issues, ideas and concerns are from multiple participants at once. However, due to teachers' work schedules it was necessary to organise most of the interviews on a one to one basis. Focus group interviews might offer the strength of fruitful and vital discussions leading to new information and views on common knowledge. On the other hand, one to one interviews might provide the teacher in focus a chance to provide in-depth information. Based on this, a

combination of interviews is therefore viewed as an acceptable approach for the collection of data for this master thesis.

Interviews may be structured, semi-structured or unstructured (Duff, 2012). While a structured interview may permit cross-case comparisons, an unstructured interview may permit an exploration of a topic. The interview chosen for this thesis may, based on this, be viewed as a semi-structured interview. An interview guide was prepared in advance and used as a basis and a guide. Duff (2012) suggests that depending on how the interview develops: "[...]the interviewer might change the order of questions, add further questions to clarify, follow up or probe more deeply into a response, or drop some questions entirely" (2012, p. 188). This is supported by Hesse-Biber and Leavy (2011) who emphasize that "[...]too strong a focus on the interview guide itself can distract a researcher from paying full attention to his or her respondent"(2011, p. 104). When the teachers answered the questions it was important that they referred to the present teaching year. The questions were related to the teachers' use of ICT for preparation as well as for classroom teaching. There was no need for information about the pupils in the sense of language competence or digital competence.

An interview guide was written and piloted on two voluntary colleagues at a local school. Some of the original questions were found too complex while others were found close-ended. The interview guide was therefore revised. Some of the questions were rephrased, some were omitted and some new open-ended questions were added. The interview guide may, as earlier mentioned, be found in appendix A.

The interviews took place in locations that were convenient for the teachers. The locations were quiet meeting rooms, team rooms or classrooms at the different schools. Mostly, the interviews were held without disruptions. In order to audio-tape the interviews a laptop and the software Audacity version 1.3 was used. Audacity is an open-source recording software. It is easy to use and records with high quality. The recordings were converted into digital files and stored on a laptop, and in addition, a safety copy was stored on an external hard disk.

The audio recorded data from the interviews were then transformed into written documents. According to Hesse-Biber and Leavy (2011) transcription involves numerous decisions regarding what will be included. Standard orthography was used, for this project there was no need to use a phonetic alphabet or non-standard spelling. Likewise, features of imperfect speech were irrelevant for this project and hence left out. The answers were then categorised according to the research aims presented in section 1.4. The data collected through the

interviews will be presented through excerpts of the interview transcripts. Key points from these interviews will be presented and discussed in later sections of this paper.

### 3.4. Ethical considerations

Research involves ethical considerations. Research should be done objectively, confidentially and respectfully. Since the data collected digitally contained no personal information, and were treated anonymously, authorisation from the Norwegian Social Science Data Services (2013) was not required. Any information obtained that could reveal the identity of a participant was therefore labelled with codes.

School principals were informed in advance and asked for permission for making interviews with members of the pedagogical staff. Potential participants were contacted and requested to give their informed consent before the interview sessions started. Informed consent is by Hesse-Biber & Leavy (2011, p. 61) described as: "participant's right to be informed about the nature of a research and its risks and benefits to them prior to consenting to participation".

To ensure ethical integrity the research material was securely stored. The interviews were recorded with a computer and the recorded files were stored with password protection. The participants were treated anonymously; transcribed interview notes were marked by and stored with capital letters as codes for the different participants. The audio recordings and transcripts will be erased upon completion of the study.

Due to the small numbers of schools participating, no names or places were mentioned during the interviews or in the presentation of the results from the interviews. After the interviews the participants were contacted with an e-mail that expressed appreciation of their participation in this research project, in order to show respect for their time and information.

### 3.5. Reliability

Reliability refers to the quality of a study being trustworthy, also reliability is described as "The extent to which an experiment, test, or measuring procedure yields the same results on repeated trials" ("Reliability," 2013). In order to ensure the reliability in this study, the process of the project is documented and described. It would be easier to use more precise measuring instruments with a quantitative research approach. Having said that, the qualitative research in this project is viewed as reliable based on the explanation as well as the documentation of the process.

Six teachers are being interviewed, this low number of participants means it is not possible to generalise the results. However, as the interviewees are trained teachers with some years of teaching experience, the data collected may give valuable insight and other teachers may be able to relate to the findings. By combining and comparing the results from these interviews with the results from the pilot study, one has a wider data collection available. Patterns of similar results might be found and this aspect will be viewed as positive support for the reliability of the present thesis.

The role as interviewer might affect the data and findings (Duff, 2012). The researcher's own experience with ICT in ESL might influence the interpretation of data. Having said that, own experience might also provide some common ground and make conversation flow easily. The interview guide is written in English, but the teachers all stated they would prefer to answer in Norwegian. The interviews were therefore carried out in Norwegian. This might affect the data in two ways. On the positive side, the conversation in the interviews is not affected by informants searching for words, it will be a conversation in a safe environment and in the language they know best. On the negative side, the translation of the transcripts might affect the presentation of the data. The positive side is regarded as more important for the actual research than the negative side. Also, the participants were given the opportunity to read through interview notes to ensure that their opinions were described and translated correctly.

### 3.6. Sample group

Contact was made with the Norwegian Social Science Data Services (2013) and school principals, before contact was made with potential informants. As the thesis focuses on the subject aims after the second year of primary school, an important criterion was that the informants had to work in either the first or second year at primary school when completing the interviews. The sample group consists of a random group of teachers where technology competence and use in education may differ. A study of teachers who were known for their use of technology would have been interesting, but would not provide the same insight into how random teachers implement digital learning material in their teaching. The sample group of this thesis consists of six teachers from four different schools. The teachers providing data for this thesis have between 15 and 30 years of practice. They have either training as general teachers or as pre-school teachers. Contact was made with school leaders at several district schools in the eastern part of Norway. Teachers were then contacted and asked to be informants. Teachers from both large as well as small schools are included in this study.

### 3.7. Summary

As the purpose of the study is to gather information on how teachers use digital technology and digital learning material in ESL teaching, this section has provided information on how material for the thesis has been gathered. Results using the described methods will be presented and discussed in the following sections.

# 4. RESULTS

This section describes results from the questionnaire and classroom observations in the pilot study, as well as key point information from interviews with six primary school teachers from the current research. The purpose of the interviews was to investigate how teachers in the early years of primary school implement the use of digital learning material in their teaching and what influences teachers' choice of digital learning material. The questionnaire and the classroom observations made in the pilot study serve as background information and are considered as important contributors of data for the present thesis.

## 4.1. Questionnaire in pilot study

The focus in the questionnaire was on teachers' competence of ICT, on frequency of language classroom activities, and on changes in teaching practice with the introduction of interactive whiteboards. The most distinct findings will be presented in this subsection. The questionnaire with aggregated results can be found in appendix B.

In the first set of questions, teachers were asked to rate their knowledge and competence of ICT. It appeared that teachers mostly rated their knowledge as intermediate. In a multiple choice question, 95% of the respondents claimed to have learned through exploring, 75% had attended a course, and 25% had learned through colleagues. 85% seemed to have reached a competence level of integration which according to Hooper and Rieber (1995) is a break-through stage where teachers use the technology integrated in their teaching and are at the beginning of understanding educational technology.

On questions regarding frequency of language classroom activities all of the respondents stated that they use web-based learning and pictures to illustrate themes more often after the introduction of IWBs. The same result was found in the questions regarding the frequency of the use of visual and auditory support, the majority also reported frequent use of tactile support. The introduction of the IWB also seemed to have some effect on other classroom activities such as showing videos or DVDs according to theme.

The last set of questions was related to change in teaching methods. A use of more communicative activities was found amongst half of the respondents which may suggest a change in teaching practice though the results indicate diversity in IWB use depending on years of practice. The majority of teachers reported that they focus more on learning styles

when planning, they have auditory and visual support available and seem to focus on using this support. Another interesting point was that all of the respondents found it easier to adjust for pupils with special needs. Interestingly, every respondent seemed to think that pupils are more active, more interested, and learn more English after the introduction of the IWBs.

### 4.2. Classroom observations in pilot study

Classroom observations were made with field notes based on the COLT observation scheme (Allen et al., 1983). Notes were taken during the observations. These notes were categorized concerning the following four categories: activity types, participant organisation, content, and pupil activity.

The extracts shown in table 4, show notes from one of the observations done and presents the use of digital tools and learning material in a 2nd grade lesson of ESL. The lesson concerning farm animals consisted of three main parts, illustrated in the table as extract A-C.

| | | | |
|---|---|---|---|
| Theme: Farm animals | Extract A | Activity type | Singing |
| | | Organisation | Whole class |
| | | Content | Video of the song *Old Mc Donald* with pictures of farm animals and sound. |
| | | Pupil activity | All pupils sing and have focus on IWB where song from internet site is projected. |
| | Extract B | Activity type | Learning vocabulary.<br>Recognising name from picture. |
| | | Organisation | Individual work in front of IWB. 5 pupils in each group. |
| | | Content | Farm animal words<br>IWB<br>Notebook software[1] |
| | | Pupil activity | One pupil touches a dice on the IWB. A picture appears on the IWB. The pupil says the name of the animal or a sentence with the word. Pupils in groups focus on the pupil in front of the IWB as well as the IWB. Pupils take turns and show excitement when it is their turn. |
| | Extract C | Activity type | Connecting name of animal with sound and picture |
| | | Organisation | Group work in front of IWB. 5 pupils in each group |
| | | Content | IWB. Soft ball. |
| | | Pupil activity | Pupils throw a soft ball at IWB and receive a random picture of a farm animal. Pupils choose from three alternatives. Pupils say the word or a sentence including the word and then throw the soft ball at the right word. |

**Table 4: Pupil activity in 2nd grade lesson**

[1] Notebook is a presentation and collaboration software that comes with the Smartboard.

Linking the animal's name with accompanying picture and sound, giving the pupils a tactile task, shows a teaching practice recognised by Hooper and Rieber (1995) as the reorientation phase where the focus in the classroom is on the student's learning as opposed to teacher's instruction. As Gillen, Staarman, Littleton, Mercer, and Twiner (2007, p. 248) mentioned in their article on pedagogic practices around IWBs; "It is hard to imagine how this could be done so well or so relatively easy in terms of teacher effort, without this digital technology". This activity illustrates an example of creative use of the possibilities the IWB has to offer.

### 4.3. Interviews in present study

Four of the interviews were held with one teacher at a time, while one of the interviews was held with two teachers. The interviews focused on each teacher's experience with the use of digital learning material when teaching in the first or second year of primary school ESL teaching. Each interview lasted on average 45 minutes. In order to visualise the answers from the different participants, quotes are translated from Norwegian and labelled with teacher A - F. The labelling ensures that the teachers are kept anonymous for the purpose of this thesis.

The transcripts were analysed and searched for patterns and information that would shed light on the research questions. The results presented in this section will be discussed in section 5 in relation to the research questions. After a categorisation of the interview data, the information was sorted in the following major themes;

- background information
- organising of teaching hours
- access and use of digital learning tools in teaching
- school-home cooperation
- expectations for the future

The most relevant answers and quotations, for the purpose of the present study, from these interviews are sorted according to these major themes and presented in the following subsections. The results will then be discussed in the following chapter.

### 4.3.1. Background information

The interviews were started with some general conversation about the informants' background and where they have taken their teacher training. The teachers have quite similar background, but there are also some differences. Three of the teachers, teacher A, C, E are general teachers, while the three others, teacher B, D and F are pre-school teachers. This is very common in the first years of primary school since pre-school teachers are allowed to teach in year 1-4 in Norwegian primary school. All teachers interviewed have been working for some years and are experienced teachers. Teacher A, B, C and D work in the first year of primary school, while teachers E and F work in the second year. None of the teachers have had any kind of training in English since upper secondary school.

> - I feel that I should have had some training. When you take continuing education in something, you feel that you build competence, and then you realise how bad you are in the other subjects. The more I learn, the more important the subject is. I don't think I do a bad job in English, but I know it could be better if I had training in the subject (Teacher B).

The subject English was not mandatory in their respective teacher training programmes, and was not chosen by any of the teachers interviewed. This result may indicate that a majority of pupils in the first years of primary school have teachers without formal training in language teaching.

### 4.3.2. Organisation of teaching hours

The different schools have different ways of organising the subject. The four teachers working in the first year had 19 hours of English each year. Teacher D organised this as a 30 minute lesson once a week, two of the teachers (teachers B and C) had some English every day, and teacher A had a combination of some English at the morning assembly every day the whole school year and a 30 minute lessons once a week the second semester of the year.

> - When you've heard it many times, you learn it. If you only have English once a week..., you have to read every day, do math every day, write everyday and speak English every day (Teacher C).
> - I have one English lesson each week. In fact, I think we should have some English every day, but it ends in smoke. We have so many things to do. Sometimes we sing an English song (Teacher D).

- At the morning assemblies we repeat the subject aims of the week. When we learn about the weather, we talk about the weather in English. We use daily routines, for example '*what is your name?'* - they get it repeated (Teacher A).

The two teachers working in the second year of primary school have two thirty minute lessons every week. One of them states that she tries to incorporate English in daily situations when found natural, while the other teacher in year 2 states that she uses English songs and rhymes regularly with the pupils.

### 4.3.3. Access and use of digital learning technology in teaching

Access to computers was found as different from school to school though all of the teachers stated they had some access to computers. This was also reflected in how often they would use it in class.

- Everything is new and working. We have many laptops on a trolley. I can have all my pupils in front of a computer with headsets. We use the laptops every week; I let the pupils sit with headphones and do tasks (Teacher A).
-We have a new computer room, the whole class working on computers, that's a whole new world. We book us in every week. We have headsets, but I like to hear what the pupils hear, and they have to repeat what they hear. But sometimes we use them (Teacher C).
-We have laptops, but I have to carry them to the classroom and get them started before class, and that takes time. But I use them when we have work stations (Teacher D).
-We have three computers in the classroom, too few for a whole class. It is time consuming with all the passwords; we have to log on to the computers (Teacher E).
-We have four laptops available, but we have to carry them from a storage room. We use them to develop writing skills in Norwegian. When we have English we only use the Smartboard and the internet. I would love to have computers available all the time, it takes too much time to set up and log on. I know some schools try iPads, - maybe in the future (Teacher F).

Teacher F mentions Smartboard which is the brand name of an IWB. The majority of the respondents reported access to an IWB in their classroom, while one of the teachers had a whiteboard with a connected projector. The IWB was mentioned by all the teachers who had it available when asked for positive use of digital equipment in ESL lessons:

-The Smartboard is genius, you have the internet, you can play a DVD, and you don't have to have a DVD player. I use the notebook software a lot. I would not have used so much sound and picture in my English class if I didn't have the Smartboard (Teacher A).

- The installation of the Smartboard forces us to use digital tools. I think the Smartboard is useful, but I think it takes too much time to start (Teacher D).

-I use the Smartboard as a work station, where the pupils do tasks to repeat what we have worked with in class. I like the combination of sound and pictures, and it is motivating for the pupils. They love the Smartboard station (Teacher F).

-We use YouTube a lot on the Smartboard, karaoke versions of songs with text, and there is especially one we use a lot, he sings and makes movements to the songs. For example the weather, he shows posters, then there is a picture, and then he says the word. There are songs and short sentences, repeated many times so they learn it (Teacher B).

-It is more valuable to work on the Smartboard than in the book. I would rather have access to resources on the internet than books for the pupils in the first grade (Teacher C).

On a follow-up question on their motivation for using digital tools all the teachers interviewed stated that digital tools are valuable when in use. Their background as pre-school or school teachers did not, in this study, seem to influence the result on how often they would use digital technologies in their classroom. The teachers in general seemed interested in using digital learning material in their teaching but there seems to be hurdles on the way. Two teachers mentioned the aspect of time and state of digital equipment:

-After I had been to a course, I made some similar tasks with my class. I found a picture and used the recorder in notebook to record word and sentences. But it takes time to make these tasks, so I have just done it a few times. My laptop does not have a good microphone so I have to use my private one (Teacher C).

- We have three computers in the classroom and when I want to use them I have to wait a long time before they are ready. And then the pupils have to log on, and that takes time as well. They do not always remember the password. Sometimes they turn the computer off by mistake and we have to start all over (Teacher E).

Teacher D mentions that she has been attending three different courses with educational publishers regarding content for IWBs:

-Attending courses is a good way to get material and ideas on how to use the Smartboard. However, the school has no money to buy resources online, but some material is available for free (Teacher D).

Teacher A highlights the benefits of a Notebook file:

> -We are several teachers working in the first grade, by storing a Notebook file the other teachers can use and repeat the words of the week in the morning assembly. By storing it in the file for the morning assembly it is a reminder for the other teachers. I hope they use it (Teacher A).

Teacher E who only has a projector and a standard whiteboard has also been to a course with an educational publisher and states that she got many ideas, and wishes she had a Smartboard:

> -It's not the same with an ordinary whiteboard, we can show pictures if I connect a laptop to the projector, but there is no interactivity. And if I want to use sound I have to find some speakers. It takes too much time to use it regularly, mostly the pupils repeat after me (Teacher E).

Teacher F is concerned about the payment of online learning material;

> -The new learning resources made for Smartboard cost a sum per class every year. I work at a small school, and we don't have the money to buy access in addition to textbooks. It should have been free when you bought the book. We have to use free available material, but it is not always easy to find good things. Our English book has a free website with tasks, but you have to be able to read to do them. That makes it difficult for the youngest pupils. They have merely learned to read in Norwegian (Teacher F).

Three of the teachers mention that they scan pages to their e-mail and show them on the Smartboard. Teacher A and F highlight the benefit of letting the pupils see a large copy of pages in their book and see how tasks can be done. Teacher B uses the interactive version of their English book; "You can browse the book. The advantage is that the songs are there" (Teacher B). One of the teachers mentions the possibilities the access to the internet has to offer in means of differentiation:

> -There are a lot of easy-readers available as downloadable PDF-files to use with guided reading. It is a bit difficult for the beginners, but it gives you the chance to give the best readers some challenges. I download files and give them to pupils I think might be able to read them (Teacher C).

Using the internet to find material for differentiation in reading material was only mentioned by one of the teachers, the other teachers did not mention this potential explicitly.

### 4.3.4. Subject aims and school-home cooperation

On a direct question to all the participants, the majority of the teachers stated that they give their pupils homework regularly. One of the teachers in the first grade, teacher C, reported that she sometimes used reading and writing of words as homework.

> -The pupils like to work online, and they often hear the words as well. I provide them links to websites, I write it on their weekly plan. They have a book as well, it's convenient to have a book but it is not vital. I think the pupils like the book (Teacher A).
>
> -I give them links so they can practice at home, I do not know if they do it, but I write the aims on the weekly plan and hope the parents follow up their children. I publish the links on itslearning as well (Teacher F).
>
> -My pupils have no homework in English in the first grade. Children nowadays know many words in English. I think they get it through games and TV. And they are not afraid to speak out loud in the classroom, so that has changed. Another thing is that many go on vacation and speak English there (Teacher D).

Most of the homework seemed to be oral practice in the first grade and a combination of oral practice, reading, and writing in the second grade. Four of the teachers gave the pupils links on the internet to make them practise online.

The direct question of homework naturally led the conversation to how subject aims are worked with by the teachers and how they are distributed. Teacher E admits that she exclusively uses the textbook and the aims stated there. Teacher A states that they have subject aims published on the pupil's weekly plan. These aims are, according to teacher A, also repeated in class during the morning assemblies. "We have a plan with themes based on the chapters in the textbook and criteria for assessment of levels of competence" (Teacher B). Teacher F has together with her colleagues collaborated on a plan for her school; "We looked at the competence aims in the subject curriculum and suggested activities and more concrete aims for the different years throughout primary school" (Teacher F). The teachers seemed to be focused on aims in their teaching, but as it turned out the majority of the teachers seemed to use the textbooks as guidance for subject aims.

Teacher B claims that with half an hour of English per week there is no chance of reaching the subject aims. A similar claim is provided by teacher D who uses the aims in the schools English textbook in her preparation for the lessons. She states there is too much in the

curriculum; "I choose from the aims, but we have no homework in English the first year, so I don't write the aims on the weekly plan" (Teacher D). According to teacher D, colleagues at her school once developed a scheme for documentation of the pupil's level of competence, and she uses that scheme as guidance for her teaching. "I don't think they were finished with all the steps in the scheme, but it's a good tool for me" (Teacher D).

The teachers interviewed all had access to an LMS and on the question on how they used the LMS with the pupils the teachers seemed to have different approaches and routines. Teacher D informs that her pupils in the first grade do not have access to the LMS. "I haven't given them any links, and they don't have any homework so I don't use itslearning with them" (Teacher D). On a follow-up questions on why, she explains that the parents found it convenient to use the LMS for information only, but she continues; "...next year we will change this, there is more to do in the second grade" (Teacher D). Teacher B and C both stated that they previously had used an LMS more, but the use had decreased the last years.

> - I used to make tasks in itslearning and let the students answer, but with the increasing number of websites with tasks I simply give them a link (Teacher B).
> - Most of the pupils have for instance Salaby[2] as a shortcut in their browser, so why should they have to log on itslearning first? (Teacher C).

Teacher C describes that she used to be an active user of the LMS, but now she thinks of it as cumbersome for young learners.

### 4.3.5. Expectations for the future

The teachers could not imagine how it would be to teach without the digital tools and the digital learning material. The majority expressed gratitude of the benefits ICT has to offer. Several of the teachers mentioned the opportunity to use digital learning material as auditory and visual support, and the majority mentioned the motivation pupils showed when they were given access to ICT during lessons. Several of the teachers also mentioned the instant feedback the pupils get when they work with tasks on the computer, teacher A described these lessons as motivating for the pupils but emphasised that these are no sleeping pillows for the teachers: "You have to pay attention, because they can just guess until they get the right answer. You have to make sure they do their best" (Teacher A). Teacher F was eager to tell about her dreams about an iPad[3] project. "My dream is to have access to some iPads in the

[2] Salaby is an online digital learning resource, some of the resources require subscription.
[3] iPad is a mobile learning device.

classroom. I have one at home and the kids just love it" (Teacher F). This statement was followed up with a question on how she imagined she would use iPads in the ESL classroom. "We could make our own glossaries with words, pictures and sounds, and make films" (Teacher F). Confronted with the fact that this is also possible with the computers she has available at her school she quickly responded:

> -The iPad is always on, in seconds you can start to work. And you can easily bring the iPad out of the classroom, for example taking pictures of the weather is better outside. The iPad easily reads out loud what you write, so you can hear when you write the word incorrect. If we had 1:1 [4] access to iPads the pupils could do homework on it; I hope this is the future (Teacher F).

All in all the respondent teachers seemed eager to stay up-to-date with ICT in education.

> -I started to work at this school because it is new. I think that when you have the combination of Smartboard, computers and itslearning, you have what you need in primary school (Teacher A).

Teacher B, C, D, and F have all attended courses provided by textbook publishers, while Teacher F also had been to a course regarding use of iPads in teaching;

> - It is a bit frustrating to go to courses and not be able to use what you have learned, but I want to be prepared for the future (Teacher F).
>
> - Going to courses is a good way of obtaining free material. We use *Stairs*, but I also have material from *Quest* and *Explore*[5]. Some of the online material is available for a limited time, so I use them now. I also scan pages from the new books and use them on the Smartboard" (Teacher D).

The teachers in general seemed to make use of free online learning material. The majority showed enthusiasm and expectations for the future possibilities of ICT in education.

[4] 1 device per pupil
[5] Stairs, Quest and Explore are ESL learning material (textbooks, workbooks, online material)

### 4.4. Summary

This chapter provided data from a pilot study as well as information for the present study from interviews with six primary school teachers. The data from these interviews was categorised into five main areas:

- background information
- organising of teaching hours
- access and use of digital learning tools in teaching
- school-home cooperation
- expectations for the future

The sorted data in the five major themes was presented in subsections. The information presented in this chapter will be discussed in the following chapter.

# 5. DISCUSSION

## 5.1. Introduction

Before examining the results' impact on the research questions, topics described in previous sections will be revisited and commented on. In chapter 4, results from a pilot study along with data from interviews from the present study were presented. The data from the interviews was categorised into five different topics. This chapter will first of all relate to these five categories with some introductory comments and discussions. Then the pedagogical use of the IWB will be discussed. Last, the research questions posted in section 1.4 are revisited. Each of the research questions will be discussed in individual subsections. Answers will be summarised based on the knowledge and insight gained throughout this project.

## 5.2. Background information

Background information in this project revealed that there seems to be many teachers in the early years of primary school with little or no competence in teaching ESL. This may be related to the fact that English is a voluntary subject in the teacher training programmes. Without formal training in English, teachers have to rely on their didactic skills in general and transfer these to ESL lessons. Though their didactic skills might be good, one might suggest that the best ESL lessons rely on trained teachers with competence and knowledge of teaching a second language. Teachers' training though had an effect size of d=0.12 indicating that other factors are more important, Hattie (2012) describes the difference between the expert and the experienced teacher:

> Students who are taught by expert teachers exhibit an understanding of the concepts targeted in the instruction that is more integrated, more coherent, and at a higher level of abstraction than the understanding achieved by students in classes taught by experienced, but not expert, teachers (Hattie, 2012, p. 34).

For this study, where use of digital learning material is in focus, it is interesting to observe that, as presented in 4.3.3, their background as pre-school or school teachers did not seem to have any impact on their use of digital learning material.

### 5.3. Organising of teaching hours

Teaching hours were organised in a multitude of ways. It is possible to hypothesise that these varieties are likely to occur at primary schools in general. These differences in organisation may be viewed as an implication of the fact that teaching hours is defined as one sum for the four first years in primary school (Norwegian Ministry of Education and Research, 2013b). Based on this, schools may determine how teaching hours are spread. One of the issues that emerge from these findings is that the focus of different learning activities such as instruction, explanation, demonstration, own activity or practice may differ and be valued differently from classroom to classroom. This variation may also be one of the factors that influence the use of digital learning material in ESL teaching. Out of the results it would seem that a requirement for using ICT in ESL lessons on a regular basis is dependent on time and access. This leads us to the next main category of access and use of ICT.

### 5.4. Access and use of digital learning technology in teaching

As presented in section 4.3.3., access to computers was reflected in how often teachers would use them in class. It would be likely to assume that teachers, with easy access to computers and digital learning material, might use digital tools more often than teachers without this easy access. The results from these interviews might therefore be transferable to teachers in general. Having said that, the number of computers in a classroom or at a school will not necessarily, make a difference. Hence, the way these resources are used in class is the most important factor for learning outcomes. Kennewell and Beauchamp (2003) state that ICT resourcing in schools along with subject content and classroom practice are contributing factors to the growing evidence of ICT as a positive effect on young children's attainment. The quantity and reliability of the hardware along with the location of equipment are mentioned as contributing factors (Kennewell & Beauchamp, 2003). This was also reflected in the information provided by the teachers in this study.

### 5.5. Subject aims and school-home cooperation

The results presented in the previous section revealed that teachers have different approaches to how subject aims are worked with and also how pupils and parents are informed. The findings regarding subject aims were unexpected and show that some teachers rely on the aims presented in the textbook rather than the aims in the curriculum from the Norwegian Ministry of Education and Research (2010). Bloom's taxonomy, presented in section 2.5, was

for this thesis considered a helpful tool for teachers in order to understand and implement subject aims. One of the main expectations for such an approach must be that teachers use the subject aims in the curriculum as the common starting point rather than the specific aims presented in the different textbooks.

The discussion in this thesis does not concern the pros and cons regarding homework. Other studies (presented in Hattie, 2012) have considered the relationship between homework and learning outcome. The discussion does, however, take a look at how parents are involved in the teaching through presentation of subject aims. The signals schools send to the pupils and their parents clarifying what is important and valuable might be referred to as goal-structure (Skaalvik & Skaalvik, 2005). Interestingly, this might be compared to learning intentions in lessons as Hattie (2012) reports based on more than 800 meta-analyses: "Unless teachers are clear about what they want students to learn (and what the outcome of this learning looks like), they are hardly likely to develop good assessment of that learning" (2012, p. 53). Though the present study was not designed to determine the effect of homework, it could possibly be hypothesised that sharing the learning intentions with both pupils and their parents would be considered as valuable especially since the pupils in the first years of primary school are only 6-8 years old.

An LMS was introduced in section 2.9.4 as a digital tool that combines auditory and visual material in a safe environment. The feature the LMS provides was considered to be valuable in ESL teaching. Contrary to expectations several of the teachers interviewed reported a decrease in use of an LMS. Of the reasons mentioned for this was that links to websites could just as easily be distributed on a weekly plan. One would think that teachers with the youngest pupils would take advantage of the benefits and use for instance audio feedback or video.

### 5.6. Expectations for the future

The results in the pilot study, as presented in chapter 4, revealed change in teaching practice after the introduction of IWBs. The data from the interviews for the present study reveals that digital learning material is used, and teachers seem in general to be interested and motivated for such use. Attending courses was mentioned as positive input from several of the informants, it can thus be suggested that teachers are aware of the benefits digital learning material has to offer. Teachers emphasised the importance of auditory and visual support. However, contrary to expectations, the study revealed few creative examples of tasks and

activities. Though digital learning tools were used, the main focus seemed to be on whole-class teaching in front of the IWB or web-based tasks at school or as home-work.

Children of today are often referred to as digital natives (Prensky, 2001), they have grown up with technology. They have spent their entire lives with tools of the digital age, for them it is only natural to use technology at school. Tornberg (2009) emphasises the importance of pupils being able to see a connection between what they learn in classrooms and the reality outside. Dudeney and Hockly (2007) expresses a similar view and state that "For these learners the use of technology is a way to bring the outside world into the classroom" (2007, p. 7). By using technology and let pupils be creative we might even prevent language teaching from becoming what Tornberg warns of as "[...]a no man's land where there is a long distance to people who speak the language and their world" (2009, p. 22, own translation). Pupils' background and experience with digital technology may therefore be an important resource and even lead to creative use of technology for the purpose of language learning.

While the majority of teachers in this study used IWBs and laptops on a regular basis, they seemed to use premade tasks or create tasks themselves for the pupils. Surprisingly, pupils were not identified as creative contributors. As introduced in section 2.5, one of the six verbs in the cognitive process dimension in Bloom's taxonomy is: to create. In the padagogy wheel, referred to in section 2.6, some of the suggested activities connected to creativity is; videocasting, multimedia presentation, podcasting, video editing, storytelling, ePub, rap, cartoon, and song (Carrington, 2011). It is important to bear in mind that there might be numerous examples of creative activities with digital tools in the first years of ESL teaching. Caution must therefore be applied, as the results describe a random selection of teachers and might not be transferable.

### 5.7. The interactive whiteboard in the primary classroom

Teachers were found to be generally positive regarding the possibilities the IWB has to offer. It seemed that teachers found using the IWB was fairly easy. The teachers who had access to an IWB in their classroom seemed to use the IWB for whole class as well as station work activities. For young children one might assume that recognition and repetition are important factors in their learning. It is therefore not surprising to find that teachers used the IWB to show the pupils pages from the textbook in order to demonstrate activities on a daily basis.

Some of the significant results of the pilot study, supported from the data from the present study, were the opportunities to use the IWB as auditory and visual support. These findings are comparable with the most frequently discussed potential of the IWB as summarised by Dalaaker et al. (2012). This could also mean that teachers use this feature based on knowledge of the positive effects. Another factor might be that pupils were found to be motivated. Varied and dynamic use might keep the level of motivation at a stable level, also when the IWB no longer is a novelty in the classroom.

Teachers seemed to believe that pupils learn more English with the introduction of the IWB. As stated earlier, the introduction of digital tools in itself enhances no learning; it is how the teachers and pupils use the tools that are important. Schmid (2008) summarises;

> [...] research has shown that, although multimedia instruction can lead to improve learning outcomes, the effective integration of multimedia in the educational context will greatly depend on the adequate consideration of the theoretically informed principles of multimedia design and learning behaviour in multimedia environments (2008, p. 1556).

An important concern regarding the use of the IWB is whether focus is on a teacher centred or a pupil centred pedagogy. Pratt (in Skaalvik & Skaalvik, 2005) describes how teachers have to shift from the traditional controlling lecturer to the supportive guide in order to change the pupils role from a receptive to a more active role. With knowledge and experience pupils become more autonomous and motivated for learning. Tornberg (2009) refers to research that states that teachers do most of the talking in language classroom, as much as 80% of a lesson.

As the IWB offers the benefits of audio-visual support, which as mentioned earlier is viewed as a positive feature for language lessons, there is however a risk that teachers might overuse the IWB for lecturing purposes with the result that little time is left for pupil centred communicative activities. As the results in this study revealed, there seemed to be a variety of activities in addition to whole-class lessons in front of the IWB. In general, it seems that teachers in this study think of a combination of teacher centred and pupil centred pedagogy as positive for learning. The main focus, however, seems to be on teacher centred pedagogy. This may be explained by the young age of the pupils, their vocabulary, and competence in English when they start school. Though pupils at all ages benefit from a combination of pedagogic tools, the results may indicate a belief that pupil centred activities require some knowledge in advance.

## 5.8. Discussion of research questions

It is now time to turn back to the research questions posted in section 1.4 and summarise answers related to these. The purpose of the study was to gather information on how teachers in the first two years of primary school use access to ICT related to subject aims in the National curriculum in their teaching of ESL.

### 5.8.1. Implementation of digital equipment and digital learning material

Research question:

- How do teachers in the early years of primary school implement the use of digital equipment and digital learning material in their teaching of English as a second language?

The present study has provided insight into several teachers' use of digital equipment and digital learning material. As seen in the chapter of the results and commented on in the previous section, it would seem that teachers do use digital learning material for preparation as well as during their lessons. Teachers seemed in general to be confident with their own skills and were observed as positive to the use of ICT in ESL teaching.

The teachers seemed to have three main areas of use in their lessons: 1) Use of the IWB used in whole class activities, 2) use of websites at school and as homework, and 3) use of activity with IWB or laptop in work-stations. However, there is still unutilised potential in the way that ICT is used. A possible explanation for these results may be the lack of adequate equipment and other external factors such as time and access. The present findings are consistent with other research (Arnseth, Hatlevik, Kløvstad, Kristiansen, & Ottestad, 2007) which found that available tools and functions are used only to a small extent.

Teachers may have different approaches and methods while teaching. Based on the answers given it may be assumed that this is also reflected among teachers in general. One weakness of the study is that it is not possible to determine learning theories that influences the teaching methods of the participants. It may, however, be hypothesised that teachers make professional decisions based on language learning theories in general and based on own teaching experience. On the one hand, a dominant use of whole class teaching would limit the possibilities of pupils reaching their Zone of Proximal Development (Nottingham, 2010). On the other hand it might be argued that teachers provide scaffolding for their pupils through the conscious use of auditory and visual support.

Most of the teachers used web-based learning material and gave pupils web sites for homework or work at school. Many of the language learning tasks on the internet are, as presented in chapter 2, based on behavioural learning theories where pupils click on the answers until they find the right answer. Although this study does not analyse web based learning material in detail, it is arguably important that teachers take conscious choices when selecting web pages with tasks for their pupils. Web pages that simply offer feedback whether the answer is correct or incorrect resemble early CALL programs (Dudeney & Hockly, 2007), and would not take advantage of the possibilities online technology has to offer.

A distinct feature presented through the results, was the use of visual and auditory support in language lessons. The respondents reported use of sound, pictures, films, songs and animation as positive use of digital equipment in their lessons. Most of the teachers also provided information to the parents on suitable web pages. Teachers seemed to be concerned with letting the pupils have a variety of activities where the focus was on learning new words in different ways. Although not referred to explicitly, it would seem that the participants in general were aware of the theory of multiple intelligences (Gardner, 2011). New vocabulary was learned through songs, through visual presentation of the words, through oral repetitive practice and through digital equipment where the pupils use their tactile senses. Tornberg (2009) summarises that teaching pupils how to get help from their previous knowledge and from the context is better than first learning a key vocabulary and then reading authentic texts. One may assume that since teachers already in the first and second year of primary school reported use of authentic texts, pupils are given chances to make use of prior knowledge.

### 5.8.2. Influence of digital competence as one of the basic skills

Research question:

- How has the introduction of digital competence as one of the five basic skills influenced teaching as a second language?

To answer this research question one has to look at how teachers responded to questions regarding subject aims. The results did not give any clear answers to this research question. Some of the issues emerging from the finding relate specifically to subject aims; as previously commented on, it would seem that some of the teachers referred to subject aims presented in the textbooks rather than the subject aims in the curriculum. As commented on earlier, the teachers seemed to let the pupils use digital tools for a limited choice of activities. To be more precise, the present study reveals no specific signs of how the introduction of the five basic

skills in LK06 has influenced their teaching. However, with the limited number of informants in mind, this result cannot be generalised.

The results here, limited as they may be, were not very encouraging. The findings are, however, consistent with those reported in the evaluation of the Knowledge Promotion (LK06) reform in primary and secondary schools in Norway (Aasen et al., 2012): "There is reason to believe that there are large variations in how basic skills are understood, and in how far work on basic skills has become an established, common concern within each school"(2012, p. 13). Furthermore the report states that there has been considerable focus on ICT, but maybe more on schools' equipment and teachers' competence rather than with how teachers implement this basic skill in classroom activities.

A revised edition of the subject curriculum (Norwegian Ministry of Education and Research, 2013a), as presented in section 2.3, with clearer descriptions of how one might take advantage of the benefits digital technology has to offer might therefore provide a useful and enlightening contribution to language teachers' knowledge and competence. At present, information gathered for this project does not reveal information on this aspect.

### 5.8.3. Teachers' choice of digital learning material

Research question:

- What influences teachers' choice of digital learning material and use of equipment in their teaching?

In order to be able to answer this research question it is useful to look back at the definition of digital competence used in this thesis;

> *The knowledge, skills, and creativity needed to be able to use digital equipment and digital technology for learning.*

It is not the focus of this thesis to investigate teachers' pedagogical views and beliefs; this definition assumes that teachers have the learning outcomes of the pupils as their first and foremost focus. The four organising questions (Anderson et al., 2001) presented in section 2.5: the learning question, the instruction question, the assessment question and, the alignment question would, due to this definition, therefore form a natural basis on how to use digital technology for learning.

As the results presented in chapter 4 reveal, there are several factors that influence teachers' choices. From the answers given it would seem that the schools' or municipalities' budgets

have an important impact on the choice of digital learning material. One of the factors is therefore economy, but one might hope that there are pedagogical reasons for priorities within the budget. There were differences between the different schools regarding access to learning material, though a common feature was that most of the schools used textbooks with the pupils and downloaded free digital material from the internet in addition for use in class and as homework. Teachers mentioned YouTube as an example of free digital material. Some of the schools had registered to paid online digital resources to which pupils were given access.

Teachers seemed to have the combination of auditory and visual support as a starting point for their search for material. As this aspect was mentioned by several of the teachers interviewed and reported as a result in the pilot study, one may assume that teachers have a belief in combining multimedia as a means to enhance language skills. However, it seemed that this belief was based on teaching practice more than research as none of the informants brought up resent research in the interviews. It appeared that the textbooks and the suggested aims and activities from the teacher guide accompanying the textbooks were used as starting points for the lessons. Search for online resources seemed to be focused on finding suitable auditory and visual support for the themes in the textbook.

The third factor seemed to be the appreciation of the possibilities the IWB offers in whole class or station work teaching. Findings in the report Monitor 2011 (Gunstein Egeberg et al., 2012) showed that IWBs are more used in primary school than in upper secondary school. Taylor et al (in Dalaaker et al., 2012) refer to findings that show that the IWB can increase the degree of involvement and interaction in the classroom. Creative learning and teaching is more than the teacher presenting material on the IWB (Wood and Ashfield, in Dalaaker et al., 2012), and the software has many functions that might change teaching practise. Examples from classroom observations where the IWB is used as a work station might serve as evidence of such change in teaching practise.

### 5.9. Bloom's taxonomy and digital competence as one of the basic skills

In the background chapter of this thesis Bloom's taxonomy (Anderson et al., 2001; Bloom, 1956) was presented. An overview of the cognitive process dimension and the knowledge dimension subject aims may be sorted by, was presented in table 2. The taxonomy was considered as a helpful tool for teachers to understand and implement subject aims into their lessons as the verbs of the cognitive process dimension describe many of the activities teachers might use in a classroom. Furthermore, the padagogy wheel (Carrington, 2011), an

adapted and digitised version of the taxonomy, was presented with the new technologies implemented to help improve learning.

In order to be able to discuss whether teachers might find the taxonomy useful in the implementation of digital competences one might choose an approach where one places the subject aims using the taxonomy grid. As Lund (2009) showed the competence aims where media is specifically mentioned for year 2 is "Use language through several senses and media"(2009, p. 90, table 5.1). The first phase would be to determine the knowledge dimension of the competence aim. Then, the second phase would be to place the subject aim under the right verb in the cognitive process dimension. Due to the recognition of this subject aim as a global objective (see section 2.5), placing this competence aim in the taxonomy grid might be not be as easy as it looks. It would therefore seem that the taxonomy grid is more suitable with educational or instructional objectives (see section 2.5) where the scope is to plan units of the curriculum and to prepare lesson plans and daily activities.

Despite these challenges, it would be interesting to suggest how the subject aims in LK06 are related to the action verbs in the taxonomy grid. A suggestion on where all subject aims from year 2 in the English subject curriculum might be placed, is therefore presented in table 5. The competence aims from the three main areas of the subject curriculum are numbered: (1) language learning, (2) communication, and (3) culture, society and literature.

| | |
|---|---|
| Remember | (2) recognise some words, expressions and simple sentences in spoken and written texts |
| Understand | (2) understand and use some common English words and phrases that have a connection with the local community<br>(2) understand simple instructions given in English |
| Apply | (1) give examples of English terms and phrases connected to personal interests<br>(2) greet people, ask questions and answer simple oral questions<br>(2) use numbers in communication<br>(3) participate in English child culture and children's literature using words, pictures, music and movement |
| Analyze | (1) find words and phrases that are common to English and the native language<br>(3) discuss aspects of the day-to-day life of children in some English-speaking countries |
| Evaluate | (1) give examples of situations where it might be useful to have some English-language skills |
| Create | (2) use the most basic English phonology and language rhythms through practical-aesthetic forms of expression<br>(2) use letters and experiment with writing English words and expressions<br>(2) use the language through several senses and media |

**Table 5: A combination of taxonomy grid and competence aims in the English Subject Curriculum.**

Another approach would be to look at the activities teachers reported they used in their classroom in comparison to the action verbs provided in the taxonomy (Anderson et al., 2001) and even the action verbs and activities suggested in the padagogy wheel (Carrington, 2011). Table 6 presents an overview of a combination of the verbs connected to the cognitive process dimension and action verbs suggested in the padagogy wheel:

| **The cognitive process dimension** | **Verbs** | **Activities** |
|---|---|---|
| | Remember/ Understand | Paraphrase, summarise, describe, compare, retrieve, infer, explain, find, locate, identify, match, classify, exemplify, interpret, report, and expand. |
| | Apply | Edit, play, implement, simulate, share, use, carry out, upload, teach, hack, run, load, execute, draw, operate, record, interview, and construct. |
| | Analyse | Contrast, distinguish, compare, sequence, infer, deconstruct, examine, classify, interview, survey, demonstrate, simulate, differentiate, outline, determine, deduce, mash, and categorise. |
| | Evaluate | Network, justify, conclude, rank, judge, compare, debate, post, conference, verify, discuss, support, decide, prioritise, evaluate, collaborate, appraise, moderate, critique, select, defend, and give your opinion. |
| | Create | Imagine, design, suppose, invent, produce, change, transform, suggest, compose, create, hypothesize, originate, rearrange, and find an unusual way. |

**Table 6: A combination of taxonomy grid and action verbs**

By combining this information one quickly gets an overview of how one might motivate for learning through a broader range of cognitive processes to achieve meaningful or constructivist learning (Anderson et al., 2001) that goes beyond remembrance of factual knowledge and as a consequence, might enhance learning.

Lund (2009) reminds us that being digital in ESL teaching is not about digitising own practices, but to be a part of the new practices developed. He states that these complex and new tasks might even make the most experienced teacher stick to the secure and well-known (Lund, 2009, p. 93). Introducing a revised English Subject Curriculum (Norwegian Ministry of Education and Research, 2013a) from the school-year 2013/2014 might hopefully provide teachers with a clearer description of how digital skills might be benefited in the language classroom. Furthermore, teachers might realise the useful overview the suggestion of a combination of the taxonomy grid with the subject aims provide.

The taxonomy grid might even also be combined with the MI-theory. An example of such a combination is reported by Noble (2004), who stated that when Gardner's theory of multiple intelligences was integrated with the revised Bloom's taxonomy to provide a planning tool for curriculum differentiation, this resulted in a greater confidence in teachers' ability to cater for different students' strengths across the multiple intelligences. Noble (2004) states that since teachers seem to have knowledge of the theory of multiple intelligences and have heard of Bloom's taxonomy; a combination of these two offering a planning tool that incorporates activities that move from simple to complex teaching, makes sense to teachers.

It is important to bear in mind that the teachers in this study were not asked direct questions regarding multiple intelligences and Bloom's taxonomy. One must therefore apply caution, as the results discussed in this chapter may not be transferable to teachers in general. However, based on the insight and knowledge provided through this project it may seem that the taxonomy is of value for ESL teachers as well as teachers in general.

### 5.10. Summary

In this chapter I have commented on and discussed the five different topics the results were categorised in. Then, the research questions were revisited and discussed in individual subsections. The findings in this study are based on information gathered through a combination of first, a web survey and classroom observation in a pilot study and second, with interviews with experienced teachers. Higgins (1995) argues that 'teacher reports' are one of the tools we can use for CALL evaluation; "Teachers are in the position to observe not only what learners say but also what they do, all the unconscious signals of enthusiasm, boredom, enlightenment, or puzzlement that they send out." (1995, p. 73). The results are descriptions that capture aspects of how language teachers work in a 21th century primary school classroom and describe relevant teaching practice. Having said that, due to the low number of participants, caution must be applied, awaiting further research.

The present study was, in the introduction chapter, considered to be highly relevant. The results and the discussion have emphasised this consideration. Through the present study several interesting findings on how digital learning material is worked with in the first two years of primary school are described. The discussions in this chapter have revealed some important factors contributing to how teachers apply digital competence in their teaching.

The discussions have also shed light on what obstacles might be involved in the use of digital learning material and equipment with young pupils. Dalaaker et al. (2012) remind us that the good development of ICT-based pedagogy is dependent on teachers participating in debates where ideas about education technology are created. Higgins (1995, p. 72) summarises that "Learners, teachers and software authors would all like to know how and when specific kinds of learning take place and how one can tell whether something has or has not been learned". The discussions in this thesis hopefully have left the reader with some insight and relevant contribution to this debate.

# 6. CONCLUSION

## 6.1. Digital skills and English as a Second Language

In the introduction of this thesis it was stated that digital competence and use of digital technology to enhance language skills in ESL has had an enormous development the last two decades. Through implementation of ICT in the ESL classroom a wide range of possibilities is offered for teacher as well as for pupils. In order to benefit from these possibilities both teachers and pupils require training. When ICT is embedded from year 1 this might facilitate new activities based on traditional ideas. The rapid development from having one computer with few programs, to having the World Wide Web in the classroom ready to be used in seconds, challenges teachers to transform their practice. Pupils in the first two years of primary school are born in the present millennium, which means that they have been surrounded by ICT their whole life. Hence, teachers and pupils may have different ways of using ICT. While teachers have adapted to technology, children of today are surrounded by technology from day one. Nevertheless, the teacher is an important factor in the technology rich classroom. Pupils require guidance in the conglomerate of digital technology, and teachers make decisions for the pupils based on their professional training and experience.

Through this study we have seen a tendency towards that the teachers seem to use digital learning material readymade by others. Some mentioned websites with exercises based on the content of their textbook, others mentioned songs on YouTube. Some of the teachers made tasks in the LMS they were using. As pointed out in the discussions, activities in general seemed to be teacher centred. Many of the activities mentioned were scaffolding activities were the teachers presented new material to the pupils and rehearsed this with them. Although some of the teachers mentioned station work, the emphasis seemed to be on teacher controlled lessons. Evidently pupils in the 1st or 2nd year of primary school, with their limited vocabulary, would not be able to produce long texts, oral or written. Having said that, the possibilities the technologies offer through auditory and visual support may help pupils produce texts earlier. Based on this insight, an emphasis on these possibilities and on more pupil centred activity would therefore contribute to more text production at earlier age.

Technologies are fragile, and some schools have old computers which might cause problems in lessons. Computers may be slow, video projectors may shut down, IWBs may need calibration. Problems with computers may interrupt and disturb planned activities. With 6 to 8

year old pupils in the classroom, this easily becomes a challenge. Using ICT in the language classroom, or in any other subject, involves teachers being prepared for the unexpected. Nevertheless, the teachers interviewed in general focused on the positive effects of using ICT in the language classroom. Through the use of an LMS teachers may design learning spaces online and make them available for pupils without taking time and place into account. Through the rapid development regarding access to mobile devices in private homes, one would expect that the dream of one mobile device per student presented by one of the teachers, is likely to come true in the near future.

The English subject curriculum and the framework for basic skills were investigated for aims regarding use of digital technology. The competence aim where new media was mentioned explicitly in LK06 was, as presented in chapter 2, the ability to use language through several senses and media. Through the use of digital technology pupils may easily reach this competence aim. The question is whether teachers take advantage of the possibilities ICT has to offer language teaching. To become aware of these possibilities teachers may benefit from sharing tips and activities with each other.

The present study has answered questions, but also brought up new questions. The freedom of the teacher to choose methods suitable for the learning situation is positive. However, the fact that most of the teachers have no professional training in English leads to question whether they have the competence to make the right decisions for the language classroom. Though learning theories in general may be transferable to ESL lessons, language learning theories and the contribution of digital learning material may be a huge challenge. Bloom's taxonomy and Gardner's MI-theory were in this thesis suggested as helpful tools for teacher to plan and implement a variety of activities for cognitive development. The present study leaves room for more in-depth research. Some of these areas are suggested in the next section.

### 6.2. Further research

The present study scratches on the surface of a major field of language acquisition. Based on the knowledge and insight throughout this thesis, different research areas appear for further study.

- The study reveals that few ESL teachers in the first years of primary school have training in teaching English. A study of teaching practice in primary school ESL lessons through observations over time would therefore be interesting.
- The combination of the MI-theory and Bloom's taxonomy are brought up in the discussion chapter. This involves developing cognitive skills combined with using own strengths and intelligences. A theoretical study on how subject curriculum could be implemented would be of interest.
- The English subject curriculum appears in a revised edition the same year as the present study is written. Studying changes and their impact on primary school teaching in the near future could therefore be suggested as new research.
- One of the teachers hopes that iPads are the future in primary schools. Mobile devices are common in private homes and one would imagine that these devices would be a common feature in future language classrooms as well. Further studies are required to see how pupils might benefit from learning with these devices.

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## APPENDICES

### Appendix A: Present study: Interview guide

Which level in primary school are you teaching?
How are the lessons organised?

Are you a trained pre-school teacher or a general teacher?
What kind of training do you have in teaching English?

When you use digital technology in class, what kind of equipment do you have available?

What kind of learning material have you used when teaching ESL with digital technology?
How would you describe your use of learning material from the internet?
How would you describe the use of the LMS with the pupils?

How do you organise use of digital technology in lessons?

How do pupils use digital technology for language learning?

Which factors influences your use of computers in your teaching of ESL?

What is your use of ICT in teaching and learning affected by?

How do you think the pupils in your class have benefited from the use of ICT?

Do you think the pupils have reached the competence aims in the subject curriculum?

Digital competence is one of the five basic skills in the National Curriculum, how do you think pupils in general benefit from use of ICT when learning languages?

**Appendix B: Pilot study: Questionnaire with results**

Number of respondents: 20

1. Open question: Which school do you teach in?

| Name of school | Number of participants |
|---|---|
| School A | 2 |
| School B | 2 |
| School C | 0 |
| School D | 3 |
| School E | 5 |
| School F | 3 |
| School G | 2 |
| School H | 4 |

2. Multiple choice question: Which grade(s) do you teach English?

| | |
|---|---|
| 1st | 10% |
| 2nd | 40% |
| 3rd | 0% |
| 4th | 15% |
| 5th | 10% |
| 6th | 5% |
| 7th | 20% |

3. Open question: How long have you had access to a SmartBoard in your classroom?

| Number of years | Percentage |
|---|---|
| 1 year | 5% |
| 2 years | 75 % |
| 5 years | 20% |

4. Multiple choice question: How would you rate your knowledge of SmartBoards?

| | |
|---|---|
| Novice (do not know much) | 5% |
| Beginner (had some training, still not comfortable) | 10% |
| Intermediate (use it, love it, want to know more) | 75% |
| Expert (use it, love it, could teach others) | 10% |

5. Multiple choice question: In what way did you obtain your competence in using the SmartBoard?

| | |
|---|---|
| I have attended a course | 75% |
| I have learned through my colleagues | 25% |
| I have learned through exploring | 95% |
| I do not know how to use it | 5% |

6. Multiple choice question: How would you rate your knowledge of Notebook, the software for SmartBoards?

| | |
|---|---|
| Novice (do not know much) | 10% |
| Beginner (had some training, still not comfortable) | 10% |
| Intermediate (use it, love it, want to know more) | 75% |
| Expert (use it, love it, could teach others) | 5% |

7. Multiple choice question: How did you obtain your competence in using Notebook, the software for SmartBoards?

| | |
|---|---|
| I have attended a course | 90% |
| I have learned through my colleagues | 25% |
| I have learned through exploring | 90% |
| I have not learned how to use it | 10% |

8. Matrix question

How frequently do you conduct the following activities in or in relation to your English lessons? Every lesson, every day, every week, every month, seldom or never?

| | Every lesson | Every day | Every week | Every month | Seldom | Never | Not answered |
|---|---|---|---|---|---|---|---|
| Write on the board with finger or pen | 25% | 50% | 25% | 0% | 0% | 0% | 0% |
| Use web based learning resources | 30% | 5% | 45% | 20% | 0% | 0% | 0% |
| Illustrate theme with pictures | 25% | 25% | 50% | 0% | 0% | 0% | 0% |
| Show videos according to theme | 15% | 0% | 50% | 15% | 20% | 0% | 0% |
| Show digital books | 0% | 0% | 25% | 10% | 65% | 0% | 0% |
| Use visual support | 50% | 30% | 20% | 0% | 0% | 0% | 0% |
| Use auditory support | 25% | 25% | 40% | 10% | 0% | 0% | 0% |
| Use Notebook Software | 20% | 25% | 40% | 5% | 10% | 0% | 0% |
| Use Board books (e.g. *Tavleboka*) | 0% | 5% | 35% | 5% | 45% | 10% | 0% |
| Save lessons for future use | 20% | 10% | 40% | 20% | 10% | 0% | 0% |
| Publish lessons in "It's learning" | 0% | 10% | 10% | 0% | 20% | 80% | 0% |
| Play games | 15% | 10% | 0% | 50% | 0% | 0% | 25% |
| Show websites | 25% | 0% | 50% | 0% | 25% | 0% | 0% |
| Use tasks on the internet | 25% | 10% | 10% | 30% | 25% | 0% | 0% |
| Use tasks in Notebook software | 25% | 10% | 0% | 40% | 25% | 0% | 0% |
| Use tasks in "It's learning" | 25% | 10% | 0% | 0% | 0% | 65% | 0% |
| Group work in front of the SmartBoard | 25% | 10% | 10% | 30% | 25% | 0% | 0% |
| Communicative activities | 25% | 10% | 10% | 40% | 0% | 0% | 15% |

9. Matrix question: How has the access to a Smartboard in your language classroom affected the frequency of the conduction of these activities? Do you use the activity more often than before, less often or has there been no change?

| | More often | Less often | No change | Not Applicable | Not answered |
|---|---|---|---|---|---|
| Write on the board with finger or pen | 50% | 50% | 0% | 0% | 0% |
| Use web based learning resources | 100% | 0% | 0% | 0% | 0% |
| Illustrate theme with pictures | 100% | 0% | 0% | 0% | 0% |
| Show videos according to theme | 75% | 0% | 25% | 0% | 0% |
| Show digital books | 50% | 0% | 50% | 0% | 0% |
| Use visual support | 100% | 0% | 0% | 0% | 0% |
| Use auditory support | 100% | 0% | 0% | 0% | 0% |
| Use Notebook Software | 100% | 0% | 0% | 0% | 0% |
| Use Board books (e.g. *Tavleboka*) | 25% | 0% | 50% | 0% | 25% |
| Save lessons for future use | 75% | 0% | 0% | 0% | 25% |
| Publish lessons in "It's learning" | 0% | 0% | 75% | 25% | 0% |
| Play games | 75% | 0% | 25% | 0% | 0% |
| Show websites | 75% | 0% | 25% | 0% | 0% |
| Use tasks on the internet | 75% | 0% | 25% | 0% | 0% |
| Use tasks in Notebook software | 100% | 0% | 0% | 0% | 0% |
| Use tasks in "It's learning" | 25% | 0% | 50% | 25% | 0% |
| Group work in front of the SmartBoard | 25% | 0% | 75% | 0% | 0% |
| Communicative activities | 0% | 0% | 100% | 0% | 0% |

10. Matrix question: Presented in the table are some statements concerning your lessons after the introduction of SmartBoards in the teaching of English as a second language.

Please indicate to what extent you agree with the following statements.

| | Strongly agree | Agree | Disagree | Strongly disagree | Not Applicable |
|---|---|---|---|---|---|
| I use the SmartBoard as a replacement for a blackboard | 25% | 50% | 25% | 0% | 0% |
| I explore the possibilities with the SmartBoard | 50% | 50% | 0% | 0% | 0% |
| My teaching methods have changed | 75% | 25% | 0% | 0% | 0% |
| I prepare my lessons in Notebook | 75% | 25% | 0% | 0% | 0% |
| I spend more time on planning lessons | 25% | 50% | 25% | 0% | 0% |
| I focus more on learning styles when planning | 0% | 75% | 25% | 0% | 0% |
| I incorporate visual learning into lessons | 0% | 100% | 0% | 0% | 0% |
| I incorporate auditory learning into lessons | 0% | 100% | 0% | 0% | 0% |
| I incorporate tactile learning into lessons | 0% | 75% | 25% | 0% | 0% |
| I use more communicative activities | 0% | 50% | 50% | 0% | 0% |
| It is easier to perform adapted training | 0% | 75% | 0% | 0% | 25% |
| It is easier to adjust for pupils with special needs | 25% | 75% | 0% | 0% | 0% |
| I let the pupils work on the SmartBoard | 75% | 25% | 0% | 0% | 0% |
| The pupils are more active | 50% | 50% | 0% | 0% | 0% |
| The pupils are more interested | 75% | 25% | 0% | 0% | 0% |
| The pupils learn more English | 50% | 50% | 0% | 0% | 0% |

11. Open question

Please write down your e-mail address if you are willing to answer some further questions about the use of SmartBoards in English language lessons.

• Teacher A at school E

• Teacher B at school H