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Masterstudium i skolerettet utdanningsvitenskap med fordypning i Engelsk

Deep Learning – Deep Waters?

A Study of Deep Learning in the Norwegian Middle School

Dybdelæring – På Dypt Vann?

En studie av dybdelæring i den norske ungdomsskole

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Abstract

This thesis explores the term deep learning and its position in the Norwegian school. The term was introduced in the renewal of the curriculum in 2020 and is now a part of teachers' classroom practice. The purpose of the study is to discover how teachers understand the term deep learning as well as how they view its status in the English subject. Considering the subject renewal was put in use in August of 2020, in the middle of a pandemic, the work may have been affected by the big changes caused by Covid-19. In addition to this, since the term is relatively new in the Norwegian school system, there is little research conducted on this topic so far.

The term deep learning can be hard to define, and there are a range of approaches to understanding it. Teachers are provided with a definition from The Norwegian Directorate for Education and Training as a basis for understanding. The term is connected to several other elements in the curriculum and is central to the subject renewal. This thesis focuses on teachers' understanding of the term, on the grounds that their understanding is crucial in order to ensure that students receive the most advantageous education and deep learning practice. This is researched through qualitative interviews of four middle school teachers. The study explores the connection between the curriculum and teachers understanding of the term deep learning. The results from this study reveal that there may be varying understandings and interpretations of the term, causing different practical approaches in classrooms throughout the country.

Sammendrag

Denne oppgaven utforsker dybdelæringsbegrepet og dets posisjon i det norske skolesystemet. Begrepet ble innført i forbindelse med fagfornyelsen i 2020 og er i dag en del av norske læreres klasseromspraksis. Målet i oppgaven er å utforske læreres forståelse av dybdelæring og begrepets posisjon i engelskfaget. Fordi fornyelsen ble innført i august 2020, midt i en pandemi, kan arbeidet med læreplanen ha blitt påvirket av de store forandringene påfulgt av Covid-19. I tillegg til dette er dybdelæringsbegrepet relativt nytt i det norske skolesystemet, og det er derfor lite forskning innen dette området.

Dybdelæringsbegrepet kan være vanskelig å forstå og definere, og det finnes flere måter å tilnærme seg en forståelse på. Utdanningsdirektoratet har utformet en definisjon som lærere kan bruke for å danne seg en forståelse av begrepet. Begrepet har sammenheng med flere

andre elementer i læreplanen og er sentralt i fagfornyelsen. Denne oppgaven fokuserer på lærerens forståelse av dybdelæringsbegrepet, på bakgrunn av at deres forståelse er avgjørende for at elever mottar fordelaktig utdanning og øvelse i dybdelæring. Dette blir forsket på gjennom kvalitative intervju av fire ungdomsskolelærere. Dette studiet utforsker sammenhengen mellom læreplanen og læreres forståelse av dybdelæringsbegrepet. Resultatet fra studiet viser at det kan være forskjeller i forståelsen og tolkningen av begrepet, som videre kan by på forskjellige praktiske tilnærminger i klasserom tvers over landet.

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Foreword

There are several reasons why I chose this topic for my thesis. Throughout the years of my teacher education, deep learning was mentioned in several lectures. Every time this topic was brought up, I was immediately intrigued by the thought of bringing deep learning into the future school. The comparison to a previous, perhaps overly emphasized, surface learning approach made me think about my own primary and middle school education. I remember having to memorize dates, numbers, vocabulary and math formulas without really understanding it in context. Like many others, I also remember memorizing and cramming for tests and then immediately forgetting the material after a test or an exam. When I moved to the US in my high school exchange year, I experienced that some of my teachers used different teaching techniques than back home. Perhaps these were more deep learning oriented, because certain things I learned there are still fresh in memory. In addition to this, when studying at a university level and by writing different papers and a bachelor's, I have experienced how going in depth in one topic can be very enriching and rewarding. At the same time, I understand the importance of giving children an all-round general education. I therefore find this topic very interesting. In addition, I hope that the (deep) knowledge gained from writing about this topic will benefit me in my teaching career and perhaps encourage other teachers to prioritize the term in their teaching.

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1. Introduction

“Deep learning”, or in Norwegian “dybdel ring”, has in the recent years become a well-known term in Norwegian schools (Larsen, 2018). The term has also been used worldwide by researchers, politicians, media and in several educational discourses. This stems from an increased focus on providing children and students the necessary skills needed in order to meet the demands of the 21st century (Winje & L ndal, 2020), which came to light here in Norway when in 2014, the Ludvigsen Commission published their first report on learning in the future school (Ludvigsen Commission, 2014). The Ludvigsen-report focused on deep learning as an important part of the necessary changes for the Norwegian school. Today, deep learning can be found as a key term in the curriculum (Utdanningsdirektoratet, 2020d) and English teachers around the country are working with implementing deep learning as a part of their English language teaching. Their understanding and work with the relatively new (at least in a Norwegian school context) and substantial term is the main focus of this thesis; “Deep learning is different in nature and scope than any other education innovation ever tried” (Fullan, Quinn, & McEachen, 2018). I have chosen to focus on deep learning in Norwegian middle school. By this I mean the Norwegian “ungdomsskole” which is from 8th to 10th grade.

1.1 Context

Deep learning is today a substantial part of the national curriculum in Norway. The term made its appearance when, in 2014 and 2015, the Ludvigsen Commission submitted reports on learning in the future school to The Ministry of Education (Ludvigsen Commission, 2014, 2015). The commission was appointed by Royal Decree in 2013 and was assembled in order to evaluate the subjects in Norwegian education against the requirements for competence in future social and working life (Ludvigsen Commission, 2015). The commission was led by Sten Ludvigsen, professor and pedagogy researcher (Wikipedia, 2018). The reports they published (NOU reports) include research that reveals that deep learning, as opposed to surface learning, is important for students’ development and creates progression in students’ learning in and across subjects (Ludvigsen Commission, 2014). Consequently, the Ludvigsen-Commission recommended a renewal of the Norwegian school subjects in the 2015 report. The suggestion was based on the rapid changes in society, the development in communication and technology and a knowledge-based society. The commission suggested fewer competence aims in each subject, as well as increased flexibility in the distribution of time for specific subjects. They

also advised that competence aims across subjects should be based on three interdisciplinary topics; life skills, democracy and citizenship, and sustainable development (Ludvigsen Commission, 2015). In 2016, the Ministry of Education and Research published a report based on the Ludvigsen Commission NOUs. This report included suggestions on how to renew the school subjects (Kunnskapsdepartement, 2016). This process was the introduction to deep learning in the Norwegian national curriculum. The new national curriculum went through an official hearing that ended in 2019. After over 7000 suggestions were received by The Norwegian Directorate for Education and Training (Utdanningsdirektoratet or, as it will be referred to hereafter, Udir), the curriculum was implemented in the fall of 2020.

The term deep learning is to be found in the core curriculum. Although it does not appear too often in the curriculum, in fact it only occurs in two paragraphs, the focus on this term has been substantial. The core curriculum consists of the main values and principles for primary and secondary education and focuses on preparing students for the world outside of school. The curriculum states that it is the school's mission to educate and secure a comprehensive development of students. The core curriculum emphasizes terms such as competence, development, basic skills and differentiation (Utdanningsdirektoratet, 2020d). The three interdisciplinary topics were also introduced and incorporated into the competence aims (Utdanningsdirektoratet, 2020b). More information on the interdisciplinary topics will be presented in chapter 2.5.2. In the core curriculum under "Competence in the subjects" is where we first find a paragraph on deep learning. The paragraph says:

School must provide room for in-depth learning so that the pupils develop understanding of key elements and relationships in a subject, and so they can learn to apply subject knowledge and skills in familiar and unfamiliar contexts. In their work in the subjects, the pupils shall be given tasks and participate in varied activities with increasing complexity. In-depth learning implies applying knowledge and skills in different ways so that over time the pupils will be able to master various types of challenges in the subject, individually and in interaction with others.
(Utdanningsdirektoratet, 2020d)

This paragraph is a part of the framework for my thesis. The paragraph explains that deep learning should be practiced in all subjects and what that implies, yet not how to do so. That is why I wish to explore how teachers should work with and apply deep learning in practice, especially in the English subject, and perhaps most importantly, how English teachers currently understand the term.

Additionally, we find the term mentioned under “Teaching and differentiated instruction” in the core curriculum. This paragraph says:

The pupils must be given the time to explore various subject areas in depth. Giving room for in-depth learning requires that the school takes into consideration that the pupils are different and learn at different speeds and with different progression. This requires knowledge about how pupils learn and what they know from before, and requires close follow-up of each pupil. Pupils who experience mastering are motivated to be more persevering and independent. Trial and error may be a source of learning and acknowledgement, and the pupils must be encouraged to try to do their best even when success is not guaranteed. School is responsible for furnishing pupils with the confidence cross boundaries and try something difficult. (Utdanningsdirektoratet, 2020j)

This paragraph links deep learning with differentiated teaching and advises that in order to follow the curriculum, teachers need to give students the opportunity to work in-depth. It also explains that deep learning requires consideration of the students’ different knowledge bases, knowledge about how students learn, and close monitoring of the students’ progress.

1.2 Thesis

This thesis will be a study of how teachers understand the term deep learning and how they work with implementing deep learning from the new curriculum into their English teaching practice. I wish to research teachers’ work with deep learning as well as their view on the term in the English subject. This includes exploring what changes they have made, if any, in their English teaching when adjusting their work to the new curriculum plan. The research questions I have developed in order to examine this sound as follows:

- Compared to the theoretical definitions, how do teachers understand the term deep learning? How do they view the relevance of the term in the English subject?

1.3 Clarification of Terms

1.3.1 Deep learning/ Deeper learning/ In-depth learning

When exploring literature on this topic, I found several similar terms used to explain the same concept; deep learning, deeper learning, in-depth learning, deep level processing etc. (Winje & Løndal, 2020). Additionally, the term deep learning is also applied for machine learning and artificial intelligence, which caused some confusion when researching literature on the term. My wish was to use the term closest to the Norwegian word “dybdelæring”. In the English version of the core curriculum, the term is translated to “in-depth learning”, but this is used in considerably few other literary sources (Utdanningsdirektoratet, 2020d). Several sources use the term deeper learning (Briggs, 2015; The Hewlett Foundation, 2013), yet in most of the newer literature on the educational phenomenon, the term deep learning is the most apparent (Fullan et al., 2018; Ohlsson, 2011; Seif, 2018). I therefore decided to use the term deep learning throughout this thesis in order to provide clarity and consistency throughout the text.

1.3.2 21st Century Skills

21st century skills are frequently mentioned in connection to education and deep learning. There is no official definition of the concept, which can cause confusion and a vague understanding of the term. Different skills are emphasized by different authors and organizations. Nevertheless, the understanding is that 21st century skills are a set of skills that are viewed as critically important in order to succeed in today’s world, and in future education and career work (The glossary of education reform, 2016). The intention behind the concept is that by basing education on developing certain skills, students will be able to meet future environmental, social and economic challenges (National Research Council, 2012). More on this in chapter 2.3.

1.3.3 Implementing

To implement is to execute, apply, put into effect, carry out, realize, enforce or fulfil something (Ordnett, 2020). In this thesis I will use the word implement when talking about the process of putting the new curriculum into effect in schools.

1.3.4 Middle School

As seen in the title of this thesis, I have decided to use the term middle school to describe the Norwegian “ungdomsskole”, which is grades 8 to 10. Norwegian students are usually between the ages 12 and 16 in this level. Because the school systems are different from Norway to

English-speaking countries and also amongst English-speaking countries, there is not one specific term to translate this word. The British level closest to “ungdomsskole” would be lower secondary school, which is usually from ages 12 to 16. I wanted to use an American equivalent to the Norwegian term because I write my thesis in American English. In the US, there is junior high school, which is from grades 7 through 9 (12 to 15 years), and middle school which is grades 6 through 8 (11 to 14 years)(ACS International School; Pearson). I did not want to use the words “8th to 10th grade” in the title of this thesis, because the grades signify different ages in the different countries. I found that most of the sources I read used middle school more than junior high, and although the age in the term junior high is more similar to “ungdomsskolen”, I chose to use middle school. Throughout the text I do use 8th to 10th grade, and that will refer to the Norwegian school system.

1.3.5 ESL/EFL Learning/Teaching and L1 and L2

When I write about ESL or EFL learning or teaching in this thesis, I am referring to English as a foreign language (EFL) or English as a second language (ESL). English is not an official second language in Norway but is often used as a lingua franca and is a familiar language to Norwegians (Rindal, 2014). When I write L1 or L2 I am referring to first or native language (L1) and second language (L2). Although many Norwegians acquire English as their second language, English could be students’ first, second, third or even fourth language. Because English does not have the official status of a second language in Norway, I am going to use both terms jointly when explaining English language learning and teaching within my thesis.

2. Definition and Theoretical Background

Even though the term deep learning may seem relatively new, the idea of deep learning has existed in educational research for decades. In the 1970's, researchers started to study the distinction between deep and surface learning (Beattie, Collins, & McInnes, 1997). A surface learning approach is characterized by memorizing facts without questioning the material, and is often connected directly to assessment requirements (Beattie et al., 1997). In the early 1980s, cognitive scientists discovered that students retain material better and are able to apply knowledge to other contexts when they learn deep knowledge and how to use this knowledge in practical and social settings. As learning scientists continued to observe classrooms, they discovered the lack of this deep knowledge among the students in different schools (*The Cambridge Handbook of the Learning Sciences*, 2014). In the last 40 years, researchers have accumulated new kinds of information about human learning and the general view has shifted from a focus on drill and practice to a focus on students' understanding and knowledge application (Committee on Developments in the Science of Learning, Commission on Behavioral and Social Sciences and Education, & National Research Council, 1999).

2.1 Definition of Deep Learning

There is a wide range of definitions when it comes to deep learning and the term is described in several different ways, both internationally and in Norway. This can cause a lot of confusion for teachers who need an understanding of the term in order to be able to use it in their teaching. Maryellen Weimer, retired Professor of Teaching and Learning at Pennsylvania State University indicates; "Typically, it's defined by what it is not. It's not memorizing only to forget and it's not reciting or regurgitating what really isn't understood and can't be applied"(Briggs, 2015). The authors of the article "Bringing Deep learning to the surface", Winje & Løndal, write that learners who reproduce, replicate and memorize elements use a surface learning approach. A deep learning approach is apparent when learners seek to understand the intention and meaning of the learning material, relate the material to previous knowledge and experience, as well as examine and question arguments and conclusions (Beattie et al., 1997; Winje & Løndal, 2020).

The term has also appeared in mainstream media, one specific article quoting; "Learn the word. It means that the knowledge that is taught should also be transferred to practical use"(Valvik, 2015) (my translation). Although this is a big part of the concept, being able to

transfer knowledge into practice is not the only element needed to describe and define the term deep learning. American educators and authors Hilton and Pellegrino are the editors of the book “Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century”. This book describes the important sets of skills needed to (among other things) increase deep learning. Hilton and Pellegrino write that deep learning occurs when the learner is able to transfer what was learned into new situations (National Research Council, 2012). In addition to the ability to transfer knowledge, we also find other important elements in mentioned within deep learning, such as being able to think critically, problem solving and communication (National Research Council, 2012).

Many authors mention the six C’s as the goal for deep learning; character, citizenship, collaboration, communication, creativity and critical thinking (Fullan, Quinn, & McEachen, 2019). Fullan et al claim that deep learning is the process of developing these six competencies; “These competencies encompass compassion, empathy, socio-emotional learning, entrepreneurialism, and related skills required for high functioning in a complex universe”(Fullan et al., 2018). The authors claim that because the six concepts often are recognized as vague, simply naming these competencies is not satisfactory in order for students and educators to have a shared depth of understanding of the term. They therefore developed further descriptions of what the six C’s include:

Character:

- Learning to learn
- Grit, tenacity, perseverance and resilience
- Self-regulation and responsibility
- Empathy for and contributing to the safety and benefit of others

Citizenship:

- Thinking like global citizens
- Considering global issues based on a deep understanding of diverse values and worldviews
- Genuine interest and ability to solve ambiguous and complex real-world problems that impact human and environmental sustainability
- Compassion, empathy and concern for others

Collaboration:

- Working interdependently and synergistically in teams
- Interpersonal and team related skills
- Social, emotional and intercultural skills
- Managing team dynamics and challenges
- Learning from and contributing to the learning of others

Communication:

- Communicating effectively with a variety of styles, modes and tools including digital
- Communication designed for different audiences
- Reflection on and use of the process of learning to improve communication

Creativity:

- Having an ‘entrepreneurial eye’ for economic and social opportunities
- Asking the right inquiry questions
- Considering and pursuing novel ideas and solutions
- Leadership to turn ideas into action

Critical thinking:

- Evaluating information and arguments
- Making connections and identifying patterns
- Problem solving
- Constructing meaningful knowledge
- Experimenting, reflecting and taking action on ideas in the real world

(Fullan et al., 2018)

Similar to Fullan et al, The William and Flora Hewlett Foundation write that deep learning is an umbrella term for certain skills and knowledge needed in the 21st century work and civic life. Further, they describe deep learning as “a set of competencies students must master in order to develop a keen understanding of academic content and apply their knowledge to problems in the classrooms and on the job”(The Hewlett Foundation, 2013). On the other

hand, Hilton and Pellegrino describe deep learning as the process of developing durable, transferable knowledge that can be applied to new situations; “We define deeper learning not as a product but as processing – both within individual minds and through social interactions in a community”(National Research Council, 2012). They also state that through deep learning, the individual develops expertise in a particular knowledge area. The practice often involves interactions and a sheared learning experience with others (National Research Council, 2012). In his book named “Deep Learning”, Cognitive scientist Stellan Ohlsson describes deep learning as “non-monotonic cognitive change”(Ohlsson, 2011), describing the cognitive learning process of deep learning. More on Ohlssons theory in chapter 2, section 2.

The above-mentioned definitions show a varying and comprehensive number of ways to describe the term. Further, as explored in chapter 1.1, the curriculum includes deep learning in two areas of the core curriculum. In the first paragraph, it says “in-depth learning implies applying knowledge and skills in different ways so that over time the pupils will be able to master various types of challenges in the subject, individually and in interaction with others” (Utdanningsdirektoratet, 2020d). Further, Udir has included a definition on their websites as an external recourse for teachers to use. Udir here defines deep learning as a “gradual development of knowledge and lasting understanding of concepts, methods and contexts in subjects and fields”. Additionally, the definition says “this means that we reflect on our own learning and use what we have learned in different ways in known and unknown situations, alone or with others”(Utdanningsdirektoratet, 2019a). To summarize, these different definitions tell us that deep learning is the gradual understanding of the learning material and development of a set of skills, and not just these skills and the knowledge in and of themselves.

2.2 The Learning Process

As previously mentioned, deep learning can be seen as a cognitive process (Ohlsson, 2011). Some of the rules of learning are yet unknown to us, yet one of the main rules is that practice increases learning. There is also a corresponding relationship between the experiences in a complex environment and the amount of structural change in the brain (Committee on Developments in the Science of Learning et al., 1999). This means that experience is very important for modifying the structures of the brain and developing understanding. We need new experiences in order to change our preprogrammed patterns and previous beliefs (Committee on Developments in the Science of Learning et al., 1999). Our brain has an

ability to change and create new patterns and connections, also known as neuroplasticity. This happens when we experience something new, and is what makes us learn and remember what we experienced (Furst, 2018).

Deep learning can also be viewed in a sociocultural perspective, which focuses on how deep learning happens together with others. In a classroom context, the sociocultural perspective connects the student's individual cognitive development with the social interaction in the classroom. This development happens in both interactions between student and teacher as well as with fellow students (Gilje, Landfald, & Ludvigsen, 2018).

2.2.1 Ohlsson's Theory

Stellan Ohlsson's well-known theory describes deep learning from a cognitive perspective. He calls deep learning a "non-monotonic cognitive change" (Ohlsson, 2011). His theory describes three different types of non-monotonic change: the creation of novelty, the adaption of cognitive skills to changing circumstance, and the conversion from one belief to another, incompatible belief. He also believes that new experiences are important for our view of reality to create a fundamental change in how we think and act (Ohlsson, 2011).

Ohlsson explains that our superior ability to learn is our "species-specific characteristic" (Ohlsson, 2011), and therefore a theory of the human mind requires a theory of learning. Further, he explains the concept of learning and how the cognitive process works; "[...] a person can learn by accumulating experiences, analyze them to identify the regularities, project those regularities onto the future and act accordingly" (Ohlsson, 2011). This means that we learn primarily from our prior experiences, and we use this knowledge to guide us in the future. Ohlsson describes this as a paradox considering the state of the world; "But in a world characterized by complexity and turbulence, change is the only constant. Furthermore, change is thoroughgoing, and the rules that control change are themselves changing" (Ohlsson, 2011). This means that only using our experiences as a source of expectations for the future can most of the time be misleading, and that learning in our world requires other cognitive capabilities. We need the ability to consider other actions and outcomes, and thereby let our previous experience be overruled. Ohlsson writes that everyday life requires a balance between projecting and overriding past experiences; "The course of shifting the basis for action from innate structures to acquired knowledge and skills, human beings evolved cognitive processes and mechanisms that enable them to suppress their

experience and override its imperatives for actions”(Ohlsson, 2011). This is at the core of Ohlssons’ deep learning theory.

2.3 Deep Learning and 21st Century Skills

The skills described as the 21st century skills are stated to promote deeper learning (National Research Council, 2012) and are often referred to in relation to deep learning, but what are 21st century skills and why are they important? The twenty-first century is characterized by the rapid increase of technology, digitalization, globalization, as well as threatening global challenges in economy and environmental issues (Chy, Reynolds, Tavares, Notari, & Lee, 2017). Chy et al. write that education systems have not evolved parallel to the changes in society; “All too often, citizens feel disempowered that they can contribute solutions or innovations that are necessary to help address global dilemmas” (Chy et al., 2017). Hilton and Pellegrino write that today’s education is critical in order for children to be prepared for future economic, environmental and social challenges. Although we cannot prepare students for all the challenges in future work life, we can teach them how to learn and thereby increase their ability to handle future challenges (National Research Council, 2012). Students need to be prepared to enter the current and future state of the world, and therefore need new sets of skills linked to the broader world challenges (Chy et al., 2017). Binkley et al writes that new standards for what students should be able to do must replace those of the past. In order for this to take place, schools must enable students to acquire problem solving skills, thinking skills, and collaboration and communication skills that will be necessary in order for students to become successful in work and life (Binkley et al., 2011).

According to Hilton and Pellegrino, the skills referred to as the 21st century skills by politicians and business leaders include critical thinking, communication, collaboration, and self-management (National Research Council, 2012), but there are several definitions of the 21st century skills. By 2019, 19 states had joined the “Partnership for 21st Century skills” in the US (California Department of Education, 2019). This framework describes the skills, knowledge and expertise students need for future education, career and citizenship. They focus on three essential domains; learning and innovation skills, life and career skills and information, and media and technological skills (California Department of Education, 2019). These three main domains are also found in other descriptions of the 21st century skills (Chy et al., 2017), but the categories vary from source to source. According to the framework developed by Organization for Economic Co-operation and Development (OECD), however,

learning and innovation skills include critical thinking, problem solving, creativity, innovation, communication and collaboration (Cisco Systems, 2008). Life and career skills include flexibility, adaptability, self-direction, productivity, leadership and responsibility. Lastly, information, media and technology skills include information literacy, media literacy and ICT literacy (Cisco Systems, 2008).

As we now have established an understanding of the 21st century skills, a further look at how they are connected to deep learning is necessary. The characteristics used to describe deep learning are very similar to those describing the 21st century skills. In the above-mentioned 21st century skills we find critical thinking, creativity, communication and collaboration; which amount to four of the six C's that are described as the goal for deep learning (Fullan et al., 2018). Many other skills mentioned such as literacy, ITC skills, self-direction and self-management are also found in deep learning descriptions (Fullan et al., 2018). When the US National Research Council were charged to define a set of key skills, amongst these “deeper learning” and “21st century skills”, they found a lot in common for these two terms; “Calls for such 21st century skills as innovation, creativity, and creative problem solving can also be seen as calls for deeper learning – helping students develop transferable knowledge that can be applied to solve new problems”(National Research Council, 2012). The committee focused on two perspectives in deeper learning and 21st century skills, the cognitive perspective and the sociocultural perspective. In view of both perspectives, the committee believed that the link between 21st century competencies and deeper learning is the ability to transfer knowledge from prior learning to new learning or problem solving (National Research Council, 2012). Overall, the process of deep learning is essential for the development of 21st century competencies (National Research Council, 2012).

2.3.1 21st Century Skills in Norwegian Official Documents

The Ludvigsen Commission repeatedly mentions the 21st century skills in their reports. The NOU 2014:7 document includes a chapter focusing on the 21st century skills (Ludvigsen Commission, 2014). The chapter describes important competencies for future working and social life; technology, development, globalization, cultural diversity, democracy, climate and environment and the rapid development of knowledge in society. Further, the report states that many of the competencies required and mentioned in international projects are already integrated in the Norwegian school system. The aim is to preserve, strengthen and further develop the work that has already been done in these areas (Ludvigsen Commission, 2014).

In the second NOU report from 2015, the commission recommended four competence areas as a basis for future education, based on the development trends of the 21st century. These four areas were (1) subject specific competence, (2) competence in learning, (3) competence in communicating and interacting, and (4) competence in exploring and creating. The commission also emphasizes the strong link between this competence-acquisition and deep learning. A central part of competence is application and the ability to apply knowledge and skills in order to master challenges and solve tasks; “Students’ knowledge of and understanding of what they have learned, how to use it, and when they can use it, is important in order to achieve competence. In this way, the development of competence and deep learning are closely linked” (Ludvigsen Commission, 2015). In the 2015/2016 report to the Storting, a part of the main message was to renew the school in order to adapt to the changing society (Kunnskapsdepartementet, 2016b). The description of the document on the Norwegian government’s web page says “A changing society also requires a school that renews itself. The government therefore proposes to renew the school subjects in order to give the students more in-depth learning and better understanding”(Kunnskapsdepartementet, 2016a).

2.3.2 Students as the 21st Century Future Citizens

According to Fullan, Quinn and McEachen (2019) deep learning is seen on a deeper level and not just as thoughts on how school can prepare students for the future. Students are seen as active participants and not just pawns in the school system. By practicing deep learning they should experience being able to change their surroundings, and the world, while still in school. This means that the school needs to be a place for them to become active, collaborative, and critical in view of real-world problems (Fullan et al., 2018). “The circumstances that now face us represent a unique configuration of challenges that make it essential that we proactively change the world through learning” (Fullan et al., 2018). Deep learning is about finding our place in a changing and complex world, and learning how to adapt to this reality through learning (Fullan et al., 2018).

2.4 Changes in the Curriculum

In order to understand the position of deep learning in the Norwegian school system, we need to analyze the different elements of the curriculum that can provide teachers with the opportunity to focus more on deep learning in their teaching. In “Rekk opp hånda!”, a podcast for teachers, pedagogue Kathika Blichfeldt was asked the status of deep learning in late 2019. She had visited several Norwegian schools and said; “I have the impression that Norwegian teachers are conscious of getting acquainted with the curriculum renewal and to understand the meaning behind the terms, and use (varying) time to discuss this. Schools have this on the agenda”(Johannesesen & Moltubak, 2019). Note that this was before the pandemic hit, and before the curriculum was put in use.

2.4.1 Changes in the English Subject

With the curriculum renewal came changes in the English subject. Language learning and reading is prioritized in order for the students to learn to become confident users of the English language to communicate and connect (Utdanningsdirektoratet, 2019b). It is now emphasized that English is a language subject that prioritizes learning to understand and be understood in the English language(Utdanningsdirektoratet, 2019c). Udir writes that compared to LK06, there is more emphasis on English as a “working language” (arbeidsspråk)(Utdanningsdirektoratet, 2019c). In addition, it is emphasized English is an important subject when it comes to cultural understanding, all-round education and identity development (Utdanningsdirektoratet, 2020h). If we study the new competence aims, several aims in the social studies field have been removed since the last curriculum. This includes aims regarding history and geography in the United Kingdom and the United States and living conditions in other English-speaking countries (Utdanningsdirektoratet, 2006). This indicates that the subject is not to be considered a social studies subject but a language subject. Udir points out that English is still a central subject for cultural understanding as well as communication and identity development (Utdanningsdirektoratet, 2019b). According to Norwegian educators, prioritized language- and reading skills is not in itself anything new. The considerable change, however, is the approach that puts emphasis on student-active language exploring (Brevik, Flognfeldt, & Beiler, 2020). The students’ own interests have also been given more attention. With reading as a priority, different types of texts and context can be explored. According to Brevik et al., this connects the English subject to the Norwegian subject, which strengthens the interdisciplinary aspects and transfer between the

school subjects (Brevik et al., 2020). The renewal also puts emphasis on the English subject as laying a foundation for the students' education, not just an "instrumental subject"; the subject is not only a language subject, but also provides content to promote intercultural competence (Utdanningsdirektoratet, 2020f). Another part of the renewal is the focus on relevance. Students should experience learning English as relevant for work and future life, as well as for the youth culture they are a part of. This focus on relevance will provide a link between the world the students meet inside the classroom and the world they meet outside (Brevik et al., 2020). By focusing on language learning and connecting this to the relevance to the world outside the classroom, the students will practice transferring knowledge which is part of the deep learning theory.

One of the main challenges when it comes to making space for deep learning in the classroom, emphasized in the NOU's (Ludvigsen Commission, 2014, 2015), is too much material in the curriculum. According to Gilje, Landfald and Ludvigsen, when teachers have to work through several competence aims in different topics, this leaves less time and opportunity to build a deeper understanding of the subject content (Gilje et al., 2018). Before the renewal came out, Gilje et al wrote; "The criteria for enabling deep learning in the classroom will be influenced by whether the curriculum groups are able to reduce the material in each subject"(Gilje et al., 2018). In the renewal, the competence aims were clearly reduced, and the goal was for the aims to represent the most important values in the subject. When the new curriculum was announced, the minister of education at the time, Jan Tore Sanner, said "[...] This does not mean less learning, but more time to achieve each aim – to learn the most important parts of the subjects" (Ertesvåg, 2019) (my translation). Focus on the important parts of the subject can also provide the teacher with the opportunity to use deep learning in their classroom. These new curricular changes are therefore a part of accommodating for teachers to have the space to focus on deep learning. Another substantial change is within assessment; instead of one grade for oral skills and one for written skills, there is now only one grade that represents the student's overall competence after 10th grade (Utdanningsdirektoratet, 2019b).

2.4.2 Interdisciplinary Topics

The new curriculum also introduced three interdisciplinary topics: health and life skills, democracy and citizenship, and sustainable development. These are described in the core curriculum and are prioritized because of their ongoing relevance and importance in society (Utdanningsdirektoratet, 2020i). The topics are included in the curriculum in order to give the students opportunities to work with issues by discussing and working together, with the aim of connecting the students to important national and global challenges that demand engagement. It will also help them understand the connections of topics in and across subjects (Utdanningsdirektoratet, 2020b). The topic Health and life skills is supposed to provide the students with knowledge surrounding physical and mental health, including topics such as sexuality and gender, drug abuse, social media, economy, relations, and thoughts and feelings. This will help the students to make choices that benefit their own health and well-being, and to develop a positive self-image. The topic Democracy and Citizenship is described as giving the students knowledge and understanding of democratic principles and human rights, as well as preparing them to participate in democratic processes. The topic Sustainable Development refers to protecting life on earth and to provide resources to cover the needs of both today's and future generations. The topic includes issues such as environment and climate, poverty, conflicts, health, education, demographics and equality and aims to teach the students to make ethical and responsible choices that benefit the population and environment (Utdanningsdirektoratet, 2020b).

In the English subject, only two of these topics are required to be covered, Health and Life Skills and Democracy and Citizenship. Health and Life Skills in the English subject refers to developing oral and writing skills in order for students to express themselves in English. When developing these skills, they will be able to express thoughts, feelings and opinions, which will help develop a positive self-image. Democracy and Citizenship in the English subject revolves around learning about different cultures outside of our own society. Students that have the ability to speak English are also able to communicate with and experience new cultures around the world. This gives the students cultural competence that can prevent prejudice (Utdanningsdirektoratet, 2020e). Sustainable development as an interdisciplinary topic is not required as a part of the English subject. Udir states that each topic is included in subjects only where they are a central part of the academic content (Utdanningsdirektoratet, 2020i).

One of the main goals with the interdisciplinary topics is for the students to gain understanding and see connection within individual subjects, as well as across subjects. “Students will learn about how perspectives from different subjects complement each other”(Utdanningsdirektoratet, 2020i).

2.4.3 Core Elements in the English Subject

Each subject in the curriculum contains core elements. The core elements are supposed to represent the most central and important content that the students must learn in order to master the subject. The English subject has three core elements: communication, language learning and working with English texts. Communication refers to being able to use the language to create meaning, both orally and in writing. The curriculum states that the students will be given the opportunity to express themselves and interact in practical and authentic situations. Language learning refers to understanding the English language as a system and develop learning strategies to better their skills. Language learning refers to learning how English is structured and identifying connections between English and other languages the students are familiar with. Working with texts refers to working all different types of texts in various types of ways. Work with the core elements will help develop knowledge of different cultures and ways of living and thinking, as well as building their own identity. The curriculum makes clear that there is a link between language learning and reading, and that learning takes place in the encounter with texts (Utdanningsdirektoratet, 2020f).

According to the cognitive perspective on deep learning, facts and knowledge need to be put in a relevant context (Committee on Developments in the Science of Learning et al., 1999). Gilje et al write that the core elements provide the relevant context to connect the learning material to. The core elements represent the ways of thinking, methods, principles and concepts the subject is built on. This makes the learning material academically relevant (Gilje et al., 2018). The core elements tell us that transfer of knowledge and being able to see connections between the different elements is essential in this new part of the curriculum. “We believe that the core is the link between the various elements, not just the elements themselves. It is here that the new English subject can really be created”(Brevik et al., 2020) (my translation). This helps emphasize the focus on transfer of learning in yet another part of the curriculum.

2.4.4 Competence Package

Udir has developed several so-called competence packages or in Norwegian “kompetansepakker”, including one dedicated to working with the new curriculum. This package is created in order to help school leaders and teachers in the work of implementing the new curriculum and is available on the Udir website. Udir states that working with this package will contribute to increased competence in interpreting and understanding the curriculum. The package consists of five modules, where one of the modules is called deep learning (Utdanningsdirektoratet, 2019d). The deep learning module consists of guidance, resources, activities and instructions on how to work with the topic in the form of videos, texts and podcasts (Utdanningsdirektoratet, 2021b). The module introduces three approaches to deep learning; “background and definition”, “learning to learn – for life?” and “assessment that promotes deep learning” (my translation). In the first approach, the definition and the background for the term deep learning in the curriculum is explained. Here, the teachers are advised to think about and discuss their understanding of the term and what consequences their knowledge has for further exploring of the term in practice. It is also prioritized that teachers discuss and listen to each other’s understanding of the term. The second approach focuses on learning approaches that promote deep learning, including making the content relevant and making the students able to transfer knowledge to new context. The third approach addresses assessment and what to consider in dialogue with students and in order to accommodate to the new curriculum and deep learning. The module also has a final part where teachers have the opportunity to reflect on what they have learned and where they are in the process of changing their practice when it comes to deep learning (Utdanningsdirektoratet, 2021b). These competence packages are voluntary to use, and it is the school faculty and leaders who choose whether to use the tool and organize the work on the modules (Utdanningsdirektoratet, 2019d).

In 2021, Union of Education Norway (hereby referred to as Utdanningsforbundet) lead a survey amongst their union representatives from schools around the country (Utdanningsforbundet, 2021b). The survey is based on topics surrounding the renewal such as status, recourses and cooperation in schools, amongst this the competence packages. A large majority of the respondents answered that the tools and competence packages from Udir have laid down the guidelines for how the renewal has been implemented in schools. 72% of the respondents from primary levels responded this to a “large” or “very large” degree. When the respondents were asked if they felt that these recourses were useful, 52 % from the primary

level schools answered that they felt that they were useful. 32 % of the respondents disagreed with this.

3. Deep Learning in ESL/EFL Learning and Teaching

3.1 How to Teach Deep Learning

According to Hilton and Pellegrino, the process of developing transferrable knowledge through deep learning requires effective instructional methods (National Research Council, 2012). The authors of “Deep Learning – engage the world change the world” write that we need to change the culture of learning, and not the structures. This transformation will occur when we work on facilitating new processes for learning. “It’s not about bolt-on programs, but rather it’s a rethinking of the learning process.” (Fullan et al., 2018)

The practice of deep learning requires the students to be actively involved; still, it is the school’s and teacher’s responsibility to facilitate this learning. The teacher has to provide guidance and support, as well as use varied methods adapted to the individual and group level (Ludvigsen Commission, 2015). Fullan, Quinn and McEachen write that deep learning requires all parties to view themselves as actively learning. Teachers must create opportunities for dialogue, new thoughts and creativity. They must create an environment where learning with and from other becomes a habit and growth is measured and progress celebrated. This culture is created when the teachers model learning by being learners themselves (Fullan et al., 2018). Fullan et al specify six characteristics of classrooms that practice deep learning:

1. The students are asking questions. They have developed the skills and language to investigate and be active recipients of the teachers’ answers.
2. Questions are valued above answers. The process of learning, discovering and communicating is valued equally as important as the results.
3. Varied methods for learning are used - based on the student’s needs and interests.
4. Clear connections to the real world. Education based on relevance and meaning is the foundation for scaffolding in the classroom.
5. Students are able to collaborate – both in and outside of the classroom.
6. Assessment of learning is descriptive, transparent and authentic. Students define personal aims, monitor own progress, and engage in feedback with fellow students and others.

(Fullan et al., 2018)

The authors also write that in the development phase of a deep learning classroom, it is necessary for teachers to ask and reflect on how to develop new norms in the classroom. An example of this is “how can we set aside time for curiosity and creativity and create space for students’ voices?” (Fullan et al., 2018).

The teacher has to adapt their teaching in order to reach deep learning aims. According to Fullan and Langworthy, the main focus of learning is the learning process (Fullan & Langworthy, 2014). It is more important to develop the students’ ability to understand their own learning process than to cover all required content. In deep learning tasks, teachers function as the students’ partners, which means that they work together with the students to find solutions. They also emphasize that learning outcomes are measured in terms of the students capabilities to build new knowledge, lead their own learning, persevere through challenges, and to build life-long learning abilities (Fullan & Langworthy, 2014). In addition to this, students who have a deep learning approach tend to engage in meaningful learning strategies, have an ingrained motivation and “aim to understand the material they are reading or learning and to integrate it with their prior knowledge; they can also be said to have mastery goals” (Pintrich, 2003). Hilton and Pellegrino also write that deep learning occurs when students are motivated to make an effort to learn (National Research Council, 2012).

An article by Elliott Seif suggests four key criteria that define a deep learning teacher: The first one that the teacher has a deep learning mindset and makes sure to focus on deeper understanding and development of certain skills. Second, the students need to be heavily engaged in the learning process, and are given the opportunity to ask questions, communicate, construct meaning and develop and provide their own solutions. Third, the teacher needs to use instructional activities that promote “high cognitive challenge”, for example analyzing data, constructing points of view and finding complex solutions to problems. Fourth, the students must be given the opportunity to apply their knowledge to authentic situations to illustrate the value of learning outside of school, and promote a critical mindset, curiosity and interest (Seif, 2018).

The following chapters include practical approaches, ideas and methods to using deep learning when teaching. There does not exist much theoretical material on deep learning in the English subject in the Norwegian classroom. Therefore, when researching practical approaches to using deep learning in the English classroom, suggestions for language learning for English as a second language had to be explored in order to find sufficient material in addition to the Norwegian sources available.

3.2 Transfer for Learning in the English Classroom

As we have previously discovered, deep learning includes being able to transfer knowledge from one context to another in order to gain a better understanding of a topic. In an article about second language (L2) learning, Mark A. James writes that an important issue in second language teaching is transfer of learning (James, 2018). The author emphasizes the importance of teaching for transfer and describes this as a goal that teachers should try to promote. Transfer of learning includes using a first language when learning a second language, as well as learning to use what has been learned in the L2 classroom in the world outside (James, 2018). When it comes to learning a second (or third) language, it is natural to use our first language in the process. This can be, and is often seen as something negative that L2 teachers try to avoid in their teaching (James, 2018). Cummins goes on to state that the student's language(s) should not be kept separate, and that it is important to teach for transfer across languages. He also writes that the assumption that translation between L1 and L2 has no place in the teaching of language is not empirically supported. Encouragement of translation in L2 teaching can be viewed as regression to outdated methods such as the grammar/translation method. He urges the adaption of bilingual instructional strategies, where cross-language transfer and language awareness is encouraged (Cummins, 2005). The L1 knowledge acts as a bridge to L2 and L3 literacy and learning (Kirkpatrick, 2008).

In "Kunnskapsløftet" (LK20), one of the competence aims after year 10 is to "explore and describe some linguistic similarities and differences between English and other languages he or she is familiar with and use this in his or her language learning" (Utdanningsdirektoratet, 2020g). This was also a competence aim in the previous curriculum (Utdanningsdirektoratet, 2006), the only difference being that the previous aim specifically said to use the "first language" (morsmål) and the new aim says "languages he or she is familiar with". This means that the students can transfer their knowledge from any language, and that the teacher must help them reach this aim. Due to the increasing number of children with a minority background, Norwegian teachers will have students whose first and second languages are not Norwegian and English. In a research article by Dahl and Krulatz, the researchers present the results of a survey of 176 English teachers in Norway (Dahl & Krulatz, 2016). In this survey teachers were asked whether they felt prepared to teach students whose mother tongue was not Norwegian. The results showed that while most of the teachers felt prepared for working with students who were not native Norwegian speakers, very few of the teachers in the survey actually focused on multilingualism in their classroom. The research also showed that they

wished to have more expertise in this area (Dahl & Krulatz, 2016). Another research article from 2014 reported that teacher-students also claimed to not have the necessary knowledge and competence required to teach English in a multilingual classroom. They felt that they lacked strategies to use in order to relate to the different languages they were to meet in the classroom (Surkalovic, 2014). Several scholarly works focus on the importance of teacher language awareness. Andrews emphasizes the importance of language teachers having both knowledge about language (subject-matter knowledge) and knowledge of language (language proficiency) (Andrews, 2003). This means that metacognitive competence in language is equally as crucial for a language teacher as high competence in the subject language (Surkalovic, 2014). Brevik et al. writes that “if students use languages other than Norwegian at home, this does not mean that teachers must know these. What is important is that everyone’s language skills are recognized”(Brevik et al., 2020) (my translation). Students who use their first/home languages when learning English are actively using transfer for learning, which additionally means they are practicing deep learning. Cross-language use and language awareness could therefore be a part of establishing a deep learning culture in the English classroom.

3.3 Deep Learning in Reading and Writing

Reading and writing plays an important part in the English subject, and there are several ways to accomplish deep learning through reading and writing (National Research Council et al., 2013). Nevertheless, the shared goal is to acquire a deeper understanding of text. Among the different reading approaches, the “four resources model” can be found (Luke & Freebody, 1990). This model describes a set of stances towards a text, seeing the text from different point of views. These four resources are: the reader as the text decoder (this includes elements such as alphabetic knowledge, sounds, spelling, patterns and sentence structure), the meaning maker (understanding meaning based on ideas and prior knowledge), the text analyst (exploring tools, word choices, form and validity), and the text critic (questions intentions, subtexts, and political motives). The different stances describe different ways to approach text, but if they are all combined, the reader can truly accomplish critical reading (Luke & Freebody, 1990). This model can be put into use when writing and creating text as well, making the writer become more aware of the choices they make and how the reader receives the text. By using this model, the reader or writer is equipped to view and work with text in different ways, in contrast to a “simple view” of reading and writing (National Research

Council et al., 2013). An article by Kirby, Cain and White describes how deep learning creates a bridge between reading comprehension and the quality of learning. The outcome of high-quality reading comprehension is a coherent understanding of a texts' meaning (Kirby, Cain, & White, 2012). Their article is, amongst others based on the model made by Kintsch (Kintsch, 1998; Kintsch & van Dijk, 1978). Kintsch brings up three representations of meaning that are formed when we read: the surface level, the textbase, and the situation model (Kintsch, 1998; Kirby et al., 2012). Each of the representations involving a deeper level of understanding and processing. The surface level (1) involves processing words and sentences. At this level, precise wording and syntax is often quickly forgotten after sentences are read. We relate the sentences to what we already know about the topic and thereby gain a more general understanding of what we read. The text-base (2) involves analyzing propositions to understand the meanings of individual clauses or sentences. The situation model (3) is described as understanding the "state of affairs" in the text rather than a description of the text itself. The reader incorporates their background knowledge from their long-term memory to understand how elements are related. This model involves deeper processing because it is more related to meaning and can be a base for transfer of learning to other, future tasks (Kintsch, 1998; Kirby et al., 2012).

Kirby et al write that an understanding of text on a deeper level is important, but often neglected. "Younger children need to be taught how to process strategically, even when reading for pleasure, and they need to be prepared for the more challenging reading that is to come"(Kirby et al., 2012). They argue that deeper processing, here embodied in the situation model, is essential for learning of high quality (Kirby et al., 2012).

3.4 Deep Vocabulary Learning

According to research, using 'deep' processing strategies when working with vocabulary in a second language is proved to be more effective than repetition strategies (Cohen & Aphek, 1980; O'Malley & Chamot, 1990). Among these 'deep' strategies are contextual guessing, a method where students develop the skill of using context to determine the meaning of unknown words – basically guessing what a word means by using words they already know (van Parren & Schouten-van Parreren, 1981). There is also the keyword method, where one generates a keyword in their native language that is similar to the new foreign word and use this keyword to create an imagery to help them remember the new word. An example: the Spanish word "apo" means celery, and the learner chooses the keyword "ape". To help them

remember this word, they create an image of an ape carrying celery (Wyra, Lawson, & Hungi, 2007). Semantic mapping is also an example of these deep vocabulary methods. A semantic word map is a graphic representation where students explore a new word by creating a map where they relate the word to other words and phrases that are similar in meaning (NSW, 2012). From my experience, semantic maps are often used in Norwegian schools, but perhaps not when it comes to learning English vocabulary.

Research claims that even though utilizing deep strategies of vocabulary is more cognitively demanding for both the teacher and student, it results in significant enhancement of vocabulary retention (Sardroud, 2013). Deep vocabulary learning strategies such as semantic mapping are seen as an effective tool for vocabulary learning in EFL and ESL classrooms. This tool, as well as the contextual guessing method and the keyword method, activates the students background knowledge when teaching them new vocabulary (Sardroud, 2013). This maintains the idea of deep learning where students activate their prior knowledge when learning new information.

3.5 Assessment in Deep Learning

Research suggests that deep learning requires feedback that helps students correct errors and practice correct procedures (National Research Council, 2012). “Assessment is one of the ways in which teachers and schools inform students what they, the teachers, and schools think is important” (Kirby et al., 2012). According to Shepard et al., about a generation ago, assessment mostly consisted of creating tests to see if learning aims had been successfully learned. Today, assessment is considered to be an important part of the students’ learning process. In fact, research shows that formative assessment is a powerful tool. Formative assessment is assessment that takes place during the learning process, with the purpose of improving the teaching and learning. According to Hilton and Pellegrino, formative assessment is a part of enhancing deep learning (National Research Council, 2012). The authors mention three main goals of deep learning in formative assessment; “(1) make learning goals clear to students, (2) continuously monitor, provide feedback, and respond to students’ learning progress; and (3) involve students in self- and peer assessment” (National Research Council, 2012). In order to be the most effective, using several assessment strategies is recommended for teachers to improve the learning process (Shepard et al., 2007). The most important part is that teachers have an understanding of the process; “More importantly, they

must have a deep understanding of the formative assessment process and understand its close relationship to instructional scaffolding” (Shepard et al., 2007).

In the new curriculum, formative assessment is a particularly significant element in the English subject. In the section “Competence aims and Assessment” for English for 8-10th grade, we find the competence aims, assessment for coursework and formative assessment. Here, it is stated that teachers need to give students guidance on further learning as well as adapt their teaching in order to help the students develop their skills in the subject. It also states, “with the competence the pupils have demonstrated as the starting point, they shall have the opportunity to express what they believe they have achieved and reflect on their own development in the subject” (Utdanningsdirektoratet, 2020g). This brings up the topic of self-assessment, which is also a substantial part of the curriculum. Udir claims that for students to be able to assess themselves and what they understand is an significant aim in today’s education, because it promotes independency, motivation and gives the students a sense of accomplishment (Utdanningsdirektoratet, 2020c). Self-assessment involves being able to understand what one already knows, what they are going to learn, and what they have learned. The curriculum states that the school needs to contribute to students reflecting on their own learning and learning processes. When students learn how to ask questions, seek answers, and express their knowledge, they will gradually be able to take an active role in their own development. “Deeper insight is developed when the pupils understand relationships between fields of knowledge and when they master a variety of strategies to acquire, share and use knowledge critically”(Utdanningsdirektoratet, 2020c).

The intention of both formative assessment and self-assessment in the curriculum is amongst others to promote deep learning (Sandvik, 2019). In the description of deep learning in Udir’s web pages, it reads “This means that we reflect on our own learning and use what we have learned in different ways in known and unknown situations, alone or with others”(Utdanningsdirektoratet, 2019a). Deep learning often includes working with certain things over a longer period of time, and by the teacher adapting to where the students are in the learning process, the students are provided with the opportunity to build a complete knowledge base (Sandvik, 2019).

Fullan et al states that there is a shift in values, from standardization and content memorization to the new era of learning (Fullan et al., 2018). If teachers create tests that mostly consist of detail questions with no space for students to express their understanding, then this is unlikely to encourage high-quality learning. An example of this type of test is

where the students are required to list points they have memorized. Kirby et al points out that this encourages the idea that reproducing details and memory are the goals of learning. They suggest that these goals should be in support of higher level goals, by linking them to questions that stimulate high quality learning (Kirby et al., 2012). In order to achieve high quality learning, both teachers and students need to be aware of what needs to be learned, how it should be learned, and what the learner should be able to do afterward (Kirby et al., 2012). Instead of reproducing memorized elements, learners are now required to seek a deeper understanding of the learning material and its intention. This creates a need for a shift in measurement tools and practices. The authors list the necessary steps for successful and meaningful measurement:

- Identify and define what is actually important for learners
 - Clearly describe what success looks like at different levels of learning or development using rubrics or learning progressions
 - Where gaps exist, develop or identify other measures of success using the agreed-upon descriptions
 - Design, implement, assess and measure deep learning making fully evidenced decisions based on a wide range of assessments and indicators
 - Moderate assessments and ratings for inter-rater reliability within and if necessary between school, districts or regions
 - Leverage learning to focus capacity building efforts and further center the teaching and learning process on students – what really matters, and how they find success.
- (Fullan et al., 2018)

3.6 Covid-19 Situation

Before ending the theoretical part of this thesis, I wanted to include some additional information on the ongoing pandemic. Because of Covid-19, the situation in Norwegian schools has been far from the usual in both 2020 and 2021. Many teachers experienced having to repeatedly change their plans as result of changing rules and regulations (Utdanningsforbundet, 2021a). A study from 2020 revealed that teachers have worked more than usual during the pandemic. In the study from May 2020, one in three teachers stated to have worked more than usual, and almost five out of ten answered to have worked somewhat

more than usual (Gilje, Thuen, & Bolstad, 2020). Leader of Utdanningsforbundet, Steffen Handal said:

“We have to remember that this has lasted since March, when we had a demanding lockdown. Then we had changes in rules and levels after that. All this requires a lot of work from the teachers. It is a tired sector now” (Alver, 2020) (my translation).

According to research, teachers developed different teaching methods and used several digital resources during home-schooling. Many also experienced more difficulties with improvising and adjusting their teaching than with physical teaching (Gilje et al., 2020). Schools in Norway have had a varied amount of home-schooling depending on the number of covid-cases in the area. After the first lockdown in March 2020, the traffic light model was developed with the aim of not having to close down schools again. The model had three different levels that describe measures the schools must follow; green, yellow and red, depending on the level of contamination in the area (Utdanningsdirektoratet, 2021c).

Due to the pandemic, preparations and work with the introduction of the new curriculum has for some been delayed (Utdanningsdirektoratet, 2020a). In spring of 2020, The Norwegian Union of School Employees requested a year’s postponement so that the curriculum renewal would be put in use fall of 2021 (Valum, 2020). According to their research, over half of their members wished to postpone the renewal (Mejlbo, 2020b). Their union leader, Anne Finborud, said that the union believed that it would be irresponsible to put the renewal in use in the middle of a crisis. She said, “Teachers will need time when the school restarts to make up for lost time, and to create security in the learning situation in order to avoid an even more stumbling start”(Valum, 2020) (my translation). The decision was made not to postpone the renewal, and Utdanningsforbundet made a statement that the evaluation was based on the apprehension that school employees were mentally prepared for the planned start-up, and that a start at a later point might create a lack of motivation. Udir wrote in 2020 “We fully understand that this is a great challenge for many schools. We still expect schools to prioritize work on the new curricula as far as possible, even though this means that other tasks must be downgraded for a while”(Utdanningsdirektoratet, 2020a). They also stated that it is the school and the school leaders’ responsibility to ensure necessary competence development in line with the subject renewal requirements (Utdanningsdirektoratet, 2020a).

According to a survey of union representatives in the Utdanningsforbundet in January of 2021, around half of the informants claimed that their school was not prepared for the

renewal, and many commented that the pandemic had an influence on how prepared each school was in advance of the renewal (Utdanningsforbundet, 2021b). In June, 2021, a report was published by The Nordic Institute for Studies in Innovation, Research and Education (NIFU) including a survey on school leaders regarding the work with the new curriculum (Bergene, Vika, Steine, Ekaterina, & Østby, 2021). The survey revealed that half of school leaders answered that the work with the curriculum had been weakened to a very large extent. Only one out of three found that they had sufficient time for this work, and 22% said that they had little to no time at all for this work. The survey also revealed that over half of the informants stated that the pandemic was a challenge to a large or very large degree. This was more apparent in central schools, where the pressure of infection had hit to a larger extent (Bergene et al., 2021). Central board member in Udir and leader in the leadership council, Tormod Korpås was not surprised by the findings in the report; “this has been a topic among school leaders and in the leadership council over the past year”(Mejlbo, 2021)(my translation). He also said “It turned out that the pandemic became an overriding event that took up large resources – time, management and administration. This went beyond much else, and it is clear that the renewal would have had a better start without corona” (Mejlbo, 2021) (my translation).

In relation to both the new curriculum and the pandemic, the need for digital teaching aids increased. When lockdown and homeschooling took place, many teaching aid manufacturers made their material free and accessible to all schools. In addition to this, the state budget in 2020 included 170 million kroner for the curriculum renewal, and 60 million for purchasing new digital teaching aids, distributed on the municipalities (Mejlbo, 2020a). The 2021 survey by Utdanningsforbundet showed that there were several challenges connected to the new curriculum and teaching aids (Utdanningsforbundet, 2021b). The study showed that only 8% of the respondents’ schools had renewed their teaching aids in connection to the renewal. When asked what degree the schools had sufficient funding to renew their teaching aids in connection to the renewal, 76% answered “small” or “very small”(Utdanningsforbundet, 2021b).

4. Methodological Ground

In this chapter I will present my research approach for the current study and account for the choices made along the way. This includes choices surrounding type of method, selection, data collection and processing. I will also discuss and reflect on reliability, validity, and ethical considerations in relation to the study.

When researching within the social science methodology, there is the divide between quantitative and qualitative methods. Johannessen, Tufte & Christoffersen (2010) write that while the quantitative method provides the researcher with numbers and statistics, the qualitative method gives insight into the meaning behind human behavior. In addition to this, they write that the qualitative method is more suitable when researching phenomena we are not too familiar with, and when researching topics we want to gain further understanding of (Johannessen, Tufte, & Christoffersen, 2010). The overall aim of this study is not to gather numbers on the use of deep learning in Norwegian schools. We already know that all teachers are obligated to use deep learning through the new curriculum. The aim is rather to explore a few teachers' views and understandings of the term, and thereby connect and compare the teachers views with each other as well as theory on the topic. By doing this I have the possibility to uncover possible challenges and issues regarding deep learning. The research questions are as follows:

- How do teachers understand the term deep learning?
- How do they view the relevance of the term in the English subject?

4.1 Choice of Method

As the aim of this thesis is to explore teachers' own views, interpretations and understandings surrounding deep learning, the qualitative interview seemed as an appropriate and sufficient method for data collection. The qualitative interview seeks to understand the world from the interview subjects' point of view and aims to uncover their perspective prior to scientific explanations (Kvale & Brinkmann, 2019). Due to the scope of the method, the qualitative interview provides the researcher with more details and diverse answers (Johannessen et al., 2010). As my aim was to gain understanding of not only how the teachers would describe the term but to uncover their actual understanding behind the term, this method was most likely to give me more valuable material for my research.

Further, the method I chose to use is the semi-structured research interview, as described in Kvale and Brinkmann (2019). This method is based on the philosophical field of phenomenology. Phenomenology seeks to explore the nature of a phenomenon by describing individual occurrences and thereby seeking their universal/general essence (Kvale & Brinkmann, 2019). In a semi-structured interview, all participants are asked the same select questions, but the conversation has a free flow within these frames. Follow-up questions can vary depending on the topics brought up by the participants (Kvale & Brinkmann, 2019).

4.2 Selection and Informants

Although deep learning benefits students, as Fullan et al state, it is the teachers' responsibility to facilitate for deep learning in the classroom (Fullan et al., 2018). My main focus in this thesis is the teachers' view on deep learning, because their view could tell us a lot about how it is being practiced throughout Norwegian schools. Because of this, I chose to use teachers and not students as informants in this study.

I wanted the participants in the study to consist of middle school teachers who had started using the new curriculum in the English subject. A couple of the teachers that were contacted, who taught 10th grade, had not begun using the new curriculum in their English classes. I made the decision to not interview these teachers because of their lack of practice teaching with focus on deep learning, which made them unable to answer many of the questions provided in the interview. The study was conducted on four English teachers from four different schools in Norway. Two from different parts of Oslo and two from schools in southern Norway. This was in order to create variety and have a diverse selection of informants.

The process of approaching relevant informants became longer and more demanding than expected. I sent a recruitment letter (see appendix 2) to professional contacts from schools I have been in contact with during my time as a teacher student, as well as contacts via private connections. I did not receive any replies from the e-mails I sent out firsthand and had to ask for a full list of all the English teachers in the schools I had connection to. I believe that the reason many of the teachers I contacted did not reply or declined, was because of time issues and complications due to Covid restrictions. The final selection of informants consisted of teachers that know of me or people I know, but I had never spoken to any of them before. The selection also included informants of both sexes, a big variation in age and professional

experience, and with different levels of education. I therefore believe this is an appropriate selection of participants that to a certain degree portrays the reality of the variety found amongst Norwegian English teachers today. The selection does not mirror the entirety of middle school English teachers, but provides valuable information on how English teachers might understand and view deep learning.

4.3 Interview Approach

4.3.1 Developing the Interview Guide

Before starting the interviews, I developed an interview guide based on my research questions as well as the theoretical framework. I wrote down some of the questions while I was researching theory, as the ideas came to me for questions I wanted answers to. When making the interview guide, I wrote down questions and sub-questions and arranged these by four topics: personal information, knowledge of term, opinions and practice. I also used these four topics when analyzing the data. Johannessen et al recommends starting out with simple factual questions and not personal opinions, because this will act as a warm up and build the connection between the participant and the interviewer (Johannessen et al., 2010). I tried to include many open-ended questions so that the participants had to elaborate themselves, in order to gain more insight into their views and reflections.

After my first two interviews I had a meeting with my supervisor, my fellow students and their supervisors. In this meeting I talked about how the informants in my interviews were elaborating too much on examples on how they used deep learning in their teaching. All though this was initially one of my questions, I felt as though these answers became too specific and not that purposeful. Together at this meeting we discussed focusing less on practical examples and more on understanding and views. After this, I therefore dropped some of the questions regarding practice in the last two interviews and was pleased with this decision.

4.3.2. Interviews

Because of the ongoing pandemic, I decided to give the teachers the choice of having the interview in person (socially distanced), or via online meetings on Zoom. Two of the teachers chose Zoom, and two wanted to meet up in person. Because of the increased work load due to the pandemic I also made sure to be as flexible as possible and hold the interviews whenever

the teachers had time instead of giving them a time limit, and as a result of this, the interview-part of the work took more time than I first expected.

In the interview sessions, I made sure the participants felt welcome and appreciated. According to Kvale and Birkmann (2019), the first few minutes of the interview are crucial. The participant wants to have a clear perception of the interviewer before they start talking openly about their feelings and experiences (Kvale & Brinkmann, 2019). I made sure to thank them for their presence and gave them a briefing on the structure of the interview before starting. The participants were again informed they would be anonymous and what information that would be included, and that the interview would be recorded, and the transcription safely saved. Overall, the interview sessions were very successful. Because I went with a semi-structured interview, I took some liberties such as changing the order of the questions to better suit the conversation, or skipping questions that were already answered in previous ones. I also added in some follow up-questions in some of the interviews that in hindsight were not necessary for my thesis, but more in order to create a flow in the conversation and make the participants feel heard. To protect the informants' anonymity, each interview was transcribed, and the recordings deleted.

4.4 Data Analysis

After the interviews were transcribed, they were analyzed using a phenomenological analysis. A phenomenological approach focuses on meaning and the content of the data. Here, the researcher reads the material in an interoperative way in order to understand the deeper meaning of the answers (Johannessen et al., 2010). The phenomenological analysis consists of four steps, as described in Johannessen et al: overall impression and outline of content, codes and categories, condensation, and summary. This is not the only way to categorize qualitative material, but it is a safe approach to use in order to ensure a systematic process (Johannessen et al., 2010).

The first step consists of getting a full impression of the data, where the researcher finds central topics without getting lost in details (Johannessen et al., 2010). I read through the transcriptions and took note of different topics and answers I found interesting. I found that the four main topics on my interview guide worked well as main topics for the data analysis as well. In this first step, the researcher can also remove irrelevant material and shorten statements (Johannessen et al., 2010). I removed sections from the interviews that I found

irrelevant to my thesis questions, but I wanted to keep the rest of the answers as they were and did not shorten them.

The next step consists of finding meaningful elements central to the thesis questions and the main topics (Johannessen et al., 2010). The transcriptions were read through thoroughly and the answers were categorized using codes. Coding is a tool used to organize meaningful information. It allows us to rearrange and reduce the data material, making it easier to analyze. The categories can be extracted from the actual interview or from key terms or thesis questions (Johannessen et al., 2010). When sorting the material, I found it hard to separate actual codes from the interview questions. I had to read through the material several times and re-do the codes as I did so. The table below shows how I organized the codes from the main topics.

1. Personal information		
2. Knowledge of term	Prior knowledge	
	Prior use of deep learning (before LK20)	Comparison to cross-curricular work
	Definition of term	
	Deep learning in English subject	
	Work with the term in plenary sessions within the school	
	Work with the term independently	
3. Opinions	Perceived benefits	
	Perceived challenges	Term understanding
		Cooperation
		Time
		Textbooks
		Differentiation
Reduction of competence aims		

4. Practice	Focus on Deep Learning	
	Student awareness	
	Successful experiences	
	Unsuccessful experiences	Covid
	Experienced competence	

After coding, the third step is condensation. This is where the coded material is sorted into the categories created, leaving the researcher with a reduced amount of material (Johannessen et al., 2010). This process merged in with the second step, because as I sorted the coded material into the categories, I made quite a few changes to the original codes. In this way, I went back and forth from the codes to the condensed material, in order to achieve the best possible coded material.

The fourth and final step consists of a summary of the material. The researcher now has to consider if the finished construct of the material is coherent with the initial material. If not, changes need to be made in order to ensure that the summary represents the original material in the best way possible (Johannessen et al., 2010). After spending time thoroughly going through the material, I believe the finished analysis of the data satisfactorily represents the original material. After the four steps are finished, the data is ready to be presented and discussed further in the research.

4.5 Reflections

A successful interview is dependent on the researcher's craftmanship, which goes beyond mastering questioning techniques and also includes knowledge of the research topic, sensitivity to the social relationship between the interviewer and interviewee, and awareness of epistemological and ethical aspects of the research interview (Kvale & Brinkmann, 2019). This section will include reflections surrounding the choices I have made when researching, including reliability, validity, and ethical considerations. This will provide a clear view of the choices I have made during the research, as well addressing some concerns and possible limitations regarding the interview situation.

4.5.1 Reliability

Reliability tells us something about the consistency and credibility of the research results, what data is used, how it is collected, and how it is processed. Central to the term is also the question of whether a result can be reproduced at other times by other researchers, or if the answers would be different in an interview with another researcher (Kvale & Brinkmann, 2019). Still, within qualitative research, such requirements are not as suitable as for quantitative methods. It is the conversation as well as the observations of the researcher that provides the data. Different researchers have different backgrounds of experience and can interpret things in different ways. Observations are also dependent on the context and how the researcher sees the situation (Johannessen et al., 2010). In this thesis, the concept of deep learning and the teachers' views on it is a changing phenomenon. Therefore, there will always be deviations from one study to the next. To strengthen a projects' reliability, the researcher can give the reader an in-depth description of the context and an open and detailed presentation of the procedure for the entire research process. This makes it possible to track the documentation of data, methods, and decisions throughout the project (Ryen, cited in Johannesen et al, 2010). In theory, this allows other researchers to retest and repeat the same research. By presenting a transparent report of the decisions regarding method in this chapter (4), I have given the reader insight of my choices while planning, conducting, and analyzing the interviews. In addition to this, I will now present some thoughts on potential limitations in relation to the different stages of the process.

I chose a semi structured interview, which I believe to be the most suitable data collection method for the purpose. When choosing a semi-structured interview, it is especially important to provide transparency (Johannessen et al., 2010). When using this interview method, I made sure to keep the conversation flowing and thereby skipped questions that I felt were already answered previously by the informant. When analyzing the material, I could see that some of the questions that were left out could have been asked after all, to gain a clearer and more concise answer. On the other hand, keeping a natural and positive conversational atmosphere was something I chose to value, and I believe this provided good results.

The process of selecting informants can also be seen as problematic, because the informants were not chosen completely at random. I sent out requirement letters which included the topic and aim of the thesis to several teachers in different schools. A lot of the teachers I reached out to did not reply or turned down the request. Therefore, I had to use acquaintances or professional connections when searching for informants. Still, none of the informants that

accepted the request knew me personally. There is also a possibility that the teachers that accepted to participate in the interviews accepted because they felt they had sufficient knowledge on deep learning, thereby not representing the average English teacher. In addition, because the informants were provided with the topic of the interview, there is also a possibility that the participants prepared for the interview by reading or learning more about deep learning before participating. Considering these factors, the informants may therefore not be representative for English teachers in Norway. On the other hand, I was able to find participants that were suitable (had taught using deep learning) and varied in age, sex, and location. Johannessen et al state that the qualitative study's main aim is to obtain meaningful information about a topic (Johannessen et al., 2010). I managed to find informants from four different schools that I knew would provide valuable information on the topic. Even though the selection of informants was satisfactory, it would have been preferable to interview more teachers to gain even more knowledge. Still, considering the ongoing pandemic and the time it took to find informants and execute the four interviews, I am pleased with the number of informants I managed to provide.

As Kvale and Brinkmann (2019) state, when interviews are conducted in person, an interview consist not only of verbal communication, but also physical communication. These in-person interviews consist of people with a body and consciousness that interact with each other (Kvale & Brinkmann, 2019). Considering this, conducting interviews on a digital video platform like Zoom might not be the most ideal way to grasp the entire context of the interview situation, and certain elements may not be seen or heard by the interviewer. Nonetheless, you are able to see hand movements, gestures, and facial expressions through the screen. You can also hear voice changes or pauses through the digital interview, which I believe provides a sufficient amount of non-verbal information. Still, it would of course be preferable to conduct in-person interviews, to gain a more in-depth observation of the informants. Ultimately, when the interviews are transcribed, elements such as body language, tone of voice and facial expressions are lost in the process (Kvale & Brinkmann, 2019). Kvale and Brinkmann also press the importance of establishing a comfortable interview situation where there is a high degree of trust between the participant and the interviewer. Although a Zoom-call might not be the most relaxing atmosphere or a highly comfortable situation, it has become the norm for most teachers throughout the pandemic. I aspired to approach the informants in a way that made them feel comfortable and able to speak freely. I also believe

that this was not a major issue in this study, because the topic is not personal or sensitive in any way.

Another part that needs to be considered is whether the interview situation was affected by my personal and subjective views. In a qualitative interview, the researcher is expected to bring a unique perspective into their studies. It is important that the findings are a result of the research and not the researcher (Johannessen et al., 2010). An example of this can be leading questions, which unconsciously or consciously try to affect the informants' answers in a certain direction. Even a small element in the formulation of a question can affect the answer (Kvale & Brinkmann, 2019). However, Kvale and Brinkmann write that contrary to popular belief, leading questions do not necessarily decrease the reliability. In fact, this can in some cases increase the reliability. Yet in my case, I made sure to spend time developing the interview guide and make the wording of the questions as clear as possible. I also strived to be objective in the interviews by not letting my knowledge from the theory I had been researching be revealed and affect the informants. I did not give the teachers any information on my view on deep learning and tried not to react in any sort of way when they talked about their views on the term. I therefore believe that the interviews were not negatively affected or lead by my subjective views. It can also be challenging to transcribe and analyze data and remain objective (Johannessen et al., 2010). Measures were made in order to limit my personal impact on the transcription and analysis. I spent a lot of time to make sure I wrote down the exact wording from the tape when transcribing, although one can perhaps never grasp the exact way the words were intended. I also used the well-developed phenomenological analysis, involving coding, as a secure system when analyzing the transcriptions. With this, I hope to have achieved to present objective and reliable findings.

Lastly, a potential issue when it comes to reliability is the translation of the interviews. All four interviews were conducted in Norwegian. I chose to use Norwegian because I believed the teachers would express themselves more freely and with less hesitation and possible misunderstandings due to language problems. I also believe that it was more comfortable for both me and the informants to use our mother tongue. Therefore, I had to translate the interviews after transcribing them in Norwegian. When translating, I tried to find correlating English words that had the equivalent meaning and expression as the Norwegian word the teachers used. However, in some instances the sentence structure must be changed when translating, and words or terms that do not have an equivalent phrase or have a different expression in English can also occur. In an article about the translation process in qualitative

research, Regmi, Naidoo and Pilkington write about transliteration (Regmi, Naidoo, & Pilkington, 2010). This is described as the process of replacing words when the exact equivalence or meaning does not exist in the other language. They write “The important aspect of transliteration is an unavoidable loss of meaning that occurs in everyday language, which helps to set the context in which cross-cultural translation can be better understood” (Regmi et al., 2010). On the other hand, in the article “Qualitative research and translation dilemmas” Temple and Young write that when translating across languages, no one can be completely sure of which words or terms that differ in meaning and which do not, because the reader of a text produces their own understanding of concepts through their own experiences (Temple & Young, 2004). My translation may also be affected by my own interpretation of the informant and what I believe they were trying to convey with the words that were chosen. Nevertheless, Temple and Young note that if the researcher themselves act as neutral and objective conveyers of the message, technical issues in the translation process can be overcome (Temple & Young, 2004). I believe that although I did my best to stay neutral and objective, my translation might be affected by my personal interpretations. Therefore, in cases where there were words or expressions that I found difficult to translate, I ensured this was expressed in the text. In addition, the parts that were translated by me is noted with “translated by the author”.

4.5.2 Validity

Validity usually tells us something about the correctness and truthfulness of a statement. A valid conclusion is correctly deduced from its premises. When it comes to validity in the social sciences, it tells us whether a method is suitable for examining what it is supposed to examine (Kvale & Brinkmann, 2019). Kvale and Brinkmann write that the researcher plays the role of the devil’s advocate in relation to their own findings. This means that the researcher has a critical view of their own interpretations and expresses what kind of control is being exercised to counteract a selective understanding or a misinterpretation (Kvale & Brinkmann, 2019).

Ensuring validity is not just important in a certain part of the research, but a continuous process throughout the project (Kvale & Brinkmann, 2019). To ensure validity throughout the whole process, I have been aware of what my thesis questions are, and how to best suit the research questions for the purpose of the thesis. I have also asked myself if the research questions actually have been answered in the interviews, which I believe they successfully

have. When it comes to the validity of the informants' answers, I had to question whether the informants' answers represented the reality of the situation. In the social sciences, tactics of checking validity include checking the representativeness of the findings. Kinsley et al (1948), cited in Kvale and Brinkmann (2019), studied the validity of the informants' descriptions by cross-checking factors such as memory and conscious or unconscious attempts to conceal or mask something (Kingsley et al (1948), cited in Kvale and Brinkmann (2019)). Examples of this in my case could be the informants trying to conceal their lack of knowledge on the subject by pretending to have more experience than they actually had. However, by asking follow-up questions and making them elaborate and explain their understanding, it would be more difficult for them to disguise their actual knowledge. I ensured this by using my gained knowledge through theory when creating the interview guide, and compared their answers to the established theory. Beyond this, if the information the informants provided proves a lack of knowledge on the term, it cannot be seen as invalid, but is in fact a factor that contributes answer the thesis question.

Johannessen et al write that one of the ways of strengthening the validity of the research is to let the informants read through and confirm the processed data themselves. Because of the situation with the ongoing pandemic, I knew that the teachers are very busy, and I therefore did not want to ask them to do so. This could potentially be a limitation to the validity of the study, but I believe it is the right choice all things considered.

There is also the question of external validation; can results from this project be transferred to similar phenomena? A study cannot be limited to pure collection of information, but this information needs to be analyzed and systemized, and then used to develop theories or interpretations to contribute new knowledge of a phenomenon (Johannessen et al., 2010). "All research aims to draw conclusions beyond the immediate information that is collected" (Johannessen et al., 2010). In quantitative studies, the findings can often be generalized from a selection to a population. This is neither possible nor the aim of the current study. Still, one can in a quantitative study talk about the generality of a study. This tells us whether the study succeeds at establishing descriptions, concepts, interpretations and explanations that can be useful in other areas of study (Johannessen et al., 2010). Because deep learning is a new element in the curriculum in Norway, this research can provide information on how the term can be interpreted and understood by teachers. The aim is not to draw any general conclusions from this, but the study might be useful at establishing groundwork that can lead to further research on the topic or similar topics.

4.5.3 Ethical Considerations

Ethics involves rules, principles, and guidelines for assessing whether actions are right or wrong. All activities in society that have consequences for other people must be judged based on ethical standards. This naturally includes the social sciences. All research must submit to ethical principles and legal guidelines (Johannessen et al., 2010). There are several moral and ethical considerations to take when using interview as a research method. The following paragraphs will consider potential ethical issues regarding the current study.

Because the human interaction in the interviews affect and could potentially have consequences for the informants, measures need to be taken in consideration to their privacy (Kvale & Brinkmann, 2019). I applied to Norwegian Centre for Research Data (NSD) for approval before conducting the interviews (see appendix 3). The teachers' personal information such as name, age, and workplace were anonymized, and this information cannot be traced in any way. If any of this information occurred in the interviews, this was removed when transcribing. An example of this is when a teacher mentioned the name of the school or the district in a sentence. All participants received a recruitment letter with extensive information on their privacy protection and rights, based on a letter template developed by NSD. This included what information will and will not be included in the study, information on their right to access the data and remove themselves from the study at any time. In the interview situation, I repeated this information, and the informants signed the consent-form before I started the recording. After recording the interviews, the recordings were deleted, and the transcriptions do not contain any personal information.

According to Kvale and Brinkmann, the researcher needs to be aware of the open and intimate situation of an interview and reflect on the potential consequences for not only the informant but the group they represent (Kvale & Brinkmann, 2019). Because the current study does not touch on a sensitive or personal topic, this provides fewer ethical concerns for the study. The topic of deep learning is purely professional, and the teachers had the opportunity to review the data or take back statements at any given time. In addition to this, a thorough transcription of the interviews and processing data contributes to a respectful and accurate reflection of the informants. I believe ethical considerations were taken throughout the entire study, and because of the nature of the topic, few ethical issues occurred.

5. Results/Findings

This chapter will present the findings of the study. The material has been transcribed, processed and analyzed and sorted into four main categories as presented in the previous chapter. The material to be presented consist of results from interviews with four teachers:

- Informant A: Female. 25 years of experience teaching English. Teaches two 9th grade English classes this year. Works at a school in the southern part of Norway.
- Informant B: Male. 2 years of experience teaching English. Teaches 8th and 9th grade this year. Works at a school in the Oslo-area.
- Informant C: Female. 12 years of experience teaching English. Teaches two 9th grade English classes this year. Works at a school in the Oslo-area.
- Informant D: Female. 14 years of experience teaching English. Teaches one 9th grade English class this year. Works at a school in the south of Norway.

None of the teachers are employed at the same school.

5.1 Knowledge of Term

5.1.1 *Prior Knowledge and Use*

All of the informants were familiar with the term deep learning and aware of its presence in the curriculum. The informants had little to some prior knowledge of the term before was introduced in the curriculum. Informant D expressed “It has always been a term, but maybe not in the way we relate to it today” (translated by the author). When asked if they felt as if they had practiced deep learning in their English classes prior to this, informant B answered that this was not a term he was used to working with on a daily basis. Informant D had worked in similar ways, but not at the same level as now; “At least now that we have worked with it, I think that we have done something similar to this before, but perhaps not at the level that is now required” (translated by the author). She said that while they previously might have given more thought to adding more subject material, they now had changed their approach to going more in-depth; “So that is what I personally think has changed the most. That with deep learning you perhaps thought more width earlier, but now you might start with something a bit more narrow to go in depth with” (translated by the author). Informant C did not remember exactly when the term came into the school, but compared the work with deep learning to prior cross curricular work (“tverrfaglig arbeid”);

We had a good deal of cross curricular work when I started as a teacher and there was supposed to be a type of deep learning within this. That you were supposed to work with the

same topics within English and Social Science for example.” (Informant C) (Translated by the author)

She could not remember if they had actually used the term deep learning previously, but believed so; “It would be weird not to” (translated by the author). Informant A also reflected on previous cross curricular work. Although her school did not work with deep learning when she started there three years ago, she remembered it from before the L97-curriculum. She said:

I did not exactly have a relationship with the deep learning term, but the way that deep learning appears in the curriculum in the way that there is more talk of interdisciplinary work in a way, this was something that we worked a lot with in the 90s where I worked before. (Informant A) (translated by the author)

She explained that they used to have a good deal of project work before the L97 curriculum, but that during L97 and LK06, there was more focus on the subject material and detailed plans, and project work was not supposed to be done. She believed teachers who had worked in the school for many years, would recognize deep learning from their work in the 90s:

So the old teachers will say that we are there again now. Not with the interdisciplinary topics, but with deep learning. That you are supposed to see width, that things are connected. So, in that way, I felt like I knew a lot about it, the way we did it back then. (Informant A) (translated by the author)

Following up on this, she said “No, we did not use the term deep learning. We called it project work” (translated by the author). She also added that this time the competence aims were more concurrent with deep learning.

5.1.2 Definition of Term

When the informants were asked how they would define deep learning, the answers were varied. Informant A had not read that much on the term but viewed the objective of deep learning as understanding that things are connected; “That everything is connected to everything, and to create connections. That is the point of deep learning” (Informant A) (translated by the author). She also believed that it was not about getting to the bottom when researching a topic, but rather to understand the connections:

The point of deep learning is not that you should somehow narrow down to the bottom of a subject. Then you become very ‘nerdy.’ It is actually understanding the world. Then you understand that things are actually connected [...] But in order to see the connections, you must also see that the school subjects complement each other. (Translated by the author)

For Informant B, deep learning meant giving the students the opportunity to learn more about a topic within the frames he provided them with. It also meant that the students could spend more time on and learn more about the topic. He believed that by spending more time on something, the students achieved a sense of accomplishment within the topic they had chosen to learn more about. Similarly, to informant C, deep learning meant spending more time and going deeper into the material when working within a topic. She compared this to how it was when she began working: “When I started working as a teacher, you often had so much syllabus to go through, and then it was almost more important to get through the syllabus than making sure that the students gained proper knowledge from it” (translated by the author). She believed this was the largest difference, that you now spent more time working through different topics. Informant D viewed deep learning as both ‘width’ and ‘depth’. In order to gain a better overall understanding, other school subjects could be used and combined when working within a topic; “Deep learning can involve cross-subject work, and then you can include other subjects in a topic, so that you get a more complete understanding of the topic you teach” (translated by the author). She also stated that deep learning could be used when working with a text, by working through various levels and focusing on different skills and knowledge.

5.1.3 Deep Learning in English Subject

The answers were also varied when the informants were asked what they believed deep learning implies in the English subject. Informant B stated that he at least wished it meant that his students would get a better understanding of the structure and composition of the language, because he had seen that several students struggled with basic grammar from primary school. They had started the year with focus on writing, and the ‘five-paragraph-essay.’ “This is sort of our deep learning on how to have a good writing frame” (translated by the author). He would also work with finding good writing strategies and finding out which learning strategies suited the students best. For informant C, working with deep learning in the English subject included working with a topic for a long time, and approaching a topic from various perspectives and spend time discussing the thematic. She also worked with

vocabulary: “Let’s say as I am working with ‘role models’ now, then you choose to see it from very different angles and go in to create a sort of vocabulary for the students” (translated by the author). She would note down different words and expressions for the students to get acquainted with. This vocabulary could then be used when reading fiction, articles or interviews. Informant D stated that deep learning involved viewing a topic from different angles and focusing on different skills and knowledge in relation to this. An example she used here was from working with the topic “USA – the land of the brave.” They approached the topic by working with a nationalistic song lyric. Through these lyrics they looked at how the country was described, how they like to describe themselves, and what knowledge this provided of the country. They also worked with comparing this to how Norwegian national songs describe Norway. In addition, they talked about technical elements such as rhyme and rhythm, as well as synonyms from the text. In this way they approached a topic and text from different angles focusing on providing the students with different skills within the subject.

5.1.4 Work with the Term in Plenary Sessions

While all informants had spent time on deep learning in plenary sessions within their schools, some of them felt this had been lacking. Informant B had worked with the term in plenary sessions, but because of the pandemic and going into different levels of the traffic light model (mentioned in chapter 3.6), this had been given less priority. He emphasized that they had not let it slide but needed to prioritize differently in order to make things go around with the limited amount of resources the school had. He expressed a wish that it had been brought up to a larger extent. The topic had not been discussed enough in informant C’s case. The pandemic and the ‘chaos-year’ had been the reason why the renewal of the curriculum had lost priority to other things. At the same time, she felt that the school had a mutual understanding that this work was important. Informant A and D had worked with the term in plenary sessions. Informant A’s school had plenary meetings every Thursday, where they mostly worked with the renewal. They had worked with deep learning a couple of times, she believed, once over the digital platform Teams during lockdown. Informant D had discussed the term within the English-section. The work had not made it further than discussing the term and working with practical things such as introducing planning tools. Because of Covid, the work had come to a halt, and she pointed out that they were still in the beginning phase of working with how to implement deep learning into their period plans.

5.1.5 Work with the Term Independently

The informants were asked if they had worked with learning more about deep learning independently, and here too the answers varied. Informant A had listened to a podcast on the topic that she really enjoyed. The link to the podcast was sent from the vice principal, as a suggestion before a plenary meeting. Informant B had been shown an instruction-video from Udirs' web pages and received some papers to read from the school. Informant D had received links to Udirs' webpages but had not received any further coursing on the topic. As she pointed out, courses had not been possible in this period. Informant C had not read anything on her own time. To the follow-up question of whether she had used any recourses from Udir, she said that she had not spent much time on this:

I probably did that more when I was 'greener' (ferskere), I tried to have a better understanding of the curriculum. But I also see now that it is very much the same, and the English subject has not really become that different with new competence aims, and the core curriculum and the basic skills is really just a kind of "new wrapping." (Informant C)
(Translated by the author)

She pointed out that the renewal had many similarities and included the same verbs as the previous curriculum, such as "describe" and "reflect." Therefore, she had not used Udirs' pages particularly much, other than familiarizing herself with the competence aims. "I understand how I can implement it into my own teaching and ensure that all the competence aims are covered" (translated by the author).

Informant A stated that it was common among teachers not to bother reading the curriculum other than the competence aims. She stated, "No teacher bother reading these things if they do not have to do it in connection to a certain day" (meaning a plenary meeting in connection to the topic) (translated by the author). She also said "That is the biggest weakness with teachers, they teach their subject and look at the competence aims. Many of them have not really gotten acquainted with for example assessment." She went on to say that assessment had changed in the renewal from what it used to be, but that few teachers actually knew this and still prioritized memorization and test-results.

5.2 Opinions

5.2.1 Perceived Benefits

All the informants viewed deep learning as important and expressed belief in the benefits of deep learning. Informant A meant that it was important for children and youth to understand that things are connected. Informant B believed that it was beneficial for the students' sense of accomplishment. He also said:

What deep learning does is that it makes the students dig deeper and spend more energy and thoughts on something that cannot be finished so quickly. And that is a quality I call mental stamina. That is something one might not have much of. (Informant B)
(Translated by the author)

Informant C stated that the students became more confident in the subject, because it gave them a vocabulary that allowed them to talk about and describe a topic. She also believed that working with a topic for a longer period of time makes the material stick in a certain way; "Because you work with a topic over such a long time period, I think the students feel as if they own the material a bit more" (translated by the author). According to informant D, deep learning could be engaging and motivational for many students: "I believe that it can be easier for them to understand the reason why they are supposed to learn the things they are going to learn, by linking it up to something" (translated by the author).

5.2.2 Perceived challenges

The teachers brought up numerous concerns and challenges when it comes to deep learning. The challenges have been divided into five different sub-topics: term understanding, cooperation, time, textbooks and differentiation.

5.2.2.1 Term Understanding

For informant A, the first challenge was understanding the term. She felt the term was misleading: "I still think it's misleading to call it deep learning (dybdelæring) because it is width-learning (breddelæring). When you read what it is, you will see that it basically is cross curricular work, project work or ways to include many subjects" (translated by the author). In informant A's opinion, the term was explained fairly well in the curriculum, but she was sure that many teachers did not actually read through the curriculum, and therefore it would have been better to use a different term that appeared more clearly. Informant D also described the term as a bit vague and hard to define. In addition to this, she said: "I think maybe the way the

subject renewal is built, it has a definition of what they think deep learning is, so you're kind of under the mercy (prisgitt) of how they interpret the term" (translated by the author). She then emphasized that teachers are at the same time free to make decisions on their own terms when planning. Informant B thought the term was fairly clear but wanted some more practical examples of how to use deep learning, such as a lesson plan that showed a practical way of using the term. When informant C was asked if the term definition from the curriculum was clear, she answered that she did not know.

5.2.2.2 Cooperation

The informants also brought up working together with their fellow teachers, and informant A and B both viewed cooperation as a challenge. Informant A pointed out how deep learning demanded cooperation across subjects, and that it was poorly arranged for this to be achieved: "If you wanted to cooperate with someone outside of your team or subject-meeting (fagmøte), people have to be willing to stay extra, and no one is" (translated by the author). Informant B pointed out the same issue; "I would like to sit from 4 to 5 but then the workday is over and the others have gone home, and I'm thinking that I don't get paid anything extra for this" (translated by the author).

5.2.2.3 Time

Time was an issue for all of the teachers when it came to planning and executing lessons with focus on deep learning. Informant A said: "I just wished I had a little more time to really get it done and that it was more arranged for us to sit together and plan things" (translated by the author). Informant B believed it was good that one could spend more time on a topic but had concerns around this as well:

What we are supposed to get through is quite extensive. So, on paper it is fantastic that it is arranged for us to spend more time on things, but then in everyday school-life so much happens all the time that it doesn't always work out to give time to it. (Informant B)
(Translated by the author)

Informant C also had similar concerns:

I think it is a very good idea, I'm just afraid that those who sit and make the curriculum forget a little about how the school works and it especially doesn't make sense to take a basic

subject such as English and give them such few hours to complete this deep learning.

(Informant C) (Translated by the author)

She also thought it was difficult to find the balance between this work and working with other parts of the subject, such as writing skills, genre-understanding, exam preparations, and all the assessment criteria the teachers have. Informant D found that because of the time-pressure, the work was done more periodically and within bigger projects. Because teaching hours could be lost to other things, it had proved most successful when there was a planned project over time: “Then you have a little more structure to be able to distribute the time a little better” (translated by the author).

5.2.2.4 Textbooks

The topic of textbooks was brought up by several of the informants. Informant B was not interested in using their textbooks because they were outdated, and he wanted the students themselves to find and use information. Informant C and D also pointed out challenges regarding deep learning and textbooks. Informant C said: “The textbooks are made for a subject that has a lot more hours, because if you are supposed to work with deep learning with six topics during one year, we need double the amount of hours” (translated by the author). Informant D teaches in a traditional school system where they use textbooks, and found this challenging to combine with deep learning. She felt that the books were outdated and not coherent with the new curriculum. “The biggest challenge is the resources available. To connect to a new way of thinking. It can create a bit of confusion for the students as many of them are still bound by still preferring to have a regular book” (translated by the author). She had seen how the new and updated textbooks were suited for the learning process. “But we are in the pinch right now, where we cannot afford to replace everything. So it’s about how to adapt in relation to the resources available right now” (translated by the author). At the same time, she had noticed that younger students have become better at using digital learning platforms, and that this might make it easier in the future.

5.2.2.5 Differentiation

Informant B found it the most challenging to reach all the students: “The vast range of what students know, what skills they have, where they are at. Their preconditions. And how to reach everyone” (translated by the author). He also struggled with how to follow up each

student in the best way possible, both the students that excel in the subject and the ones who do not; “and how to get the student to think that deep learning is exciting and something to engage in” (translated by the author). He found it difficult to motivate everyone and mentioned how some students struggled to concentrate on a topic over time. He here mentioned students with low/medium results or behavioral issues such as ADD and ADHD, who might feel that spending so much time on something is a bit tiring. In addition, some students finished their work too quickly; “[...] they only see the top of the iceberg and not the bottom. It can be a bit hard to just ‘okay, calm down, we are now going to learn something, we are not just going to do something’” (translated by the author). He therefore had to make sure that the students got acquainted with this different way of working with tasks. Informant D had two other groups of students in mind. Firstly, students with lower performance in the subject. She felt as though they were more dependent on a structured and simple plan to relate to. Secondly, the typical “good girls” (translated from ‘flink pike’ – this expression may not have the exact same meaning in English but is used as a translation to the Norwegian term):

It can also be very difficult for a lot of good, typically good girls, who are very concerned that things should be right or wrong. And if they do not know whether things are right or wrong, they do not dare to challenge themselves more on this. Boys are a little better at taking the risk of daring to venture into something that may be a little more difficult to grasp.

(Informant A) (Translated by the author)

5.2.3 Reduction of Competence Aims

Three of the teachers felt that the reduction of competence aims in the English subject made it easier to focus on deep learning. Informant A said that she had not given this any thought, and did not know. She did not really feel as if the competence aims actually reduced the workload: “If you look at the competence aims, they are just larger, while earlier there were a thousand small ones. So if you look closely, then it’s not certain that they are very reduced” (translated by the author). Informant B first answered that it was easier to focus on deep learning, but throughout the interview expressed the same concerns as informant A:

Actually, it’s not that much of a difference practically. Because you still have to give them broad general knowledge to take with them. So yes, it is a bit more narrowed down so that we can focus more on some things, but I don’t necessarily feel planning takes less time.

(Informant B) (Translated by the author)

Informant C believed that the reduction of aims did make it easier to focus on deep learning. It was positive that the competence aims were ‘broader’ because she could then spend more time with the material and still reach all the competence aims. She also pointed out that within the English subject, teachers were more free to choose what they wanted to teach. Informant D was also positive and saw that the ‘larger’ competence aims made it easier to get through everything, and as opposed to previous work, the projects that they now carried out usually covered a good deal of the competence aims. She could also see how the entire curriculum built up under the deep learning aspect; “I feel that the way the renewal is built, all of it is sort of facilitated for you to think about deep learning. But it requires good planning and co-ordination” (translated by the author).

5.3 Practice

5.3.1 Focus on Deep Learning

Three of the informants (A,C & D) did not really focus or think about deep learning when going in to an English class. Informant C said: “In the last few days, I think I have zero focus on it because it’s kind of just about getting through to the summer” (translated by the author). Similarly, informant D said that this was not in her ‘everyday-focus.’ On the other hand, these three informants had the impression that deep learning was a priority when planning their English lessons. According to informant A, the work with deep learning had not perhaps come that far, but was a priority at her school. Informant C worked with planning topics in a completely different way than she used to because she knew the topics were going to be worked with over a longer period of time:

“It is important to me that the students get the tools they need in order to master a topic in the best way possible, be able to discuss, write, read, have an understanding of the topic. I might spend a lot more time giving them those tools in the beginning” (Informant C) (Translated by the author).

When informant D made detailed period plans, deep learning was a part of the focus. She also emphasized that if there were situations in the classroom where it felt appropriate, she would take a deep dive into a certain topic. Informant B did focus on deep learning when planning classes as far as he felt was possible, but not for every single lesson. “I try to take some things a little along the way to see what their needs are” (translated by the author).

5.3.2 Student Awareness

When the informants were asked “are your students aware of what deep learning is?” informant A said she probably never used that term in front of her students. Informant D had not used the term, and was unsure of an 8th grader would be able to relate to such big terms. Informant C had used the term in class, but said that she probably did not use it enough, and that she had probably not been enough aware of her own use of the term. She said “I have probably done that when they have asked ‘Oh, why are we still going to work with this topic?’. Then I say ‘This is deep learning, people’” (translated by the author). Informant B felt he had used the term clearly in front of the students. He also used it when giving them written feedback: “I for example write ‘you do not quite go in-depth, you do not write why this is’, because then I make them conscious of the words all the time” (translated by the author).

5.3.3 Successful Experiences

All the informants had had successful experiences with deep learning. Informant A talked about some ‘aha-moments’, where students who were usually not that interested in the English subject were more active in class. This happened when they had worked with the same topic in a different subject before working with it in English class. Informant B felt that the students were left with advantages and had also received positive feedback from the students. Informant C was satisfied with the fact that it now was easier to work with literature such as poems or speeches that she might have skipped previously because they were too immense. They had also worked with current topics such as the US election. She said: “In practice, it has made it easier to make the subject a little more fun, and current” (translated by the author).

5.3.4 Unsuccessful Experiences (Covid Situation)

The main topic that was mentioned in connection to unsuccessful experiences with deep learning was the pandemic. All the informants stated that time that was supposed to go to the subject renewal was lost due to the pandemic. Informant A said: “since this is something that we really started with this year, it has become a year where we have achieved terribly little” (translated by the author). Informant B said that even though there was much focus on deep learning in the beginning of the year, it had decreased because of different restrictions and distractions due to Covid. “The renewal came at a slightly unfavorable time. To say the least”

(translated by the author) he said. Informant C mentioned that several classroom lessons were lost:

I see that per now in the ninth grade, it has been a very special year, we have lost so much classroom teaching, but we see that the way things look right now, we will get through three topics in total in one year. And you can say in a way that that is deep learning, but it is also about the strange year. (Informant C) (Translated by the author)

5.3.5 Experienced Competence

The majority of the informants felt as though they had the competence to use deep learning in their English classes. Informant A answered yes, informant B said “I might be wrong in many ways too, by all means. But I feel that I have started to get an understanding and that the students benefit from it, at least as I have seen lately” (translated by the author). Informant C answered: “I feel that the vast majority of teachers have that competence, as long as they have education within the subject they teach” (translated by the author). Lastly, informant D was a bit hesitant: “In one way yes, in another no. You have your own experiences and own understanding of it, based on what you have worked on. But I feel that I would like to have more courses in relation to specific things in the subject” (translated by the author).

6. Discussion

The following chapter discusses the current study in relation to existing theory on the topic, previously presented in chapters 1, 2 and 3. The discussion includes 6 sections, each with different questions related to the thesis questions. Firstly, “Is there an equal understanding of the definition of deep learning?” will be answered through examining theoretical definitions and comparing the informants’ definitions to each other’s as well as the theoretical material. This chapter will also explore the challenges related to the defining the term deep learning. Secondly, the renewal of the curriculum as well as the informants’ views of the curriculum will be discussed in the chapter “How does the curriculum facilitate for deep learning?”. Thirdly, the pandemic will be the topic in the chapter “How has Covid affected work with the renewal?”. There will then be a discussion on the informants’ experienced benefits and challenges with working with deep learning in practice. Lastly, I will examine ways to improve the overall understanding of deep learning in the chapter “How can teachers become more competent in deep learning?”.

6.1 Is There an Equal Understanding of the Definition of Deep Learning?

The term deep learning does not have a general or universal definition. Although there are many similarities in the different theoretical definitions of the term, there are also a few differences. The William and Flora Hewlett Foundation in the US views deep learning as an umbrella term for certain skills and knowledge necessary for 21st century life (The Hewlett Foundation, 2013), while Pellegrino and Hilton as well as Stellan Ohlsson describe deep learning as the process of developing knowledge that can be applied to new context (National Research Council et al., 2013). That raises the question of whether deep learning is the process of learning to use a certain set of skills, or the result. It can be difficult to view a term that includes the verb ‘learning’ as a set of skills, because learning is usually referred to as a process and not a finished product. The core curriculum is also slightly two-sided when it comes to this, stating “in-depth learning implies applying knowledge and skills in different ways so that over time the pupils will be able to master various types of challenges in the subject, individually and in interaction with others” (Utdanningsdirektoratet, 2020d). This sentence is stating that deep learning is the action of applying knowledge and skills in different ways, but also the process of learning to be able to master different types of challenges. The Udir definition also states that deep learning is the “gradual development of knowledge and lasting understanding of concepts, methods and contexts in subjects and

fields” as well as reflection on what has been learned in different ways (Utdanningsdirektoratet, 2019a). According to this, when are the students practicing deep learning? When they gradually develop this lasting understanding, or when they reflect on and use what they already have learned? As it appears, deep learning is both the process of developing certain skills and understanding, as well as the ability to reflect on and use this knowledge in challenges, other situations and in new context (Utdanningsdirektoratet, 2019a).

6.1.1 Teachers definitions

When the informants were asked to define deep learning, their definitions were often more on the practical side. For example, to informant B, deep learning meant giving the students the opportunity to learn more about a self-chosen topic within certain frames. This included spending more time in developing certain knowledge. Informant A said that it was important to see connections and create connections. In order to see these connections, you had to see that the subjects also complement each other. Informant C talked about spending more time and going deeper when working within topics. Informant D viewed deep learning as both using other subjects when working with a topic or working within the subject. She used the example of working with different levels and focusing on different skills when working with a text. Even though they were asked to define deep learning, they seemed to focus on how they worked with deep learning. The teachers did not express a clear definition of the term, such as the definition from the curriculum, but rather their own methods or ways of practicing this in the classroom. This is an interesting finding, because the curriculum definition (and the Udir site definition) does not say much about how to practice deep learning, but rather what it entails. Therefore, the teachers’ definitions might represent the practical understanding of the theoretical definition from the curriculum.

It could sometimes appear that the informants’ definitions were angled from the teachers’ point of view and not the students’. Theoretical literature on deep learning does not say much about the teacher but is usually focused on the learner, the learning process and the outcomes of this process. For example, according to Winje & Løndal, a deep learning approach is apparent when learners seek the intention and meaning of the learning material, relate the material to previous experiences, and examine and question arguments and conclusions (Beattie et al., 1997; Winje & Løndal, 2020). According to authors such as Fullan and Langworthy as well as Stellan Ohlsson, even though deep learning often occurs together with others, the main focus is the individual learning process (Fullan & Langworthy, 2014;

Ohlsson, 2011). Nevertheless, the informants occasionally expressed their understanding from the teachers' perspective. Informant D said: "Deep learning can involve cross-subject work, and then you can include other subjects in a topic, so that you get a more whole understanding of the topic you teach" (translated by the author). Here the word *teach* (in Norwegian *undervise*) implies that she viewed the term from the teachers' angle. Informant C said: "Let's say as I am working with 'role models' now, then you choose to see it from very different angles and go in to create a sort of, for the students to have a vocabulary" (translated by the author). This statement also shows that although the students are the focus of the informant, the term is seen and described from informant C's teaching-perspective. This could also possibly be because the term is most often described with the students in focus, and as the teachers are required to use the term in their classroom, they must define it from their own perspective for a more thorough understanding.

Another overall impression was that the answers were varied. There were certain similarities between the informants' definitions, but they mostly focused on different aspects when defining the term. The one factor that was similar in three of the four informants' answers (Informant B,C and D) was "spending more time within a topic". On the other hand, their answers sometimes represented conflicting views. Informant C stated that deep learning was about going deeper into the material when working within a topic, contrary to informant A who meant that deep learning was not about narrowing down and getting to the bottom of a topic, but rather to see connections and understanding the world. This shows how teachers may have very different interpretations of the complicated term. Informant A's mention of seeing connections can be found in theoretical material. As stated by Ohlsson, a substantial part of deep learning is the transfer of knowledge (Ohlsson, 2011), and as pointed out by Fullan et al., seeing connections to the real world (Fullan et al., 2018). At the same time, deep learning theory values the importance of students understanding their own learning process over covering a required amount of content (Fullan et al., 2018) and the curriculum emphasizes the gradual development of long lasting knowledge and understanding of concepts in subjects and fields (Utdanningsdirektoratet, 2020d), which highlights informant C's perspective. Thereupon, the statements of informant A or C are not incorrect, yet alone do not show a complete understanding of the term. In general, the informants seemed to have their own ways of defining the term and focused on different practical aspects of deep learning, and the results showed that their understandings were not unanimous.

When comparing the informants' definitions to the theoretical definitions, there were some similarities and some differences in their descriptions. The differences may perhaps be a result of, as mentioned above, the informants more practical, rather than theoretical, approach to the term. By examining the paragraph on deep learning from the core curriculum and the Udir definition from their website, some key words that appear are gradual development, lasting understanding, applying skills in different ways, and mastering various types of challenges, in and across subjects (Utdanningsdirektoratet, 2019a, 2020d). Informant A said that the point of deep learning was that everything is connected, and to create connections. In the Norwegian version of the Udir definition, the word "sammehenger" is used (Utdanningsdirektoratet, 2019a), which can be translated to context or connections. In addition to this, according to Fullan et al, clear connections to the real world and education based on relevance and meaning is one of the six characteristics of a deep learning classroom (Fullan et al., 2018). Informant A also mentioned that in order to see these connections, one must understand that the school subjects complement each other. To work across subjects is also a part of Udir's definition which mentions work within and across subjects. Informant D stated that deep learning was both 'width' and 'depth' and talked about working both within a subject and across subjects, as the Udir definition states (Utdanningsdirektoratet, 2019a). Informant B and informant C described deep learning as spending more time within a topic and giving the students the opportunity to learn more about the topic. Informant B said that deep learning involved giving students a sense of accomplishment by learning more about a self-chosen topic. If we look at the Udir definition, the two informants' understanding can be connected to the key words "gradual development" and "lasting understanding" from the Udir definition. We also find, enhanced under "Teaching and Differentiated instruction" in the core curriculum, the sentence "The pupils must be given the time to explore various subject areas in depth" (Utdanningsdirektoratet, 2020j). From this, it is apparent that the informants have knowledge of the term, and that their definitions can be related to theoretical material from the curriculum. Yet it demonstrates how different elements within the term are emphasized by each teacher, which can create different understandings and varying practice. Additionally, none of the teachers defined deep learning as a cognitive process within the learner, but more as practical approaches to teaching.

6.1.2 Challenges Defining the Term

When the informants talked about their understandings of the term, they mentioned a few challenges. Informant D said that the term was a bit weak and hard to define, and although you are free to make your own decisions when planning, teachers must follow the definition and interpretation of the term that is presented in the curriculum renewal. The definition from the curriculum stems from the NOU's represented by the Ludvigsen Commission (Ludvigsen Commission, 2014, 2015), which are based on international research and literature on deep learning. There is no universal definition of the term, and although the curriculum definition is established from literature, as most definitions, the definition in the curriculum can be viewed as an interpretation of the term. This is perhaps exactly why the renewal includes the definition, so that all Norwegian teachers are provided with the same interpretation to follow. However, the term still appeared confusing to some of the teachers. In informant A's opinion deep learning or "dybdelæring" was a misleading term. She said that many teachers did not read through the curriculum and therefore believed the name would confuse them on the actual meaning of the term. This correlates with informant C's statement that she did not spend that much time on Udir's recourses and the new curriculum because she felt as if she understood how to implement it into her own teaching.

In informant A's opinion, the term is not about going deeper into a topic, but about 'width'; seeing connections and working across subjects. The informant raises the question of whether the term itself is misleading or hard to understand. The word 'deep' in the term deep learning is often used as the opposite of surface learning (Beattie et al., 1997). The word can also be used when talking about deep and lasting knowledge (*The Cambridge Handbook of the Learning Sciences*, 2014) and the process of using prior knowledge when learning something new (Ohlsson, 2011). Overall, the confusion that informant A expresses could be caused by the complexity of the term, and the above-mentioned practical approach to teaching as opposed to the cognitive learning process. Informant B touched on this particular issue, and said that the term was fairly clear to him, but that he wanted some more practical examples on how to use deep learning. The curriculum description of the term does not include any examples or practical representations, but more of a general description of the term. This makes it the teachers' own responsibility to understand the practical way of using the term. It gives them the freedom to teach the way that they feel most comfortable but might also cause some confusion and a range of different approaches.

As the informants had a practical approach to the term and expressed confusion around the term, it could be necessary to look at the wording of the term. In Norwegian, the word ‘dybdelæring’ consists of ‘dybde’ which translates to and refers to ‘depth’, and ‘læring’ which refers to ‘learning’. Yet, the verb ‘å lære’ translates to both to learn as well as to teach. The English word ‘learning’ only refers to learning, while in Norwegian, the word ‘læring’ can refer to both learning and teaching (Ordnett, 2020). This could possibly be the cause of some of the confusion for Norwegian teachers. As previously described, deep learning is the development of skills and a cognitive process within the learner. In the topical situation, the teacher must introduce the term to the students and bring it into the classroom, but the term itself does not refer to teaching or the teachers role. Even if teachers are aware of this, could the word ‘læring’ perhaps unconsciously affect their perception of the term into a more practical, teaching-oriented view?

6.1.3 Comparison to Cross Curricular Work

Several of the teachers talked about working across subjects when asked about deep learning. Informant A was said that by reading about the term she believed that it was basically cross curricular work and should be called ‘width-learning’ (breddelæring) and not deep learning. Both informant A and C felt as though they had been working in similar ways before the new curriculum, because they had done cross curricular work (tverrfaglig arbeid) or project work earlier in their teaching carriers. Informant A felt like she knew a lot about deep learning because of the way they had worked across subjects before: “the way that deep learning appears in the curriculum in the way that there is more talk of cross curricular work in a way, this is something that we worked a lot with in the 90s” (translated by the author). Informant C also said that there was an increased focus on cross curricular work with a deep learning aspect when she started working. Although deep learning includes working between subjects, it is also work within a subject. The section on deep learning in the core curriculum does not actually mention anything about working across subjects, just learning to “apply subject knowledge and skills in familiar and unfamiliar contexts” (Utdanningsdirektoratet, 2020d). The definition from Udirs sites does state that deep learning is developing understanding within *and* across subjects (Utdanningsdirektoratet, 2019a). Still, these definitions do not suggest that deep learning is mostly about working across subjects.

Another element that might cause some confusion for teachers is another new addition to the curriculum; the three interdisciplinary topics. The interdisciplinary topics health and life

skills, democracy and citizenship, and sustainable development and deep learning have certain things in common, but they are two different parts of the curriculum. Teachers have to work with both the interdisciplinary topics and deep learning in their subjects. The two terms from the new curriculum may appear confusing to some teachers, because of previous cross curricular work or project work. Informant A said that she recognized the deep learning work as similar to previous cross curricular; “The old teachers will say that we are there again now. Not with the interdisciplinary topics, but with deep learning. That you are supposed to see width, that things are connected”. The interdisciplinary topics of health and life skills, democracy and citizenship and sustainable development are topics that are meant to be worked with in all subjects and the topics are supposed to help the students see connections across subjects. Yet the curriculum does not state that you have to work with these topics in cross-subject or project-work. While working with deep learning often can include cross curricular work, there seemed to be a big focus on this from many of the teachers. A focus on cross curricular work might cause a neglect of the deep learning work within the subject. Questions for further research on this topic could be “why is there so much focus on cross curricular work?” and “does this cause a lack of focus on deep learning within the subjects?”.

6.1.4 Deep Learning in ESL/EFL Teaching

The informants brought up different approaches when asked about deep learning in the English subject. Informant B said that he wished it meant giving the students an understanding of the language structure and grammar. As previously mentioned, the renewal brought an enhanced focus on language and language skills to the English subject, and one of the main three core elements in the English subject is language learning (Utdanningsdirektoratet, 2020f). Informant B would also practice writing skills with his classes and help the students find out which writing and learning strategies suited them the best. The renewal promotes students taking an active role in their own learning process and states that deeper insight is developed when the students master a variety of strategies (Utdanningsdirektoratet, 2020c). Deep learning requires the students to be actively involved in and lead their own learning (Fullan & Langworthy, 2014), and according to Pintrich, students who have a deep learning approach tend to engage in meaningful learning strategies (Pintrich, 2003). Therefore, informant B’s focus on learning strategies is part of giving the students the opportunity to practice deep learning.

Informant C gave a similar answer as when asked about the general definition of deep learning; to work with a topic for a long period of time and spend time discussing and viewing the topic from different perspectives. She would make sure the students had vocabulary words in relation to the topic that they could use when reading and discussing. Working with texts is another one of the core elements in the English subject in the renewal, in addition to communication and language learning (Utdanningsdirektoratet, 2020f). Working with vocabulary is therefore essential in the English subject. Informant D also focused on viewing topics from different angles and focusing on different skills in relation to this, for example when working with a text. The enhanced focus on reading and working with texts in the curriculum provides the teachers with the opportunity to use these deep learning strategies. An example from literature of a method that promotes deep learning in reading strategies is the four resources model (Luke & Freebody, 1990). This model describes the reader in four different angles: the text decoder, the meaning maker, the text analyst and the text critic. Another example from literature is Kintsch's model, which describe three different representations of meaning that are formed in the reader: the surface level, the textbase and the situation model (Kintsch & van Dijk, 1978). Although informant D might not have used any of these exact approaches, they similarly represent ways of approaching texts on many levels. This text-based approach is an important part of working with deep learning in practice, and can result in high quality reading skills and comprehension (Kirby et al., 2012; Luke & Freebody, 1990).

Theory on ESL/EFL teaching shows that there are several ways of using deep learning in the English subject; transfer for learning is an example of this. When students use their first language when learning new English vocabulary, they practice the transfer of knowledge which is characteristic for deep learning. James emphasizes the importance of teachers using the students' first languages and describes it as a goal that English teachers should promote (James, 2018). We also find this transfer for learning as a competence aim in the English subject curriculum which specifies "explore and describe some linguistic similarities and differences between English and other languages the pupil is familiar with and use this in their language learning"(Utdanningsdirektoratet, 2020g). Several scholarly authors focus on the importance of teacher language awareness, which promotes transfer across languages (Andrews, 2003), yet research shows that very few Norwegian teachers focus on multilingualism in their classroom because they feel that they lack strategies to help them relate to the different languages (Dahl & Krulatz, 2016; Surkalovic, 2014). None of the

informants in the current study mentioned using transfer across languages in connection to deep learning in their English teaching practice. This does not necessarily mean that the teachers do not use this in their classroom practice. They are in fact obligated through the competence aims to accommodate for students to use their first language in their English language learning (Utdanningsdirektoratet, 2020g). This was also a competence aim in the previous curriculum (Utdanningsdirektoratet, 2006), which means that teachers should already have experience using this approach. The fact that none of the teachers mentioned this when describing their understanding and practice of deep learning shows that they might not see the connection between this curriculum competence aim and deep learning work. In addition to this, although informant C mentioned working with vocabulary, none of the informants mentioned specific methods such as contextual guessing, semantic mapping and the keyword method, which are also examples of ways of practicing deep learning when learning new vocabulary (van Parren & Schouten-van Parreren, 1981; Wyra et al., 2007). These might be methods the teachers already use in their classroom practice, but do not recognize as deep learning work. This tells us that the teachers may need more competence on what type of work could in fact promote deep learning, and how it is a part of the curriculum and perhaps even their established classroom practice. According to Sardroud, these deep vocabulary learning strategies give positive results, but are more cognitively demanding for both the teacher and the student (Sardroud, 2013). Seen in relation to the research on Norwegian teachers' attitude towards multilingual learning strategies (Surkalovic, 2014), this could point to the fact that deep vocabulary strategies and transfer for learning requires practice and experience which teachers might feel as if they are lacking. This knowledge and practice is necessary in order for the teachers to use deep learning confidently in their classroom.

The current study also revealed a lack of focus on deep learning in the classroom situation. All of the teachers agreed that deep learning is important and beneficial for the students. Yet, when the informants were asked about their focus on deep learning when going into their English classes, most of them said that their focus was not specifically on deep learning. Most of the informants did, on the other hand, state that they kept deep learning in mind when planning lessons. Informant C claimed she worked with topics in a completely different way than she used to, and informant B and D had deep learning as part of the focus when making detailed period plans, yet they said that they barely kept it in mind when walking into the classroom. Although informant D first stated that she did not have deep learning as an

‘everyday-focus’, she said that she would take a deep dive into a topic if situations appeared where it felt appropriate. Informant C said that her focus now was getting through to the summer, and a cause for this, as seen in the other answers, could be difficulties surrounding the pandemic (more on this in chapter 6.3). The lack of focus on deep learning in the actual lessons could also be connected to the previously mentioned gap between theoretical and practical understanding of the term. As we have seen, the informants had different practical ways of defining the term, and although the informants stated that they understood the term, some expressed a wish for more coursing and practical examples on how to use deep learning.

6.2 How Does the new Curriculum Facilitate for Deep Learning?

As brought to light in the theoretical chapters, many of the new curriculum changes can be linked, if not directly connected, to working with deep learning. The changes that have been made in the English subject include an increased focus on language learning and reading, as well as communication and cultural understanding and relevance. With the renewal, the English subject became more language focused, and the new competence aims are based on language and not social studies (Utdanningsdirektoratet, 2019c). New competence aims focusing on language and language learning provides the opportunity to practice deep language learning. The focus on relevance and intercultural competence can be connected to deep learning because it provides the students with a way to connect and transfer what they learn in the English classroom to the outside world (Brevik et al., 2020).

The interdisciplinary topics of health and life skills and democracy and citizenship also contribute to the deep learning classroom by promoting seeing connections across subjects and using knowledge from these topics in different contexts. The students are also supposed to discuss and work together when working with the interdisciplinary topics. This is also emphasized as a part of deep learning; Fullan et al write that students that are able to collaborate is one of the main six characteristics of a deep learning classroom (Fullan et al., 2018). The work with the interdisciplinary topics also surrounds understanding and learning more about the outside world in order to educate the students to become civil members of the 21st century, which is also an aim within deep learning (Ludvigsen Comission, 2014, 2015; Utdanningsdirektoratet, 2020b). The core elements are also a part of this deep learning work, because they provide a relevant context to connect the learning material to (Gilje et al., 2018). The core elements promote seeing connections between the different elements, which is another way of emphasizing transfer of learning in the curriculum (Brevik et al., 2020).

The above-mentioned elements from the curriculum that teachers need to incorporate into their teaching have a close connection to deep learning. This shows that if teachers work with other elements from the new curriculum such as interdisciplinary topics and core elements, as they are required to do, they will most likely also work with deep learning in their teaching. This is perhaps not something teachers are aware of, and it is not something that is clearly described in the curriculum. If one is aware of the different characteristics of deep learning, then they are perhaps more likely to see these characteristics in other parts of the curriculum as well. This could also suggest that teachers use deep learning in their classroom teaching more than they are aware of themselves. The informants in the study were not directly asked about the different new elements in the curriculum, but informant D said that she was starting to see how the renewal was built on the deep learning aspect, and that the renewal laid the foundation for thinking about deep learning.

Through researching for this thesis, when reading the Ludvigsen Commissions' reports and the sources these reports build on as well as exploring the different new elements in the curriculum, the presence of deep learning within the whole curriculum became apparent. In addition to this, when I became aware of the different characteristics of deep learning through theoretical material, it was easier to recognize elements that facilitate for or connect to deep learning within the curriculum. Deep learning is very multifaceted and complex, and not every teacher has the time to do as much research as someone who is writing a master's thesis on the topic. All the informants felt that time in general was an issue, and when asked if they had done any research on the topic independently, it turned out that none of the informants had done any research further than what was provided to them by their school. To understand the complex term and its position in the curriculum requires a significant knowledge basis. When this knowledge is obtained, it can become easier for teachers to understand what deep learning is and where we to find it.

6.2.1 How do Teachers View the Curriculum Changes?

The changes in the curriculum should mean changes in the way English teachers plan and teach in their classrooms. How, if at all, have the teachers changed their classroom practice in order to adapt to the new curriculum and deep learning?

An important change in the subject renewal was a reduction in the amount of competence aims. This change was based on the Ludvigsen Commissions' reports which claimed that too

many competence aims and topics in the past curriculum was a potential issue for teachers. In 2018, Gilje et al claimed that too many aims made it more challenging for teachers to work on deep learning and that the reduction of material would make the work with deep learning more achievable (Gilje et al., 2018). Does the reduction of competence aims actually give the teachers more time to work on deep learning? Three of the four informants talked about how the aims had now become ‘larger’ (større) or ‘broader’ (videre). Informant A said that even though the competence aims were fewer, they were just ‘larger’ now, while before there were ‘a thousand’ smaller aims. She said, “If you look closely, then it’s not certain that they are very reduced” (translated by the author). Informant B said that even though the curriculum was narrowed down in order to focus more on certain topics, he still had to give the students a broad general knowledge and spent just as much time planning as before the renewal. Although the Ludvigsen-reports claim that the issue lies with too many topics and competence aims (Ludvigsen Commission, 2014, 2015), this does not necessarily mean that the reduction of aims consequently gives space for deep learning. On the other hand, Informant C stated that the ‘broad’ aims were positive because it made it easier to spend more time with the material and still reach all the competence aims. Similarly, informant D said that the project work they now carried out covered more competence aims than before the renewal. She saw how the new curriculum build up under the aspect of deep learning but pointed out that this required planning and co-ordination. Gilje et al claimed that the reduction would make deep learning more achievable (Gilje et al., 2018), but they did not claim that this would not require time and planning. This tells us that the reduction of the aims itself might not be a direct path to deep learning, but that it is a part of facilitating for teachers so that they are provided with the opportunity to carry out their deep learning work.

The changes in the English subject did not just include a reduction in the competence aims, but also a change in the subject content. Still, the competence aims did not appear that different to the informants. Informant A expressed uncertainty regarding whether the aims were actually reduced and not just reorganized. Informant C said that there were a lot of similarities from the previous curriculum, and that the English subject content had really not become so different with the new competence aims. Informant B also said that there was not much of a difference practically in the competence aims from the last curriculum. However, the competence aims are not only reduced in numbers, but in addition to this, the aims now consist of language learning and not social studies content such as geography and history. This substantial change is a cut in the competence aims because a part of the last curriculum

was in fact social studies oriented. The transfer to a language learning oriented subject gives the teachers the opportunity to work with deep learning and focus on language acquisition without being bound to certain topics within social studies and literature. Yet, several of the teachers did not feel as if the reduction of competence aims gave them more time to focus on deep learning. Informant C found it difficult to find a balance between deep learning work and work with other parts of the subject, such as writing skills, genre-understanding, exam preparations and all the assessment criteria. Informant B said that he still had to focus on general knowledge, so he spent the same amount of time planning. This tells us that there is a gap between the intention behind the changes in the renewal and how teachers grasp them.

6.2.2 Use of Term

The informants were also asked whether their students were aware of the term deep learning or not. Although this study focuses on the teachers', and not the students', view and understanding of deep learning, I felt as though this could tell something about their stance and approach to the term in the classroom. Two of the teachers had not used the term in front of the students (A and D). Informant D was unsure if an 8th grader would be able to relate to such a big term. The two other informants had used the term in front of their students (B and C), one with more intensity than the other. Informant B said he used the term actively, while informant C said that she had probably not used it enough. She had used it in certain situations but had not been aware of her usage of the term. Informant B explained that he made sure to make the students' aware of the terms, and for example used the term when giving the students feedback. Should the students be aware of the term and the process they are going through, and could this affect their learning? Fullan and Langworthy write that in deep learning tasks, students and teachers work together. They also note that one of the learning outcomes is for the students to lead their own learning (Fullan & Langworthy, 2014). Ohlsson's perspective of deep learning also puts emphasis on the individual and the learning process (Ohlsson, 2011). In the curriculum, self-assessment and metacognition is highly prioritized, stating that the school needs to contribute to students self-reflecting on their own learning and learning processes (Utdanningsdirektoratet, 2020c). According to Sandvik, this type of self-assessment promotes deep learning (Sandvik, 2019). This shows that there is a strong link between deep learning, self-assessment, and the cognitive process. The curriculum does not state that teachers need to use the term explicitly in front of the students, however it promotes students being active participants in their own learning process. Therefore, using the

term in front of the student may be helpful in order to make them more aware of their own learning.

6.2.2 Assessment

According to Fullan et al., there is a need for a shift in measurement practices in order for students to practice deep learning in the classroom. Because students have to seek a deeper understanding of the learning material, teachers have to accommodate for this by adjusting their assessment and measurement tools (Fullan et al., 2018). Deep learning requires successful and appropriate assessment strategies. An assessment method stated to enhance deep learning is formative assessment (National Research Council, 2012). Formative assessment is found in the renewal of the curriculum and as an essential element in the English subject (Utdanningsdirektoratet, 2020g). Hilton and Pellegrino mention three main goals of deep learning in formative assessment: (1) make learning goals clear to students, continuously monitor, (2) provide feedback and respond to students' learning progress, and (3) involve students in self- and peer assessment (National Research Council, 2012). Many sources claim self- and peer assessment as successful ways of practicing deep learning, and as Sandvik states, the intention of formative and self-assessment in the curriculum is amongst others to promote deep learning (Sandvik, 2019). This shows that there is a strong relation between formative- and self-assessment and deep learning. Two of the informants mentioned assessment in their interviews. Informant A believed that many teachers had not read through the curriculum and had therefore would not get acquainted with the term deep learning. In relation to this she said that few teachers had gotten acquainted with assessment and would therefore not know that the assessment aspect is different from previous curricula. She also said that many teachers still prioritized memorization and test results. Informant B said that he made the students aware of the term deep learning when giving the students feedback. He mentioned for example writing "you do not quite go in-depth here" when giving written feedback. Other than this, none of the teachers mentioned assessment as a part of their deep learning practice. This too, is another example of an instance where the connection between elements of the curriculum and deep learning has not been made clear. Teachers might not see the direct relation between formative assessment and deep learning. Seeing this connection could contribute to a more whole understanding of deep learning.

6.3 How has Covid Affected the Work with the Renewal?

There are several considerations in this study due to the covid-19 pandemic. Because the curriculum renewal was put into effect fall of 2020, and the pandemic hit in March 2020, the situation might have affected the outcome of the work with the renewal, both before and after the curriculum was put in use. As informant B said, “the renewal came at a slightly unfavorable time. To say the least” (translated by the author). All informants claimed that time that was supposed to be spent on working with the subject renewal was lost due to the pandemic. Seen in the light of the survey by Utdanningsforbundet (Utdanningsforbundet, 2021b) and the NIFU report (Bergene et al., 2021), this seems to correlate with the overall perception from several other schools in the country. Informant B said that there was much focus in the beginning of the year (2020) but that it decreased because of the restrictions, and informant A said that very little had been achieved this year because the work had just started when the pandemic hit. This makes it clear that the focus area of this study is definitely affected by the lack of priority to deep learning because of the pandemic. The results from the interviews may have been affected by the fact that two of the informants lived in the Oslo-area, which had more instances of Covid in general. These two informants might have had even less time or opportunity to work with the term, but this was not a very apparent through the interviews. Although the informants might have had more knowledge and experience using deep learning if it had not been for the pandemic, the situation has hit the entire country and consequently had a huge impact on how teachers have been able to do their work through this time period. Although research shows that the pandemic was especially challenging for schools in highly contaminated areas, all schools in the country were closed down at least once, and no one was unaffected by the situation (Utdanningsforbundet, 2021b). Overall, the work with this thesis started after the pandemic had hit. This result from the study is therefore not invalid because of the pandemic, but have to be considered with the pandemic in mind.

This current study compliments other research showing the lack of work with the new curriculum (Bergene et al., 2021; Utdanningsforbundet, 2021b). When the informants were asked about how much work they had done on deep learning in plenary sessions at their schools, informants B, C and D said that the chaos and different stages of lockdown had caused deep learning to be less prioritized and the work to come to a halt. According to Udir, work with the new curriculum needs to be prioritized, and it is the school leaders’ responsibility to ensure that teachers are provided with the necessary competence (Utdanningsdirektoratet, 2020a). Nevertheless, the NIFU research, which was done on school

leaders around the country, showed that only one in three found they had sufficient time for this work (Bergene et al., 2021). Informant B wished that the topic had been brought up more than it had, and informant C said that the topic had not been discussed enough. Informant D also said that the work had not made it further than discussing and introduction of practical tools, and that the school was still in the beginning phase. Udir wrote in 2020 that they expected schools to prioritize work with the new curricula as far as possible; “even though this means that other tasks must be downgraded for a while” (Utdanningsdirektoratet, 2020a). Focus on this work still remains for many schools throughout the country and could be an important part of improving teachers’ knowledge and confidence in deep learning.

6.4 What Are the Benefits and Challenges of Working with Deep Learning in Practice?

6.4.1 Benefits

A deep learning approach is claimed to provide the students with capabilities to build new knowledge, lead their own learning, persevere challenges, and in addition give students goals and motivation (Fullan & Langworthy, 2014; Pintrich, 2003). The informants in the study shared several positive experiences with deep learning. Some of the successful experiences mentioned in the interviews involved an increase of interest and activity in class (informant A), as well as positive feedback from the students (informant B). Informant A had seen that when topics had been worked with in a different subject prior to the English subject, some students who usually were not as interested in the English subject became more active in class. Informant C was able to make the classes more fun and current by bringing up current topics in class. She also believed students became more confident in the subject when they learned relevant vocabulary that allowed them to talk about a topic. She also believed that working with a topic for a longer period of time made the students feel as if they owned the material a bit more. Informant B said; “I believe that it can be easier for them to understand the reason why they are supposed to learn the things they are going to learn, by linking it up to something” (translated by the author). The informants also mentioned that they believed deep learning provided the students with benefits such as confidence and a sense of accomplishment, and that it was engaging and motivational (informant A and D), as found in theoretical material (Pintrich, 2003). This shows that the teachers saw the benefits of working with deep learning and how it could affect the students positively, as the theoretical material also has shown. Yet, several challenges were mentioned, which will be specified in the next chapters.

6.4.2 Challenges

6.4.2.1 Time

A couple of the informants found collaboration with their fellow teachers as a challenge when it came to deep learning and said that it was poorly arranged for the teachers to have time to cooperate across subjects. Both informant A and B pointed out that if they wanted to work together with teachers from other subjects, they had to stay extra hours after work. This leads to one of the most important issues all the informants brought up; time. It was clear that the informants wished they had more time in several aspects of their work. Informant A wished there was arranged for more time to sit together and plan. In addition to this, as previously explored in chapter 6.3, most of the informants wished they had more time for work with implementing the renewal. This was also apparent in the 2021 report by Utdanningsforbundet, where the majority of respondents answered that their school had little or very little time to implement the renewal (Utdanningsforbundet, 2021b). Time was also an issue in the classroom; informant B and D mentioned how classroom hours could be lost due to other things happening in the school day. Informant C said:

I'm just afraid that those who sit and make the curriculum forget a little about how the school works and it especially doesn't make sense to take a basic subject such as English and give them such few hours to complete this deep learning. (Informant C) (Translated by the author)

This leads us to the question of whether teachers actually have enough time to practice deep learning work in the English subject. In 8-10th grade, the entire number of classes for the English subject is 222, which is equal to the number for their foreign language classes (eg. German, Spanish, French) while the Norwegian subject has 398 classes. This gives the English teachers less classes per week than subjects such as Norwegian (depending on how the classes are distributed), and less time in general for the English subject. It could therefore perhaps seem like the English subject is not prioritized, even though the curriculum states the importance of the subject (Utdanningsdirektoratet, 2020f). The subject has a comprehensive amount of content and overall aims. It is emphasized that the English subject not just focuses on language learning, and communication and reading skills, but also that it is an important subject when it comes to cultural understanding, all-round education and identity development (Utdanningsdirektoratet, 2020h). Informant B also expressed his concern surrounding the time issue:

What we are supposed to get through is quite extensive. So, on paper it is fantastic that it is arranged for us to spend more time on things, but then in everyday school-life so much happens all the time that it doesn't always work out to give time to it. (Informant B)
(Translated by the author)

Informant C also found it difficult to find the balance between deep learning work and working with other parts of the English subject, such as writing skills, genre-understanding, exam preparations, and assessment criteria when there was limited time to spend on the English subject. Although it is possible to incorporate deep learning into most of these elements in the English subject, this may, as previously mentioned, not be completely clear to teachers. Generally, it appeared that the time issue was more a general concern for all of the informants, perhaps not just in the English subject. More time to plan, cooperate and work with deep learning was a clear need for all the informants.

6.4.2.2 Textbooks

Another topic that was brought up by the informants in the interviews was textbooks. Informant D mentioned the lack of updated textbooks as an issue and explained that the textbooks they used were not up to date with the new curriculum. The school had a tradition of using analog textbooks and could not afford to buy new updated textbook systems. She therefore found it challenging to adapt to the renewal with the resources available at her school. Informant B also said that he was not interested in using their textbooks because they were outdated, and informant C said that the textbooks included too many topics; “The textbooks are made for a subject that has a lot more hours, because if you are supposed to work with deep learning with six topics during one year, we need double the amount of hours” (translated by the author). As Chy et al emphasize, the twenty first century is amongst others characterized by the increase of technology and digitalization (Chy et al., 2017). They state that the education systems have not evolved with the changes in society and that students need to be prepared for the current and future state of the world. Therefore they need set of skills that will be necessary for them in the future (Chy et al., 2017). As digitalization is a part of the important changes in society, technology and digital literacy is an important part of the 21st century skills (Cisco Systems, 2008). The Ludvigsen Commission also list technology as one of the important competencies for future social and working life, and emphasize the link between the development of these competencies and deep learning (Ludvigsen Comission, 2015). The curriculum expresses a strong emphasis on technology and digital skills through

all subjects and competence aims, and Udir writes that “teachers must use digital tools, teaching aids and resources in the work of further improving the students learning” (Utdanningsdirektoratet, 2020k). Consequently, deep learning work should include working on digital skills and not just be practiced by using textbooks. As informant D noted, the new textbooks and digital learning platforms are more adapted to the new curriculum. Informant D’s school represents the many schools that do not have sufficient fundings to improve their material. As presented in the 2021 survey by Utdanningsforbundet, only 8% of the schools had renewed their teaching aids in connection to the renewal and a majority of the schools had a small or very small degree of sufficient funding to renew their teaching aims (Utdanningsforbundet, 2021b). Although many schools are unable to update their resources, they are supposed to accommodate for their teachers to be able to adapt to the new curriculum. As the NOU’s state, it is the schools and teachers’ responsibility to facilitate for deep learning (Ludvigsen Commission, 2015). Fullan et al also write that when developing a deep learning classroom, teachers need to reflect on how to develop new norms in the classroom (Fullan et al., 2018). This means that the process of adapting to deep learning in the classroom requires a change in the established culture, and using older textbooks is not adequate for reaching all the required aims. Unfortunately, in situations as mentioned, it can be in the teachers’ hands to adapt their classroom practice even if the school cannot provide sufficient material.

6.4.2.3 Differentiation

Two of the informants brought up challenges regarding deep learning and differentiation. Informant B struggled with reaching all the students because of their different knowledge bases and varied skills. He found it difficult to follow up on each individual student in the best way possible. The core curriculum says:

“Giving room for in-depth learning requires that the school takes into consideration that the pupils are different and learn at different speeds and with different progression. This requires knowledge about how pupils learn and what they know from before, and requires close follow-up of each pupil”(Utdanningsdirektoratet, 2020j)

Informant B’s statements were therefore very much aligned with the curriculum, and even though he expressed that differentiation was difficult, this indicates that he understood the link between deep learning and differentiation. Informant D mentioned that it could be difficult when students (often girls) were a bit afraid to challenge themselves and take risks

when things were a bit more difficult to grasp. In the same paragraph that mentions deep learning and differentiation, the core curriculum says:

Trial and error may be a source of learning and acknowledgement, and the pupils must be encouraged to try to do their best even when success is not guaranteed. School is responsible for furnishing pupils with the confidence cross boundaries and try something difficult. (Utdanningsdirektoratet, 2020j)

This suggests that informant D was on the right path when working with deep learning and differentiation, because she saw that her students needed to challenge themselves to be able to reach their deep learning goals, which is in line with the curriculum paragraphs' message.

Another challenge for the informants was reaching and motivating all their students. Informant B said that some of his students found it tiring and hard to concentrate on something over a longer period of time. Both informant B and D mentioned the challenge of adapting their teaching to students who had lower results in the class. According to literature, deep learning occurs when the students are motivated for learning (National Research Council, 2012; Pintrich, 2003) and the challenges that the informants experienced could be related to a lack of motivation for the students. The challenge of motivating your students is an ongoing topic among teachers and educators that involves years of research (Pintrich, 2003). In relation to deep learning, the curriculum states that "Pupils who experience mastering are motivated to be more persevering and independent" (Utdanningsdirektoratet, 2020j), and therefore mastering various challenges could be a part of getting students more motivated. Although some of the informants struggled with student motivation, the informants also experienced that many students were in fact more motivated when working with deep learning. Informant A had experienced that students who were usually not that interested in the English subject in fact became more active in class. Informant B said that deep learning was important in order to give the students a sense of accomplishment, and informant C said that it made the students become more confident in the English subject. Informant D believed that for many students, deep learning could be engaging and motivational learning. Motivating students is an ongoing challenge for teachers, but according to these statements, deep learning can in fact contribute to motivate and give students a sense of accomplishment. Further research, especially research that focuses on the students' experiences with deep learning could provide more information on this aspect.

6.5 How Can Teachers Become More Competent in Deep Learning?

When the informants were asked if they felt as though they had the competence to use deep learning, the answers were mostly yes. Informant D said “In one way yes, in another no. You have your own experiences and understanding of it, based on what you have worked on.”

From examining at the four informants’ definitions and their use of deep learning, I believe informant D’ answer is an accurate representation of their knowledge of deep learning. None of the teachers felt as if they did not understand the term or how to use it, but the varying answers and approaches represent many ways to interpret the term. Could these variations in understandings be a problem? And if we consider this to be problematic, is there a way to accomplish more unanimous understanding of the term?

In order for teachers to become more competent in deep learning, more work with the implementation of the new curriculum is required. As this study as well as other studies show, not all teachers feel as if they have had a satisfactory amount of time to work on the renewal (Mejlbo, 2021). When the informants were asked if they had done any independent work with deep learning, three of four informants answered yes. Neither of these had found any information on their own initiative, but read material received from the school. Informant A had listened to a podcast provided by school staff, informant B had received documents and watched an instruction video from Udir’s websites, and informant D received links to Udir’s web pages. Udir clearly states that the curriculum is not in the sole responsibility of the individual teacher, and that the school and school leaders have separate responsibilities connected to the work with the renewal (Utdanningsdirektoratet, 2021a). Schools must plan the implementation of the curriculum as well as evaluate and adapt in order for the students to achieve the necessary competence aims. School leaders must provide the necessary resources and framework conditions in order to give teachers the opportunity to get to know and use the curriculum successfully. According to Udir’s web sites “The school must, together with the school leader, assess the need for competence development when introducing new curricula and choose necessary measures for development that involves the whole school” (Utdanningsdirektoratet, 2020a). Udir also recommend that teachers work together and collaborate when working with the renewal to be able to maintain connections in and between subjects, and to improve and assess their teaching (Utdanningsdirektoratet, 2021a). The school leaders have the highest level of responsibility to ensure students education in line with the curriculum, which means that they are responsible for ensuring that help and information is available to teachers. Teachers also have a responsibility to ensure their knowledge of the

curriculum, but as we have learned throughout this thesis, they feel as if they do not have enough time for this. Consequently, for improvement of teacher competence, it is necessary for schools and school leaders need to make the renewal a priority and set time aside for teachers to work with this. Although the renewal has currently been in use for over a year, the current study shows that the pandemic has interrupted and slowed down the work that was started in 2020. As Udir states, this work now needs to be prioritized (Utdanningsdirektoratet, 2020a). In the years to come, teachers will hopefully have more time for the English subject without interruptions and difficulties connected to Covid. This will give them more time to explore and test out working with the new curriculum, which again will provide them with more experience with deep learning. Some of the informants explained that deep learning work in plenary sessions was cut down due to Covid, and now that teachers will have more time cooperate, they will also be able to discuss and explore the term further. This will of course be up to each individual school.

Another way of working towards a more collective understanding of the term could be the competence packages provided by Udir. The competence packages are created in order to help school leaders and teachers implement the new curriculum and includes a course on deep learning. Working with these competence packages is voluntary and up to each school. If every school participated, could this lead to a better and more equal understanding of deep learning? Udir states that working with the package will contribute to increased competence in understanding and interpreting the curriculum, which is a main focus in the deep learning course (Utdanningsdirektoratet, 2019d). In the survey by Utdanningsforbundet, a majority of the respondents answered that the tools and competence packages from Udir laid down the guidelines for the work with the renewal. 52% answered that they felt that these resources were useful, and 32% disagreed (Utdanningsforbundet, 2021b). None of the informants in this current study had worked with the competence packages, and their understanding of the term was not affected by the course on deep learning from the competence packages. They did, however, say that they used other resources from the Udir web pages; informant D had received links, and informant B had viewed an instruction video, but none of the informants' schools had the same approach to working with the renewal. Further research is necessary in order to get a better overview of the results from using the competence packages, but the 2021 survey suggest that working with the competence packages might be a good way to implement the renewal (Utdanningsforbundet, 2021b).

6.5.1 How Could Udir Improve Their Resources?

As mentioned above, the informants had not done any other research on deep learning except what had been provided to them by the school, and most of these resources were from Udir's web pages. The informants all mentioned time to be an issue and experienced a lack of time in their daily work life. We can therefore not require teachers to spend their time researching and learning about deep learning on their own initiative. Consequently, schools and teachers are highly dependent on Udir's resources in order to gain knowledge on new terms and elements in the curriculum. The responsibility that Udir has requires that they provide sufficient material for teachers and schools. As informant B requested, more practical examples could be useful in order for the teachers to gain a better understanding. Deep learning can be practiced differently in each subject, and therefore examples and approaches to deep learning could be presented for each subject. It is up to each teacher how to arrange and plan their own classes, and the current curriculum gives the teachers this freedom by not providing exact methods or approaches to their teaching. However, this might in fact be what causes the many different ways of understanding and practicing deep learning. Furthermore, some of the informants did not quite see the important part deep learning plays in the entire curriculum. This could also have been made clearer by Udir. It takes time and knowledge to understand how different parts of the curriculum facilitate for work with deep learning. The term deep learning is only mentioned in two different paragraphs throughout the curriculum. If the term was mentioned in more parts of the curriculum, it might make the teachers more aware of its position and importance. To summarize, below are three suggestions for improvement mentioned, based on the entirety of this thesis. While it is not the purpose of the thesis to make a policy recommendation, the following are my suggestions for Udir:

- Because the term can be difficult to interpret in a practical sense for the classroom situation, Udir could provide more practical examples of deep learning, either through external links to their web site or other material connected to the curriculum.
- Because there are different ways of practicing deep learning in the different subjects, Udir could provide practical examples of how deep learning can be practiced in the different subjects.
- Because deep learning can be linked to and used in relation to several parts of the curriculum, Udir could mention deep learning in more parts of the curriculum or provide an external link to their web site where they could explain more about deep learning's position in the curriculum.

7. Conclusion

The aim of this thesis was to explore teachers understanding of deep learning and compare their views to each other's and to theoretical definitions. The topic was chosen based on the fact that the term is a substantial new element in the curriculum renewal. The research questions that this thesis seeks to answer through four qualitative interviews are:

- Compared to theoretical definitions, how do teachers understand the term deep learning? How do they view the relevance of the term in the English subject?

Before answering the research questions, a review of theoretical material and the curriculum content was necessary. This firstly included introducing background information and definitions from various literary authors. Moreover, Udirs' definition and the curriculum description of deep learning was explored, and this definition acts as a foundation for this thesis. The theoretical sources inform us that deep learning is a multi-faceted term that can be defined in several different ways. The term is both described as developing certain skills as well as the process of developing long lasting understanding of a topic and the ability to use this knowledge in new and other contexts.

Following, more elements in the curriculum was explored which contributed to support the important position deep learning holds within the renewal. Practical approaches and examples for deep learning in the ESL/EFL classroom were also examined before concluding the theoretical part of the study. Before presenting the findings from the research, the methodology chapter was introduced, explaining the procedure and choices made when obtaining data in the qualitative research. The findings from the four interviews in the study were presented and then further discussed in the discussion chapter.

The data from the study discovered some interesting and valuable findings, and although they do not provide any information that can be generalized further than the four informants, some important issues are raised which could be considered for further research. Firstly, the study showed that the informants had differing ways of defining deep learning. This revealed that the answer to the first thesis question is that the teachers in this study understood the deep learning term in different ways. All four of the informants' interpretations of the term had elements that could be found in theoretical definitions of the term, but they mostly focused on different parts of the term, consequently having different ways of practicing deep learning in the classroom. Secondly, the research points to an enhanced focus on practical approaches in the teachers definitions of the term in general as well as in the English subject. Notably, their

definitions were in some cases seen from the teachers' point of view, as opposed to the students'. In addition, one of the informants had a significant focus on the cross-subject aspect of deep learning and several teachers compared the term to previous project work. I found the informants' emphasis on cross-subject work an interesting finding, considering that this is only one part of the Udir definition of the comprehensive term. In general, there was a lack of a common definition and interpretation of deep learning among the informants.

All informants in the study recognized the importance of deep learning, and mentioned benefits including increases in motivation, confidence and activity in class, as well as a sense of accomplishment among the students. The informants had, however, experienced some challenges related with deep learning. The informants in the study all felt that they did not have enough time to work with implementing the curriculum renewal, cooperating with colleagues or to plan and execute lessons. According to research, the Covid-19 pandemic affected the work with implementing the renewal, which lead to a lack of attention to deep learning (Mejlbo, 2021). Therefore, in order for teachers to gain more knowledge and experience with deep learning, work with the implementation needs to be continued and prioritized by schools in the future (Utdanningsdirektoratet, 2020a). It should also be noted that the informants mentioned other challenges, such as the lack of updated textbooks and limitations regarding resources, and the challenge of reaching all students when teaching.

After exploring and discussing theoretical definitions of deep learning and practical approaches to the term, the position of deep learning in the curriculum appeared more clearly. There are several parts of the curriculum that provide a foundation for deep learning work (Utdanningsdirektoratet, 2020b, 2020c, 2020f, 2020j). Yet, this may not be apparent for all teachers. Certain informants in the study did, for example, not think that the English subject and the competence aims were all that different in the renewal. One informant remarked that the curriculum in general was mostly the same as before the renewal. To answer the second thesis question, teachers may not be completely aware of the term's important place in the English subject or in the curriculum in general.

Although the answers from the interviews in this study only represent four teachers' understandings of deep learning, the results reveal a clear variation in the interpretations of the term and should therefore be considered further. Considering the different variations in understanding of the topic, there may be a need for supplementary explanations of the term and its position in the curriculum in order for the practice of deep learning to become more equal for classrooms throughout the country. This study implies that teachers mostly use

Udires' resources when working with and learning terms from the curriculum, and therefore three suggestions for improvements are proposed in this thesis. The suggestions for Udir are as follows: Firstly; more practical examples of deep learning through external sources, secondly; different practical examples for each subject, and thirdly; including the term deep learning in more parts of the curriculum or providing an explanation of deep learnings' place in the curriculum. If these changes are made, this could lead to a more equal approach to teachers deep learning practices. Overall, there is a gap between the curriculum renewal and teachers' understanding of deep learning, and in order for teachers to have a more rounded and equal understanding of the term, it is necessary that this gap is filled.

I have in this thesis presented and discussed the informants' understanding of the term deep learning, linked this to theoretical definitions and material as well as the LK20 curriculum. Moreover, I have presented the terms place in the curriculum and discussed how teachers view the relevance of the term in the English subject. Furthermore, I have presented some benefits and challenges that the informants in the study experienced working with deep learning in their practice. Additionally, I have discussed ways of improving the main finding of the study, which was a distinct variation in the ways of defining the term deep learning. Through this work I thereby believe I have answered my thesis questions successfully.

7.1 Limitations to the Study

Because this study was on a smaller scale with only four informants, one cannot draw conclusions from this research on behalf of all English teachers in Norway. The findings do not necessarily represent the situation in all Norwegian schools. Even though there is no way to determine whether the results are representative for English teachers in general, the aim of the study was to explore teachers understanding, and the four qualitative interviews made it possible to explore the different views, opinions and experiences these teachers had in-depth. The teachers in the study were all from different schools, and therefore represent four different school cultures and practices.

Another element that could be considered as a limitation to the study is the Covid-19 pandemic. Firstly, because of the pandemic, two of the interviews were done on digital platforms, and this might have influenced the outcome of the interviews. The informants that were interviewed via Zoom might have been affected by the situation and answered more shortly to the questions or expressed themselves less freely. The digital interview situation

may not create the same safe environment as can be established when meeting in person. Still, through the digital interview, the informants body language and expressions are revealed, and in that sense, there is not much of a difference than the in-person interviews. In addition to this, the topic of the interview was professional and not personal or sensitive, and therefore not necessarily uncomfortable for the informant. The interviews were also done almost a year after the first Covid lockdown and the informants therefore had experience using these digital platforms when the interviews were conducted. Consequently, I do not view this as a major limitation to the study.

Secondly, the informants that worked in schools where there were higher incidences of Covid may have had even less time to gain experience with deep learning work. Two of the informants worked at schools in the Oslo-area, which was generally more affected by Covid. The lack of work with the curriculum renewal within the school could be even more significant in these schools. Nevertheless, the results from the interviews showed that all the informants experienced a lack of time, and they expressed a wish for more time for cooperation, planning and curriculum-work.

An additional factor that can be considered as a limitation to the study is the fact that the interviews were conducted in Norwegian. The reason I made this choice was because I believed that the informants would express themselves better and be more secure in the vocabulary connected to this topic in Norwegian. The interviews therefore had to be translated by me after the transcription was made. These translations can be viewed as flawed, as my understanding of the conversation is made through my own experiences and therefore might affect my choice of words and translations (Temple & Young, 2004). I aspired to make my translations as neutral and objective as possible, but some situations occurred where I found terms or words difficult to translate. I did note down in the text when translations were made by me, and I emphasized when words were challenging to translate. Overall, the impression of the interviews can appear differently when it is translated to English. I therefore believe that this is a limitation to the study, but I still feel certain that executing the interviews in Norwegian was the right decision in connection to this study.

A few more concerns in relation to the study, as mentioned previously, is firstly that the informants knew the topic of the study beforehand from the recruitment letter. The informants received information on the topic of the study before agreeing to partake, which might have affected whether they accepted or not. It is possible that they accepted because they felt that they felt confident in the topic of deep learning. Considering that the recruitment letter was

sent to several teachers and only a few of accepted, this could mean that the group may not be representative for all English teachers. Because they knew the topic beforehand, they also had time to prepare and an opportunity to read up on deep learning, and could therefore appear to have more knowledge on the topic than beforehand.

7.2 Suggestions for Further Study

There are several areas for further research that would be interesting to explore in relation to the topic of this thesis. Firstly, as mentioned previously in the text, the findings regarding the informants' focus on cross curricular work when it comes to deep learning could be interesting for further exploration. As mentioned in chapter 6.1.3., some of the teachers connected deep learning to previous cross curricular work or project work. A larger scale study, focusing on the understanding of deep learning in relation to cross curricular work as well as the interdisciplinary topics in the curriculum, could help map out and unravel some of the challenges within the comprehension of these elements in the curriculum.

Secondly, it would be interesting to conduct a larger scale survey or quantitative study on how teachers view and practice deep learning in their classroom. This could determine whether this study's findings can be recognized in a larger scale study. A quantitative study could help point out whether teachers have similar or varying understandings of the term deep learning and point out statistic patterns within their interpretations of the term. In general, more research on Norwegian teachers' views on the curriculum and how they implement it into their practice would give a good deal of important information in order to suggest improvements and uncover flaws within the LK20.

As this study focuses on teachers only, it could be useful to research how students experience deep learning in the classroom. This could be a qualitative study exploring students experience with deep learning, examining their awareness of the term, and whether they have experienced changes their classes after the curriculum renewal. This could also be done in addition to teacher interviews, or as an observation study, for the purpose of gaining more insight on the classroom practice with focus on the learners.

Finally, a study focusing on Udirs' resources, how they are utilized and perceived by teachers could also be interesting. The interviews in the current study were not focused directly on Udir and their resources, but the results have shown that the informants' main source of

information on deep learning was the curriculum and Udirs web pages. Therefore, new research could further examine the work that teachers and schools are conducting related to the curriculum which consequently could help map out areas for improvement within Udirs' resources. Additionally, it would be interesting to further explore teachers' opinions on and perceptions of the curriculum renewal, considering this study displayed opinions that LK20 was not that different from the previous curriculum. Further study could possibly uncover how much emphasis the teachers put on the new elements in the curriculum, and if they are aware of the changes that are presented in the renewal.

These suggestions could ultimately contribute to teachers gaining an overall, equally based, understanding of deep learning, thereby making students equipped with the necessary skills and knowledge for their future endeavors.

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Appendices

Appendix 1: Interview Guide

Appendix 2: Recruitment Letter

Appendix 3: NSD Approval

Appendix 1: Interview Guide

Intervjuguide «Deep Learning – Deep Waters?»

<p>Del 1 Start: Rammesetting</p> <p>Ca 5-10 min</p>	<p>1. Løs, uformell prat</p> <p>2. Informasjon</p> <ul style="list-style-type: none"> - Jeg forteller litt om bakgrunnen for oppgaven, og kort om formålet med oppgaven. - Jeg forklarer at intervjuet blir anonymisert og hvilke opplysninger som blir tatt med i oppgaven - Jeg informerer om at jeg vil ta lydopptak av intervjuet - Hvis ikke dette er gjort på forhånd, signerer informanten samtykkeskjema (som skal være lest gjennom på forhånd) - Jeg starter opptaket
<p>Del 2: Erfaringer og forståelse</p> <p>Ca 20 min</p>	<p>Startsspørsmål:</p> <ul style="list-style-type: none"> - Hvor mange år har du undervist i skolen? (hvor mange som engelsklærer?) - Hvilket trinn er du engelsklærer på? (hvor mange klasser har du?) <p>Hovedspørsmål:</p> <ul style="list-style-type: none"> - Hva visste du om dybdelæring før det kom på læreplanen? - Hvordan vil du definere dybdelæring? <p>Oppfølgingsspørsmål:</p> <ul style="list-style-type: none"> - Når hørte du først om dybdelæring? - Hadde du selv reflektert over om du drev med dybdelæring? - Hva vil dybdelæring si i engelskfaget? - Hvorfor er dybdelæring viktig? - Har dere diskutert dybdelæring i plenum blant lærerne på skolen? - Har dere fått noe «opplæring» i dybdelæring? - Har du selv satt deg inn i dybdelæringsbegrepet ved å lese deg opp? (I så fall – hvordan/hvor har du fått informasjon)
<p>Del 3: Meninger</p> <p>Ca 15 min</p>	<p>Hovedspørsmål:</p> <ul style="list-style-type: none"> - Hva syntes du om fokuset på dybdelæring i den nye læreplanen? - Hvordan syntes du det er å undervise med fokus på dybdelæring?

	<p>Oppfølgingsspørsmål:</p> <ul style="list-style-type: none"> - Syntes du begrepet er tydelig beskrevet i læreplanen? - Føler du at du forstår hvordan du skal ta i bruk dybdelæring? - Syntes du det er utfordrende med dybdelæring i praksis? (Hva) - Ser du på bruk av dybdelæring i undervisningen som viktig? (hvorfor/hvorfor ikke) - Hva syntes du er vanskelig med dybdelæringsbruk i engelskfaget? - Er det lettere å fokusere på dybdelæring når det er færre kompetansemål?
<p>Del 4: Utøvelse/Praksis</p> <p>Ca 20 min</p>	<p>Hovedspørsmål:</p> <ul style="list-style-type: none"> - Hvordan tar du i bruk dybdelæring i din engelskundervisning? - Hvor mye fokus har du på dybdelæring i din undervisning? <p>Oppfølgingsspørsmål:</p> <ul style="list-style-type: none"> - Hvordan bruker du dybdelæring/ kan du gi et eksempel? - Vet elevene dine hva dybdelæring er? - Har du vært tydelig overfor elevene at de driver med dybdelæring i de situasjonene de har tatt det i bruk? - Tenker du på dybdelæring når du planlegger timer? - Hvor ofte vil du si du har lagt opp til dybdelæring i engelsktimene? - Har dette vært vellykket? (hvorfor/hvorfor ikke) - Føler du du har tid til å bruke dybdelæring i faget? - Føler du du har kompetanse til å bruke dybdelæring i faget?
<p>Avslutning Del 5: Tilbakeblikk</p> <p>Ca 5-10 min</p>	<p>Oppsummering:</p> <ul style="list-style-type: none"> - Jeg oppsummerer i korte trekk - Jeg spør informanten om jeg har forstått dem riktig ut ifra oppsummeringen <p>Spørsmål:</p> <ul style="list-style-type: none"> - Er det noe du vil legge til? - Har du du vil endre på av det du har sagt? - Er det noe du tenker jeg burde ha spurt om?

Vil du delta i forskningsprosjektet

«Deep Learning – Deep Waters? A Study of Deep Learning in Norwegian Middle School from Theory to Practice»?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å finne ut mere om bruken av dybdeløring i engelskfaget på ungdomstrinnet. I dette skrivet gir jeg deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

I denne masteroppgaven skal jeg ta utgangspunkt i dybdeløringsbegrepet fra den nye læreplanen, og se nærmere på teorier og definisjoner som ligger bak begrepet. Jeg skal sette opp teorien mot hvordan dette begrepet brukes i praksis av engelsklørere. Jeg vil da prøve å finne ut hvordan lærere forstår begrepet og hvordan de jobber med dybdeløring, fra læreplan til klasserom.

Hvem er ansvarlig for forskningsprosjektet?

OsloMet ansvarlig for prosjektet. Jeg har gått bachelor på grunnskolelører 5-10, og skriver nå master på programmet Skolerettet Utdanningsvitenskap med hovedfag i engelsk.

Hvorfor får du spørsmål om å delta?

Jeg har valgt å intervju engelsklørere på forskjellige skoler i landet, og velger ut ifra egne referanser.

Hva innebærer det for deg å delta?

Du trenger ikke å forberede noe før intervjuet. Metoden er kvalitativt intervju, og jeg tar i bruk lydopptak og notater under intervjuet. Hvis du velger å delta i prosjektet, innebærer det at du intervjues, enten via zoom eller fysisk møte. Det vil ta mellom 45 – 75 min. Jeg vil stille spørsmål som omhandler den nye læreplanen, engelskfaget, pedagogikk og didaktikk med fokus på dybdeløring. Jeg er kun ute etter din erfaring med tema. Opplysningene registreres ved hjelp av lydopptaker, lagres på OsloMet sin lagringsdatabase, og slettes etter prosjektet er ferdig.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan jeg oppbevarer og bruker dine opplysninger

Jeg vil bare bruke opplysningene om deg til formålene jeg har fortalt om i dette skrivet. Jeg behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

Det er kun meg som vil ha tilgang til opplysningene. Navn og kontaktopplysninger vil bli anonymisert i oppgaven. Du vil ikke kunne gjenkjennes i publikasjonen. Opplysninger jeg kommer til å ha med er hvor i landet skolen du jobber på ligger, ca hvor mange år du har drevet med undervisning, og hvilket trinn du jobber på.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Opplysningene anonymiseres underveis i transkriberingsprosessen og prosjektet avsluttes etter planen i slutten av 2021. Opptakene slettes ved prosjektslutt.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene,
- å få rettet personopplysninger om deg,
- å få slettet personopplysninger om deg, og
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra OsloMet har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Oslomet ved Anne Cecilie Løkling, e-post: s313480@oslomet.no, eller veileder Siri Mohammed Roe, e-post: sirimoh@oslomet.no
- Personvernombudet ved Oslomet: Ingrid S. Jacobsen, e-post: personvernombud@oslomet.no

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

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

Med vennlig hilsen

Anne Cecilie Løkling

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet, og har fått anledning til å stille spørsmål. Jeg samtykker til:

- å delta i intervju

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

(Signert av prosjektdeltaker, dato)



NSD sin vurdering

Prosjekttittel

Masteroppgave i Skolerettet Utdanningsvitenskap

Referansenummer

129459

Registrert

15.10.2020 av Anne Cecilie Løkling - s313480@oslomet.no

Behandlingsansvarlig institusjon

OsloMet – storbyuniversitetet / Fakultet for lærerutdanning og internasjonale studier / Institutt for grunnskole- og faglærerutdanning

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)

Siri Mohammad Roe , sirimoh@oslomet.no, tlf: 67238470

Type prosjekt

Studentprosjekt, masterstudium

Kontaktinformasjon, student

Anne Cecilie Løkling, annececilius@gmail.com, tlf: 90109137

Prosjektperiode

13.10.2020 - 15.11.2021

Status

01.07.2021 - Vurdert

Vurdering (2)

01.07.2021 - Vurdert

NSD har vurdert endringen registrert 01.07.2021.

Vi har nå registrert 15.11.2021 som ny sluttdato for behandling av personopplysninger.

I tilfelle det skulle bli aktuelt med ytterligere utvidelse av den opprinnelige sluttdato (30.06.2021), må vi vurdere hvorvidt det skal gis ny informasjon til utvalget.

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

Lykke til videre med prosjektet!

27.10.2020 - Vurdert

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 27.10.2020, samt i meldingsdialogen mellom innmelder og NSD. Behandlingen kan starte.

DEL PROSJEKTET MED PROSJEKTANSVARLIG

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

MELD VESENTLIGE ENDRINGER

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

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

Du må vente på svar fra NSD før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 30.06.2021.

LOVLIG GRUNNLAG

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

PERSONVERNPRINSIPPER

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

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

DE REGISTRERTES RETTIGHETER

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

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

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

FØLG DIN INSTITUSJONS RETNINGSLINJER

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

Zoom er databehandler i prosjektet. NSD legger til grunn at behandlingen oppfyller kravene til bruk av databehandler, jf. art 28 og 29.

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

OPPFØLGING AV PROSJEKTET

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

Lykke til med prosjektet!

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