

Teaching them the way they learn

A comparative study of dyslexia support
in dyslexia friendly schools and general schools in Norway

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IV

Abstract

Dyslexia is a learning difficulty that affects accuracy and fluency of reading and spelling abilities (Rose, 2012). A large body of research related to dyslexia itself has been conducted. However, there are no perfect answers yet regarding how best to support dyslexic people since there is a lot of individual variety in the difficulties experienced. *Dyslexia friendly schools* are specialized in supporting students with dyslexia. There are 125 such schools in Norway (Dysleksi Norge, 2020), and the number has been increasing dramatically since 2016.

This research was qualitative and was focused on teachers' competence in supporting dyslexic students and the impact of teacher training. The aims of this research were to clarify whether development of expertise has an impact on dyslexia support and what kind of support was felt to be effective. In addition, the differences in implementation between dyslexia friendly schools and general schools were also examined. Vygotsky's Cognitive Development Theory gives a perspective on how skilled teachers contribute to dyslexic students to achieve difficult tasks, while Rose's model of Removing Barriers to Achievement explains the importance of structured expertise in each school in terms of effective interventions.

The main findings indicated that ICT support could reduce both students' burden and teachers' struggles. It was also significant for teachers to take professional development training and update their expertise because appropriate knowledge about dyslexia support gave teachers confidence. However, there were several obstacles to taking additional training. Content and approaches to additional training also had a significant impact upon teachers' motivation.

This study concluded that the key factor to successful dyslexia support was cooperation and development of expertise. Therefore, it is recommended that a community, a school, teachers and parents should share expertise to work together for dyslexic students. Further, schools should understand the importance of additional training whilst course providers should also consider the specific needs of the teachers.

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List of abbreviations

- BDA – The British Dyslexia Association
- DAYSY – Digital Accessible Information System
- DFS – Dyslexia Friendly School
- EEA – The European Economic Area
- EU – The European Union
- GS – General School
- ICT – Information and Communication Technology
- IDA – International Dyslexia Association
- IQ – Intelligence Quotient
- NAV – *Ny-Arbeids- og Velferdsforvaltning*
(the Norwegian Labor and Welfare Administration)
- NSD – *Norsk Samfunnsvidenskabelig Datatjeneste AS*
(the Data Protection Office for Research)
- PPT – *Pedagogisk-Psykologisk Tjeneste*
(Pedagogical Psychology Service)
- SEN – Special Education Needs
- UNESCO – United Nations Educational, Scientific and Cultural Organization
- ZPD – Zone of Proximal Development

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1 Introduction

Inclusive education is a relatively new movement in educational history. The United Nations International Year of Disabled Persons in 1981 emphasized that all people, with or without disabilities should be able to participate fully in society (Hornby, 2014). The Salamanca statement on special needs education (UNESCO, 1994) contributed significantly to the development of inclusive education significantly. This statement recommended that children with disabilities should be educated in mainstream schools.

Those with special educational needs must have access to regular schools which should accommodate them within a childcentred pedagogy capable of meeting these needs, (The Salamanca statement,1994, p.8)

Over the past 20 years, movement toward the ‘inclusion’ of children with special needs in mainstream schools and classrooms has gained momentum (Hornby, 2014). To maintain the quality of inclusive education, teachers must be competent and confident enough to provide effective support to all unique and vulnerable learners. In order to distribute effective support, development of expertise is essential. According to Bell (2013), professional development training is a central factor in developing teachers’ self-confidence in the classroom. Formal training is often more highly prioritized than informal staff development by teachers. Professional development training requires a commitment to providing teachers with the necessary time both to learn significant knowledge and to reserve their personal time (Bell, 2013).

Dyslexia is a term which signifies learning difficulties associated with reading, writing, spelling. Significant numbers of students with dyslexia struggle at school because of a lack of awareness and knowledge about dyslexia (Dyslexia International, 2014). Research¹ shows that 90 percent of dyslexic students can learn in the mainstream classroom if they have appropriate early dyslexia intervention by trained teachers (Dyslexia International, 2014). Currently, however, there are still a lot of teachers who struggle to support their dyslexic students. Therefore, it is significant to determine appropriate interventions and how teachers

¹ Dr. Harry Chasty speaking at the European Parliament’s European Children in Crisis Action for Dyslexia Consultative Conference, 1994.

can develop their expertise. This study, therefore, will examine how to achieve inclusive education for dyslexic students, and whether professional development training has an impact on students and teachers.

This thesis will focus on importance of development of expertise for supporting dyslexic students. It will be significant to make it clear that expertise has an impact on dyslexia support and what kinds of expertise are more useful in practice. In addition, dyslexia friendly schools in Norway (Appendix D) will be studied. The concept of ‘dyslexia friendly schools’ is interesting, so it will be examined whether there are significant differences between dyslexia friendly schools and general schools.

This chapter presents an overview of this thesis. The rationale of the study explores the reasons why dyslexia will be focused on, why development of expertise is important, why dyslexia friendly schools will be focused on, and the reason this research will be conducted in Norway (1.1). Research questions which will be stated (1.2) are important to show the purpose of this thesis. Then, an overview of methodology will be explained (1.3) to show what approach will be chosen and how this research will be conducted. The structure of the thesis will be described (1.4) in order to lead readers through this thesis smoothly.

1.1 Rationale of the study

This section will introduce the four rationales of this study. It is significant to make clear what this thesis will focus on and why this study is necessary. Rationales for the study concern dyslexia itself, development of expertise, dyslexia friendly schools in Norway and why this study needs to be conducted in Norway.

1.1.1 Dyslexia

Dyslexia is a learning difficulty that primarily affects the skills involved in accurate and fluent reading and spelling (Rose, 2012, p.9). Dyslexia is a label which signals an individual’s need for various types of support such as teaching approaches, assessment needs, support tools, curriculum variation, school management, and family involvement.

According to International Dyslexia Association (IDA)(2018), as many as 15-20% of the population worldwide and 13-14% of school population all over the world have some of the symptoms of dyslexia, for instance, a combination of abilities and difficulties that affect the learning process in reading, spelling and /or writing. Accompanying weaknesses may be identified in speed of processing, short-term memory, sequencing, auditory and /or visual perception, spoken language and motor skills (Peer, 2001). Although one in ten people in a society has some problems associated with dyslexia, their difficulties tend to be overlooked. Additionally, not all symptoms appear in isolation. Some of them, such as low level of general knowledge, slow processing speed, hesitation in oral reading or poor- short-memory are often misunderstood by teachers or parents (Peer & Reid, 2013).

Even in countries that have studied further and receive more institutional support, such as the UK or Norway, early identification is difficult. Some specialists believe that screening tests in the first grade of school is unreliable, and it is better to notice those making poor progress in comparison with their typically developing peers (Rose, 2009). However, a teacher, tutor, or therapist specially trained in using a multisensory, structured language approach are helpful for people with dyslexia so they can help students improve at their own pace (IDA, 2018). According to *Dysleksi Norge* (2015), which is an organization for dyslexia support in Norway, appropriate early intervention improves dyslexic students' performance. In other words, with proper support, and early identification, individuals with dyslexia will be able to achieve better results in school. Therefore, a study of dyslexia is important to explore the support being given and suggest how this support can be improved.

1.1.2 Development of expertise

For dyslexic students, achievement depends upon quality of support, and quality of support depends upon educators who are equipped to deal with dyslexia. It is essential for the professionalism of a teaching career to cultivate individual values, identities, and work as teachers. It is, however, also important for teachers to improve their own practice with feedback (Pollard, 2018). The importance of development of expertise should be emphasized because the quality of education depends on the quality of teachers. Moreover, the development of expertise has several impacts for not only individual teachers' expertise, but also for teachers' motivations, leadership, and contributions to schools (Richardson, 2014 &

Sheena, 2013). Simply, staff development is also able to motivate teachers to develop their own personality and career (Sheena, 2013). What teachers actually have learned from a training will be reflected in schools directly.

It is significant for teachers to understand current perceptions, identification procedures and teaching strategies recognized as being successful for dyslexic students (Peer & Reid, 2013). In order to attain students' academic and social aspects of development, schools should ensure that they provide the specific needs and individual goals for dyslexic students (Tod & Fairman, 2001). Such individual targets should extend learners' potentials and possibilities as well as motivation and confidence. Development of expertise is essential in order to provide individual education plans for each dyslexic student, in terms of knowledge for customized arrangement skills by teachers (Peer& Reid, 2013).

Another key factor which needs to be discussed in relation to the development of expertise is to create the best learning environment for all students. When educators give appropriate instructions and support to students who need help, it minimizes the risk for demotivation and learned helplessness that can arise from an inability to face some tasks (Peer& Reid, 2013). At the same time, this environment should be beneficial for non-dyslexic students, as teachers must have enough time to support all students equally in a class. This support should also contribute to creating better learning environments with dyslexic students. Dysleksi Norge (2019) mentions teacher's competence clearly.

Skolen har planer som sikrer kompetanseheving av lærerne på områdene: lese- og skrivevansker og IKT-hjelpemidler. [The school has plans to ensure that teachers have competence in the areas of reading and writing difficulties and ICT aids.] (Dyleksi Norge, 2015, p.106)

It is essential for teachers to have competence in areas of dyslexia. Not only teaching techniques, but also Information and Communication Technology (ICT) aids cannot be ignored because all dyslexic students have a right to be provided a fund in order to buy a computer by *Ny-Arbeids- og Velferdsforvaltning* (NAV) (Appendix D) for their study support. In addition, curriculum differentiation and the development of appropriate individual education plans are necessary for dyslexia (Peer & Reid, 2013). Understanding each student's situation and giving appropriate support and teacher training will provide knowledge, skills and confidence to teachers.

By developing expertise, students with dyslexia will be able to follow the other classmates or even perform better than others (Rose, 2009). For that, understanding and encouragement for development of expertise are essential.

1.1.3 Dyslexia friendly school

Available support for dyslexic students varies greatly between countries. Finland focuses on language problems and about 65% of all students who have difficulties in this area receive part-time special education needs (SEN) support (Ogden, 2014). In Norway, however, oral communication and language problems are not a priority in SEN field to the same extent. However, dyslexia is also considered a significant difficulty which requires special support. According to Dysleksi Norge (2015), reading and writing difficulties have never been supported even if there is broad political agreement on the need for the commitment in Norway. Even though many schools have engagements, plenty of competence and good practice, there are big differences between each school. Therefore, Dysleksi Norge (2015) claims it has taken leadership to improve this situation.

Dyslexia friendly schools in Norway started as the project '*En dysleksivennlig skole*' in 2005. Originally, Dysleksi Norge was inspired by 'dyslexia friendly schools' of the British Dyslexia Association (BDA). Dyslexia friendly school is a qualified school that can provide better support for dyslexic students. They are neither special needs education schools nor private schools. The majority of students in dyslexia friendly schools are students who do not have reading and writing difficulties, and most of teachers working there are general teachers. In order to be approved as a dyslexia friendly school, a general school must meet 10 criteria which Dysleksi Norge provides.

According to Dysleksi Norge (2019), during its first 10 years (from 2006 to 2015), 26 schools have been certificated as dyslexia friendly schools. They mentioned in 2015, about 5 to 10 schools were qualified each year in the past, however, according to the latest information on their website (Dysleksi Norge, 2019), the number of dyslexia friendly schools has been increasing dramatically. In fact, there are 103 schools (including 1 Norwegian international school in Spain) in October 2019 (see Table 1).

Table 1: The number of new dyslexia friendly schools per year

Year	Number of new DFS (2019)
2006	1
2008	1
2009	1
2010	1
2011	3
2012	5
2013	3
2014	4
2015	7
2016	13
2017	28
2018	20
2019	16
Total	103

Source: Dysleksi Norge (2019)

Dysleksi Norge (2015) claims that they have built up considerable expertise in the field, which they convey through their online course or through individual assignments at schools. They also have good contact with the academic environment and generally have an overview of where competence exists so that they can guide schools in the right direction. They also mention that dyslexia friendly schools need various kinds of materials for students' support.

Skolen har et bredt læremiddeltilbud slik at alle elever har tilgang til alt fagstoff.

[The school has a wide range of teaching materials so that all students have access to all subject matter.] (Dysleksi Norge, 2015, p.106)

These materials include ICT, audiobooks, scanning of textbooks and several education programs (Dysleksi Norge, 2015). These materials should be distinct differentiations from general schools. In other words, it is assumed that dyslexia friendly schools provide better educational materials for students with dyslexia. Dysleksi Norge also has its own dyslexia support training courses for dyslexia friendly schools. Therefore, it is assumed that teachers working at dyslexia friendly schools have more experience with teacher training for dyslexia, and that this contributes to their expertise.

If Norwegian dyslexia friendly schools show the positive effects in terms of creating a better learning environment for learners with dyslexic difficulties, they could prove to be a significant model case for other countries which are struggling to support students with dyslexia. Therefore, this study about a case in Norway shows an interesting potential for other countries which have challenges in their better education environment. In addition, it would be useful to learn what actually works best if they are certificated as dyslexia friendly schools, and whether it really does impact upon teacher expertise and the effective support of their students. As mentioned above, the number of dyslexia friendly schools has increased significantly in recent years. It would be important to know whether the reason more schools apply for being a dyslexia friendly school is based on the actual distinct results or a passing trend.

If dyslexia friendly schools encourage their staff to attend additional trainings and support them in practice, it is possible to say that dyslexia friendly schools give an advantage in the development of teachers' expertise. A study about dyslexia friendly schools will show unique points of view to pursue an equal educational environment towards both learners and educators.

1.1.4 Norway

This research will be conducted in Norway. Norway is a constitutional monarchy in Europe which is located on the northwestern part of the Scandinavian peninsula and shares the border with Sweden, Finland and Russia. The size of the country is 385,307 km² including a long coastline and over 230,000 islands. The population is about 5,300,000 in 2018. Residence in urban areas is increasing and 82% of the population is in urban settlements. Especially, one-fifth of the population lives in Oslo, the capital. (Statistics Norway, 2019).

Norway is not a member of the European Union (EU) but is a member of the European Economic Area (EEA) and has agreements of trade, workforce and education between EU countries. Norway is one of the richest countries in the world, in large part due to its strong industrialization. Approximately 553,000 people are employed in secondary industries, including oil extraction and electricity and water supplies. Children in Norway are guaranteed equal education opportunities. Not only the Ministry of Education and Research, but also

Ministry of Children and Families takes the overall responsibility for children welfare services and childhood development (Regjeringen.no, 2019).

Norway was chosen for this study because local schools in Norway have a long experience with dyslexia support and there are several organizations that have been working for dyslexic people, their families and teachers. The percentage of people with dyslexia and dyscalculia aged 15- 66 years in Norway is 6.6% (Statistics Norway, 2019). Norway has dyslexia friendly schools and the number of dyslexia friendly schools has been increasing recently. It is interesting to verify the fact whether the concept ‘dyslexia friendly school’, which originally is from the UK, works in Norway as well. If the challenge which is inspired by the UK works in Norway, it will be a good model for other countries to introduce dyslexia friendly schools in their community. Especially, it might be a good opportunity for other Scandinavian countries to adopt dyslexia friendly schools, because they have a lot of similarities to Norway in terms of social systems, education and culture (Store Norske Leksikon, 2019). Hence, this study is worth conducting in Norway in order to reveal the outcomes of dyslexia friendly schools. This can then be used as a model case.

Figure1: Geography of Norway and position of Oslo, Akershus and Oppland



Source: Store Norske Leksikon (2019)

1.2 Research aims and research questions

There are several SEN support organizations (including dyslexia) in Norway. As mentioned above, the number of dyslexia friendly schools is growing year by year. There seem to be specific reasons for dyslexia friendly schools being popular. Therefore, the aims of this research are to clarify which reasons are behind this trend, to investigate implementation gaps of dyslexic students' support between dyslexia friendly schools and general schools, and to contribute to a discussion about whether it is important to develop educators' expertise in the area of dyslexia. In order to fulfill the aims, I have three research questions;

1. What are the similarities and differences between dyslexia friendly schools and general Schools in Norway?
2. What impact does teacher expertise have upon teaching dyslexic students?
3. What influences does Continued Professional Development (CPD) have on teachers with dyslexic students?

1.3 Methodology

Comparative design will be chosen as a research design as it is worth studying two contrasting cases between dyslexia friendly schools and general schools in Norway. This design embodies the logic of comparison when two or more contrasting cases are compared (Bryman, 2015). As research methods, qualitative interviews and the collection and analysis of text will be conducted. A qualitative interview is flexible and semi-structured and is expected to provide rich and detailed answers (Bryman, 2015). In this research, semi-structured interviews will be held with dyslexia friendly schools and general schools in Norway so that great interest in the interviewee's point of view will be collected. As an analytical method, thematic analysis which is one of the major approaches to qualitative data analysis will be used. According to Matthews and Ross (2010), thematic analysis is a working process with the raw verbal or visual data which have been gathered from the research. In order to describe ideas from the collected data, themes which are words and phrases are focused on (Guest, MacQueen & Namey, 2011). Codes are linked to raw data and used for later analysis (Matthews & Ross, 2010). Therefore, thematic analysis will be applied as an analytical method in this research.

1.4 Structure of the thesis

This chapter has presented the rationale of this study. Following this, chapter 2 consists of a literature review that presents the wider context regarding dyslexia, development of expertise, inclusive education and utilizing of ICT for dyslexia support. Chapter 3 introduces Vygotsky's Cognitive Development Theory and Rose's model of Removing Barriers to Achievement as theoretical frameworks, which will lead this study. Chapter 4 describes the methodological choices and the study design. Validity and reliability, ethical issues and delimitations are also mentioned in this chapter. Chapter 5 reviews findings regarding the data which was collected during the fieldwork, followed by a discussion of the results in Chapter 6. The conclusion is presented in Chapter 7 as a summary of this thesis with recommendations for policy-makers and future research.

2 Literature Review

This chapter presents an overview of the literature relating to dyslexia itself (2.1) and discusses the potential of the contribution by dyslexia friendly schools (2.2). Then, the discussion will be extended to inclusive education (2.3). Development of expertise (2.4) will be explored through several different perspectives, such as its general definition and impact, application to dyslexia support and possible issues. In addition, the chapter goes through utilizing ICT for dyslexia support (2.5), and concludes with a brief summary (2.6). The chapter begins by addressing the issue of defining dyslexia.

2.1 What is dyslexia?

2.1.1 Characteristics of dyslexia

Dyslexia is difficult to define precisely because several difficulties may exist as symptoms of dyslexia. IDA (2012) defines dyslexia as referring to a cluster of symptoms: People having difficulties with specific language skills, particularly reading, and usually experience difficulties with other language skills such as spelling, writing, and pronouncing words. Historically, literacy difficulties were focused on adults in the latter half of the nineteenth century, and dyslexia first was reported in children in 1896. In the 1920s, dyslexia was believed to be caused by the visual difficulties which resulted in the reversals of letters and words. Subsequent research has revealed that dyslexia is not a visual problem, but a linguistic one (Shaywitz & Shaywits, 2003).

As common difficulties, reading and writing problems are caused by cognitive impairments (Smythe, 2010). The primary difficulties of dyslexia are often connected with reading and spelling accuracy and fluency which relate to phonological difficulties². Phonological processing, including phonological awareness, verbal memory and verbal processing speed, are specific features of dyslexia, although phonological awareness is an essential skill for

² Phonological difficulties are problems that relates to an awareness of sounds and the characteristics of these sounds in words (Peer & Reid, 2013)

basic work-level reading and spelling development. Verbal memory is the ability of a phonological short-term memory to remember a list of instructions or words, and verbal processing speed is how long it takes to recognize letters and digits (Rose, 2009). In addition, organizational difficulties are also problems. For instance, it is difficult for dyslexics to connect knowledge that they have already learned with new knowledge. There are also discrepancies between students' abilities and skills. Even if students have excellent abilities in other subjects, heavy literacy difficulties may demotivate them from expanding their skills (Peer & Reid, 2003). Although common difficulties are related to reading and writing problems, some dyslexic people have coordination difficulties, such as using scissors or playing sports, as well. Therefore, it is essential to understand that individual symptoms of dyslexia are different and each person needs a different type of support (Smythe, 2010).

It is generally agreed that general abilities, intelligence, individual effort or socio-economic factors are not causally related to dyslexia (Smythe, 2010). Difficulties based on dyslexia can exist in children irrespective of their IQ and severe impact of dyslexia may be not resolved perfectly. It is commonly believed that dyslexia does not have an impact on their IQ. However, the difficulties may affect their intellectual abilities because poor readers spend less time in reading activities. As a result, reading difficulty affects the performance related to IQ even if intelligence is not directly impacted (Gus & Samuelsson, 1999). This secondary effect of reading disabilities can make the verbal IQ score of poor readers lower. Measures of IQ cannot predict how much literacy intervention affects outcomes. However, teachers can notice that there are some ability gaps between learners' oral performance and record in writing when they observe children who have reading and writing difficulties (Rose, 2009).

2.1.2 Diagnosis and treatment

Dyslexia is a persistent, chronic condition that stays with an individual their entire life. There is no perfect treatment for dyslexia. Drug treatment is not beneficial to improve dyslexia itself (Schulte-Körne, 2010). Defining the disorder and advising parents and teachers are recommended as an initial treatment. Treatment of core reading and spelling support and concurrent psychological disorders are possible solutions. International dyslexia intervention

studies have expanded effective dyslexia treatment programs, for example training phoneme³ awareness, relating spoken and written language at the sub-word level and explicit tutored instruction (Hakkaart, Goettsch, Ekkebus, Gerretsen & Stolk, 2011). However, the cost-effectiveness of these interventions nationally and internationally has not been reported. In addition, most students improve their reading and spelling difficulty very slightly although dyslexic children engage in regular, intensive support. Unfortunately, the reason for this is not yet apparent (Schulte-Körne, 2010).

The common features of dyslexia may appear at any age. Some realize the difficulties during childhood or adolescence, others notice it after reaching adulthood (Rose, 2009). The extent of the learning difficulty does not change suddenly, but it does get worse over time. Some people who manage the difficulties well during early school days may begin to struggle after years when the reading and writing demands at school increase. Poor readers often avoid reading and spelling development, and this may result in dissatisfaction and disengagement (Rose, 2009). Therefore, early identification and effective intervention are keys for support, and it is essential that quality support by the school and the home is provided as soon as possible (Evans, 2007). If they are given high quality intervention and family care-support, students might have strong oral language skills and the ability to maintain attention. On the other hand, poorer outcomes, such as severe phonological problems or co-occurring learning difficulties will be caused by poor teaching or late intervention (Rose, 2009).

Although early identification is generally regarded as the better way to lead dyslexic children successfully, it is hard to say when they should start to be screened. According to Rose (2009), some recommend that children should be screened for dyslexia in the first grade. Others insist that it is too early for the first-year children to be screened, and the results would be unreliable. Rose (2009) recommends three steps in order to identify and assess dyslexia. First, it is important to monitor children's language development carefully in the early stages. When difficulties related to literacy emerge and it affects their progress, specialists can try to make their situation better with specific study plans or advice to individual learners' needs. If the outcome of the skills assessment by specialists does not prove to be a solution, comprehensive assessment will be needed. Although there are different views towards early identification for dyslexia, early intervention has been shown to be a big success for students

³ Phoneme, in linguistics, is the smallest unit of speech distinguishing one word (or word element) from another (Encyclopedia Britannica, 2019).

with literacy difficulties. According to Dysleksi Norge (2015), if early support is conducted when students with dyslexia are grade 1 and 2, 80% of these students show a better result than other students who are diagnosed later. For example, when support begins in grade 3, the result is 50%, and only 10-15% good outcomes appear when the support is conducted from grade 5 (Dyleksi Norge, 2015). Therefore, it is important for class teachers to be provided with sufficient information about the difficulties and strengths of students with dyslexia. The information must be based on an accurate assessment in order to conduct appropriate support (Peer & Reid, 2003).

In summary, there are various symptoms of dyslexia and it is said that the perfect treatment and solution do not exist. However, appropriate early identification is effective. It is worth discussing when and how an assessment should be conducted and how we should minimize difficulties.

2.2 Dyslexia friendly school

If it is difficult to define dyslexia and to eliminate the difficulties. It might be accepted as a 'specific learning difference' rather than difficulties. Some children prefer mathematics to music. Some students are good at writing essays or making speech. Some children need help to read or to write. The Norwegian-American clinical psychologist, Ole Ivar Lovaas (1927-2010) said, "If they don't learn the way we teach, we must teach them the way they learn."

A school should recognize that all children have strengths and weaknesses, and they have various learning styles and preferences. Teachers must also understand that learning difficulties can be often regarded as learning differences in terms of methods, materials and approaches. Schools and teachers should understand all children are different and provide appropriate learning opportunities for all. Dyslexia friendly schools are expected to offer equal learning opportunities for both children with and without literacy difficulties (Reid & Fawcett, 2008).

'Dyslexia' is a label which can be helpful to inform teachers that the student needs appropriate teaching. It can, however, lead to a misunderstanding that only 'experts' must deal with dyslexia, and classroom teachers with less training and experience could be ill-

equipped to educate dyslexic students. The key factors to teach dyslexic students are knowledge and understanding of the type of dyslexic difficulties and the individual student's profile, such as their backgrounds, strengths and strategies (Reid, 2005). Therefore, class teachers with knowledge and experience with a variety of teaching materials are able to handle their students including their needs. The responsibility for teaching dyslexic students is under class teachers, not 'specialists' because class teachers have the advantage of clear students' profiles (Reid, 2005). Teachers should be aware of individual needs and students' learning styles. Evans (2007) identifies four essential factors for being good practitioners: "knowing the child; knowing and being enthusiastic about what you are teaching; being aware of the barriers to learning and developing ways to overcome them" (Evans, 2007, p.87).

There are some useful indications of a more dyslexia friendly school environment from other work in the inclusion area (Reid & Fawcett, 2008). Dyslexia friendly schools understand the specific learning styles of their students and are thus able to involve all students in learning opportunities. It is possible that the power of a dyslexia friendly approach can benefit all. In other words, 'dyslexia friendly' teachers and schools may enhance the learning of non-dyslexic students as well. In order to create such an environment, Mackay (2001) recommends to help rather than hinder, to support rather than confuse and to open doors rather than close them.

For this purpose, dyslexia friendly schools should offer opportunities for a number of teachers to undertake appropriate specialist training in supporting dyslexic students (Rose, 2009). Teachers should be provided with regular training and development of expertise to ensure that they gain the knowledge and skills to attain different learning needs (Mackay, 2001). The expertise of teachers can make it possible to balance empowerment and challenge within clearly understood patterns of strength and weakness. Dyslexia friendly schools also have a responsibility to provide specialist expertise in all local schools and authority areas. Dyslexia friendly schools should provide clear guidance on the purpose of the policy and interventions to parents (Rose, 2009). Additionally, dyslexia friendly schools have a significant possibility to fulfil inclusive education. All teachers should be experts who are looking for the best way of teaching an individual, and they should be offered opportunities to develop their expertise continuously. Dyslexia friendly schools also can be advisors in their community. Other general schools expect their advice because of the label as a dyslexia friendly school.

2.3 Inclusive education

The ideas and philosophy of inclusive education policy and practice in Norway have been influenced by the Salamanca Statement (UNESCO, 1994), which stated that students with special needs should have opportunities to learn at regular schools with an inclusive orientation, and that this is the most effective way to achieve Education for All (Ogden, 2014).

Students who received adapted education in their own class were more likely to achieve vocational or study qualifications compared to students who were educated in special classes or groups (Ogden, 2014, p.224).

This has proved that SEN students attending mainstream classes achieved better results and qualifications than students who attended special classes. As mentioned in section 1.1.3, dyslexia friendly schools are not SEN schools. They are general schools whose students are almost all non-dyslexic students. The difference is that teachers at dyslexia friendly schools are more familiar with dyslexia support. Well-trained teachers are able to expand students' abilities even if they are dyslexic. As mentioned above, more students are able to be educated together and it affects all.

Evans (2007) claims that an educationally inclusive school is an effective school which equips appropriate teaching and learning opportunities for the achievements and well-being of every student. They focus on not only students' performance, but also offering new opportunities to students with learning difficulties. This does not mean that everyone should be treated the same: equality of opportunity is not a case of providing the same opportunities for all children. Appropriate opportunities should be provided students depending on individual abilities and needs. Dyslexia friendly schools can realize inclusion because their teachers should be able to advise the best way to study for dyslexic students and it would affect well for all.

Professionals who receive special training can provide a need for students with dyslexia, and teachers should take training to update their skills and awareness of current research in all topics of special needs. However, initial dyslexia course for all teachers will be more practical as a preparation to improve literacy skills from the early ages and conduct appropriate support for children with reading and writing difficulties (Layton & Deeny, 1995).

It is hard to define inclusion or inclusive education exactly. According to Evans (2007), the views of inclusion in the Index by the Centre for Studies on Inclusive Education (CSIE) in the UK includes: equality of both students and staff; more participation of students, not exclusion; restructuring the cultures, policies and practices in schools to respect diversity of students; fewer barriers to learning and participation for all students; awareness that particular students' participation causes other students more benefit; schools' improvement for both students and staff; advantages of support learning between students; cultivating maintaining relationship between schools and communities.

Effective communication systems are important as a part of inclusion policy because it is essential to give and ask relevant information for students' support. School staff should be talking to each other about children with difficulties and share the problems they encounter, and the solutions they are implementing (Evans, 2007). Learning support across the curriculum with all subject teachers is also a recommendable strategy to handle students' difficulties (Layton & Deeny, 1995). There will be pressure on class teachers and SEN teachers once literacy difficulties have been recognized because they will be expected to remedy the difficulties and support their study in all subjects. All subject teachers need to consider taking action for the students' support because reading and spelling difficulties will affect their overall study, not just individual subjects (Layton & Deeny, 1995). According to Dysleksi Norge (2019), dyslexia friendly schools provide enough support tools and utilize them. This should contribute towards removing the barriers between each subject and make it possible to expand students' abilities. Dyslexic students can utilize support tools to follow their class so that everyone at the school can learn together.

As mentioned above 2.2, everyone is different in terms of personality, background, interest and learning styles. Learning difficulties should be treated with the best approach by schools and teachers. However, it is important for educators to understand that supporting dyslexic children will support non-dyslexic children as well (Reid & Fawcett, 2008). Dyslexia friendly schools can offer equal learning opportunities for both children with and without dyslexia and, as such, may be a model of inclusive education.

2.4 Development of expertise

2.4.1 The definition of development of expertise

Before discussing development of expertise, it is important to define human development as a fundamental of human beings. According to the psychologist Malcolm Watson, human development is a sequence of stages, and the processes invoke change and reorganization in humans throughout their entire life. Watson claims that ‘perspectives’ is the most interesting aspect when we discuss human development. A perspective is subjective and difficult to measure because it is strongly affected by what we experienced through life. When we analyze ‘development’, Watson suggests considering four factors: the essential nature of a human being; dynamics of development; inner self and the external environment and the characteristics and sequences of the development (Neufeld, 2009).

On the other hand, the definitions of professional development include: a means for an individual to update their knowledge and technological advancement in order to keep up with rapid change and an unstable modern workplace; lifelong learning for professionals and personal development; and a means for employers to maintain the standards of the workers’ professionals competence and variety (Hardy, 2012). Human beings have dynamics of the development, in brief, people desire to improve themselves and their environment in nature. Therefore, it is important for workplaces to understand all the activities during the training courses for professional development must be designed to enhance their work and career (Hardy, 2012).

Regarding teachers’ expertise, Berliner (1988) described that development of expertise in pedagogy as consisting of five stages: novices, advanced beginners, competent, proficient and expert. According to his theory, the first-year teachers become advanced beginner teachers by the fourth or fifth years of their career if they have any talent and motivation. The third stage, competence should be a goal enough to be a teacher although there is still room for them to improve themselves. After the fifth year, a modest number of teachers still maintain their interest and motivation to be proficient, and some of these proficient teachers achieve the highest stage, that of expert. Huberman (1993) also proposed five stages of teacher development in a different way: career entry, stabilization, experimentation, conservatism and disengagement. Both descriptions given by Berliner and Huberman claim that teachers’

expertise changes over the course of their career and their progress is voluntary, not compulsory. Professionalism through a teaching career is expressed through individual values, identities, and works as teachers. However, professionalism also needs to be underpinned by processes which enable teachers to routinely review and improve their own practices (Pollard, 2018). Education will succeed depending on teachers who know what they are implementing appropriately. As mentioned above, although it is essential that parents understand and take care of their dyslexic children, well-trained teachers have more impact for dyslexic students' support (Peer & Reid, 2003). Hence, development of expertise should be the main area of focus when dyslexia support is discussed.

2.4.2 Impact on development of expertise

The more experience teachers have, the more awareness of learning effective teaching knowledge and skills may be raised. It may make teachers more adaptable and understandable through the process of developing their personal qualities and self-understanding. Having sufficient opportunities to teach may also create a supportive work environment in terms of taking additional training, improving the school environment continuously in order to teach students well. (Hargreaves & Fullan, 1992). Provided opportunities to develop expertise with appropriate levels and timing, they will stimulate teachers' interest and deepen their expertise.

Teachers who attend staff development have various motivations. Teacher development has an impact on the personal development for individual teachers. Personal development connects with the teaching career itself. The majority of participants in a survey that study teachers' motivation desired to support students with learning difficulty to develop their self-esteem and confidence (Bell, 2013). School teachers wish to help their students deal with their study at school and avoid the potentially negative effects of dyslexia. The environment and conditions provided by schools also affect the process and success of teacher development. In addition to learner-focused motivation, teachers also consider connecting the staff development with personal and career development. Although there are not so many teachers who wished to financial benefit or promotion in this research, career ambitions also motivated some teachers (Bell, 2013).

It is also essential for teachers to know about the importance of professional development training and to get enough time to attend courses from their working place (Alam & Farid,

2011). The context of teaching is necessary to focus on the development because what teachers actually have learned will be reflected on schools directly. Therefore, school management should take an initiative, namely, leadership is an important factor as to whether the staff training will succeed or not (Richardson, Karabenick & Watt, 2014). When principals show support and promote staff development initiatives, it will motivate their teachers and encourage them to attend staff training and other activities. In other words, extrinsic incentives such as promotion and rewards are also able to become motivation (Alam & Farid, 2011). Moreover, effective leadership can also help to provide a supportive environment for staff development, for example flexible working schedules or having enough substitute teachers (Richardson, Karabenick & Watt, 2014). Understanding teachers' working environment will expand learning cultures among teachers and encourage them to work closely together and support each other. Hence, it is important for school management to consider offering both funding and scheduling when they encourage teachers to take professional development (Bell, 2013).

One of the most important impacts from additional training is the effect on implementation in practice. When teachers realize that they contribute to students through what they have learned, that teachers motivate to work and learn more. However, teachers do not show only positive responses after training. Depending on the contents, environment or the way to provide the course, some teachers may end up confused or demotivated in practice (Alam & Farid, 2011). For example, it is widely accepted that the skills- and knowledge-based forms of additional trainings have several advantages. It is focused on practical, understandable and usable skills for teachers to utilize with their own teaching situation. Knowledge and skills which teachers have learned through workshops will support their teaching in their own classrooms and contribute to improve levels of the use of the new skills continuously (Hargreaves & Fullan, 1992). This teacher development, however, has strong critics. In many cases, knowledge- and skills-based approaches are conducted as a top-down basis by 'experts' from outside their own schools. It is hard to involve the teachers and to hope for their commitment. It is also possible to risk generating teachers' resistance. In addition, when the repetition of new skills is conducted inflexibly and teachers are limited the degree or pace of adoption of those knowledge and skills, they feel a disrespect for their professionalism and judgement in their class (Hargreaves & Fullan, 1992). Schools should ask teachers with training to support their colleagues with the new skills so that the teachers motivate themselves and mitigate the pressure of 'top-down from outsiders'. Skills-based staff development also consumes too much time,

energy and resources. It also often happens that experts and researchers give much pressure to participants and they force teachers to implement the new skills out of context and appropriateness for the teachers' purpose.

2.4.3 Staff development for dyslexia support

Staff development is one of the main factors to identify dyslexia and support dyslexic students appropriately (Peer & Reid, 2003). It is important to raise teachers' awareness of teaching strategies and appropriate procedures in order to lead students with dyslexia successfully. Dyslexia is known worldwide and appropriate support is highly expected. Dyslexic students need to be given the attention of their learning (Peer & Reid, 2001). In practice, however, few schools have their own dyslexia specialists at schools. Therefore, schools should notice the importance of staff development, and those with expertise should share with their knowledge to all teachers in schools (Peer & Reid, 2001).

Initial dyslexia support training might focus on reading and spelling skills, with a perspective of appropriate support to children with dyslexia. Therefore, teachers who have primary students are considered to have an advantage to prevent literacy difficulties and to enhance spelling skills in all students. These teachers are expected to be better at predicting where problems can arise and prepare appropriate support to divert mild difficulties. They are also considered as being able to promote literacy skills in all primary children to a higher level (Layton & Deeny, 1995).

Rose (2009) claims that dyslexia friendly schools should provide teachers with short courses on teaching intervention programs which includes: the definition and characteristics of dyslexia; expertise on implementation; monitoring and evaluation of literacy interventions; publishing guidance on teacher training in order to advise other teachers delivering high quality dyslexia support; and link online training materials. For the purpose of providing appropriate advice for parents and utilizing resources effectively, a well-rounded understanding of literacy development is also necessary. This knowledge-based training must be included as a part of teacher education (Layton & Deeny, 1995). In order to fulfill this suggestion, dyslexia friendly schools should ask some appropriate organizations and the initial dyslexia support training sector to support building additional training courses for the purpose of strengthening SEN and dyslexia area and continuing professional development (Rose, 2012).

However, there are no perfect programs for dyslexia support. As mentioned above (2.1), dyslexic people suffer from various symptoms and it is very difficult to take care of them individually. In addition, dyslexia will not be cured, it will be managed as a personal feature throughout an individual's entire life. Although it is hard to find quick solutions, many recommendations for dyslexia support are appropriate individual education plans depending on each student's development. Peer & Reid (2003) also show the key factors of staff development and the possible approaches (see Table 2).

Table 2: The key factors of staff development and the possible approaches

The key factors of staff development	The possible approaches
An awareness of the different elements of dyslexia	What is dyslexia? - descriptions, definitions
Examples of dyslexia profiles	Case studies, profiles and examples of action
Individual education plans-resources	Curriculum planning, targets and assessment
Curriculum access through differentiation	Curriculum differentiation in different subject area
Communication with other professionals and parents	Communication-parents, professionals, and school staff
An acknowledgement of self- esteem in successful learning	Self-esteem, peer learning

Source: Peer & Reid (2003)

Peer and Reid (2003) also propose several specific staff development programs: a sound framework of the theoretical issues; an ability to link ongoing research with practice; experience and competence in practical aspects relating to the identification and teaching of learners with dyslexia; school-wide issues including assessment; examinations; time-tabling; learning styles and curriculum differentiation.

Rose (2009) claims that all teachers need to equip core skills and schools need several teachers with advanced skills. Also, several specialists in dyslexia must be in each local area. This is because every teacher has the possibility to teach children with SEN, and they need to support the students effectively. Some studies have reported that there are similar consequences whether an intervention is done through individual tuition or teaching in small groups. One-to-one teaching by experts is not always essential. The studies concluded that the

key element to gain a satisfying result was the quality of the teaching (Rose, 2009). Therefore, appropriate teacher training is essential in order to provide effective intervention and to find satisfying consequences. Therefore, Rose (2009) also recommends that dyslexia friendly schools should offer a number of teachers to undertake specialist training in order to contribute as an expert in all schools and authority areas.

2.4.4 Issues and consideration for teacher development

Teacher development is the learning and training opportunities that teachers should engage in proactively. Ideally, all teachers should attend several courses, implement the skills in practice, keep learning and keep up their motivation. It is, however, hard to expect several teachers' attendance and continuing their learning.

There are some barriers for teacher's attendance at professional development training: little time is available; the learning is fragment or discontinued; the contents of teacher trainings seem too general; few schools or teachers have responsibilities for intervention of dyslexia. These barriers are beliefs that teachers are inactive toward professional development, and fragmented (Hardy, 2012). As a result, one-shot workshops or just-in-case training have been common and experts provide lectures to teachers without taking into consideration specific school differences (Hardy, 2012).

As mentioned above 2.4.2, one example is a top-down process of teacher development which is directed by the management, with less involvement by teachers (Peer & Reid, 2003). This type of staff development is not compulsory, and teachers can choose what they learn from a menu of options. This might be a fragmented approach, which means that it is difficult to find relevance to their needs or previous study. This may be judged not to relate to teacher development on dyslexia, and some subject teachers who have a possibility to support dyslexic students will not select the course (Peer & Reid, 2003). A top-down staff development would mainly focus on the curriculum, not individual subject topics if more attendance is expected. Another example is the short-term and individual activities which dominate the majority of professional development (Hardy, 2012). Such teacher development is the 'default' mode in order to educate many teachers as passive attendants of training (Hardy, 2012). The cost of further training should also not be ignored. Additional funding should be prepared so that teachers can concentrate on high quality development of expertise (Rose, 2009). It is

important for schools to understand that expert support for individual students is not cheap, but it is essential for dyslexic students to reach their potential in education (Bell, 2013).

2.5 ICT for dyslexia support

2.5.1 The contribution of ICT for education

The impact of ICT has occupied our daily lives. More and more teachers and students have become familiar with ICT for schoolwork. Historically, technology has assisted individuals with disabilities in order to extend their abilities in ways that provide sensory access (i.e., Braille) and physical access (i.e., wheelchairs) (Roblyer, 2005).

Technology, however, is able to support students with SEN and their learning needs (Roblyer, 2005). It is widely accepted that both dyslexic students and teachers benefit from ICT.

According to Statped (Appendix D) (2017), in particular, students with dyslexia may have even greater benefits than others in developing their digital skills. In other words, it will be a significant loss if dyslexic students are not given the opportunity to develop digital skills.

Without technology, it is possible to say that students with reading and writing difficulties are deprived of equal learning opportunities (Statped, 2017). ICT can remove a lot of barriers and give more opportunities to access more information for the learners with dyslexia. The impact has been significant (Peer & Reid, 2001). Technology can make it possible to increase learning-friendly opportunities and extend their potential, and students with dyslexia will be able to be more productive and independent for their learning. As a remedy, technology contributes to improving performance or supporting individual learning. As a compensation, using technology makes it simpler to perform specific tasks (Roblyer, 2005). For example, technology can reduce a lot of obstacles such as poor spelling and handwriting when students work for their research, homework and projects. ICT makes it possible for students with dyslexia to demonstrate their actual ability (Thomson, 2008). ICT empowers people with reading and writing difficulties to control their individual learning styles and needs and lead them to achieve their goals.

When people emphasize the importance of ICT, some people believe that students who use ICT never learn basic skills. Dysleksi Norge (2015) claims that this idea is a serious

misunderstanding. They encourage students with reading and writing difficulties to be familiar with digital devices. They also mention that using ICT is also its own skill. The knowledge and skills help students with a learning difficulty to study independently.

There are many reasons why ICT contributes a lot for students with learning difficulties. It is, however, not perfect for all. ICT works the best if it is with appropriate users (Doering & Roblyer, 2010). Time is needed to choose effective programs for novices, especially children who need to learn ICT. In fact, it is unlikely to work if students are just given technology without help in understanding how it works in classroom routines (Doering & Roblyer, 2010). Rose (2009) claims that the core learning activities such as being productive, creative, and critical need to be produced by students themselves. It is important to remember that ICT is a compensation for learning skills, not a perfect tool to help the whole learning process.

2.5.2 ICT tools for dyslexia support

Computers enable people with dyslexia to engage in many learning activities that were previously impossible. For example, texts on the screen can be spoken out loud instead of reading, and speech can be written on the screen. Typing on computers helps to reduce writing mistakes by hand. Computers repeat vocabulary or instructions and assisting to memorize or keep information. Applications help to practice necessary skills to use further tools. A lot of ICT programs are widely recognized as a good practice. ICT can aid dyslexic students to perform without difficulties and a lot of students with reading and writing difficulties are motivated by ICT (Peer & Reid, 2001). There are many different applications and tools that exist for supporting students with dyslexia.

One of the main characteristics of dyslexia is related to reading skills. Most dyslexic students struggle reading and developing grade-level reading skills. Some teachers spend a significant amount of time to teach how to read, others encourage students to use software products to compensate their learning difficulties (Roblyer, 2005). In order to become successful learners, it is essential for students with dyslexia to be able to read books and access other information as much as possible. Audiobooks are a great alternative for accessing literature, and it is available on CD-ROM and online (Thomson, 2008). Text-to-speech software gives students abundant text materials and makes students read books by themselves because it does not require the same amount of support by teachers (Thomson, 2008). Moreover, if students

receive all materials and instructions in a digital format and copy and paste the information into computers, text-to-speech will help them to listen to the information instead of reading (Roblyer, 2005). There are various software programs created in order to develop the basic reading skills of students with dyslexia. Many of them seem similar to text-based reading practices such as flash cards, reading comprehension exercises or games. However, these programs give more interesting and varied learning experience than printed textbooks, and provide consistent support to students with difficulties. Therefore, dyslexic students will be able to improve their self-esteem through successful experiences by using these programs (Thomson, 2008). There are many examples of ICT being used in dyslexia support in Norway. Everyone who has reading difficulties has a right to borrow audiobooks through the website by *Norsk Lyd- og Blindeskriftbibliotek*⁴. The *Digital Accessible Information System* (DAYSY) is also widely utilized in Norway. *Lingspeak* and *AppWriter* are applications who read out all types of text on computer screens (Dysleksi Norge, 2019).

Although it is categorized as a writing difficulty, a lot of different difficulties exist among dyslexic people. For students who struggle with poor handwriting, voice recognition software may be useful. If students have a spelling difficulty, word prediction software gives word selections when people type the first few letters of words. Students can hear what they have written by *speech synthesis*, which is talking word processors (Roblyer, 2005). Portable writing aids or laptops are very common tools who remove several disadvantages associated with handwriting, such as poorly formed letters, slow writing rate and weak spelling (Thomson, 2008). In Norway, Dysleksi Norge (2019) introduces *Lindys* as a strong spellchecker which can be customized for specific dialects or custom-made rules. *TextPilot* can check spelling errors both in Norwegian and in English while *stavekontroll* which is also a spelling check program can check only typical Norwegian. *Tuva* has both functions as speech-to-text and text to speech. These aids are important to focus on the content of writing without obstacles.

In addition to support tools of reading and writing skills, ICT is able to expand other possibilities, for example, to assist search skills. Dictionaries, which have a huge volume of text on a printed page and other reference books are too challenging for many dyslexic students. It is now possible to access a lot of dictionaries and encyclopedias online or some

⁴ Norwegian Library of Talking Books and Braille

programs with speech output. These technologies reduce the learning burden of students with reading and writing difficulties (Peer & Reid, 2001). For making text readable, Dysleksi Norge (2019) recommends *OneNote* which is a notetaking program by Microsoft for writing and drawing, and some scanner programs such as *Adobe Acrobat Document Cloud* and *AppWriter*. They have also introduced some products from Daisy such as *Skannermus* which is a computer mouse to be able to scan documents and *C-Pen*, a digital highlighting pen that can scan lines of text on printed paper and turn it into digital text. Scanners can ease writing obstacles from learners with dyslexia. Dysleksi Norge (2015) mentions that an *iPad* can be a practical learning aid for everyone. For students with reading and writing difficulties, the impact of *iPads* has been shown to be particularly significant. Dysleksi Norge expects that schools keep updated on relevant support not only for students with reading and writing difficulties but also students with mathematic difficulties and language difficulties as well. Norwegian Education Computer Support Union (*Norsk Pedagogisk Dataforening*) has up-to-date information about good training apps (Dysleksi Norge, 2015). There are more ICT resources from Statped, *utdannings-direktoratet*⁵ and *Norsk Lyd-og Blindeskriftbibliotek*.

2.5.3 The importance of learning ICT for teachers

Dysleksi Norge (2015) mentions that dyslexic students who have learned about the benefits of ICT at an early stage experience, develop independence and self-acceptance. In fact, a lot of ICT programs exist to support the learning of dyslexic students year by year. However, not all programs suit all students because individual strengths and difficulties are very different. Therefore, dyslexic students need to choose the appropriate programs for their needs and to notice which programs are more suitable for their own learning styles. During their learning progress, it is possible that their needs will change, and students must be flexible to try new applications if necessary. It is important for dyslexic students to have training with utilizing technology in order not to lose learning opportunities due to poor knowledge of ICT. Digital learning resources should help close the gap between the child's preconditions and provide the opportunity to participate on a par with others (Statped, 2017).

The school has the responsibility to utilize the technological opportunities, which means that up-to-date knowledge of various solutions and facilitating good use must be provided for

⁵ Norwegian Directorate for Education and Training

students (Statped, 2017). Teachers also need to assist students with difficulties in selecting appropriate programs depending on their current situation. For doing this, it is also essential for educators to analyze which programs suit particular difficulties. One important thing that educators must be aware of is that some students do not wish to use ICT in the class or their groups. They are afraid that their classmates will realize that they have difficulties. Therefore, it is important to respect students' will but to encourage students to utilize useful support programs in all subjects (Peer & Reid, 2001). It is often agreed that lack of training or inappropriate use of ICT cause students with dyslexic problems lead to feelings of discomfort (Rose,2012). It usually happens at the early stages. Therefore, it is necessary for all students with reading and writing difficulties to demonstrate the potential of ICT to maximize their actual ability, in other words, appropriate support will eliminate this initial loss of confidence or frustration and expand their potential. This opportunity to be an effective user of ICT affects not only their learning but their life and future (Peer & Reid, 2001).

2.6 Summary

This chapter has presented a perspective on dyslexia and explored several possibilities for supporting students. Dyslexia may refer to various symptoms and cannot be cured perfectly. However, there are several possibilities to minimize the difficulties. One of the most important factors to support dyslexic students is well-trained teachers. If teachers with enough knowledge about dyslexia can contribute towards early identification and intervention, it is possible to prevent serious difficulties. Utilities of ICT is becoming more familiar in the education field as well. Teachers who have knowledge about support tools can advise about the most appropriate ways for students to utilize them. This will eliminate students' difficulties in order to expand their own ability. Appropriate support by well-trained teachers will make it possible for all students to study together, which is inclusive education. The dyslexia friendly school is a model in order to fulfill this inclusive learning environment. The potential impact for development of expertise is significant for supporting dyslexic children.

3 Theoretical Framework

This chapter will outline the lens used for understanding key concepts used throughout the thesis. First, this chapter will state the paradigm in which this thesis is located (3.1). It is important to be aware of an education paradigm because it influences the educational approach and practice. Subsequently this chapter will define key concepts of this study: inclusive education (3.2) and development of expertise (3.3). Then, this chapter will justify the use of Vygotsky's Sociocultural Theory of Cognitive Development (3.4) and Rose's Model of Removing Barriers to Achievement as analytical frameworks (3.5), both of which are later used in discussion of the data (see Chapter 6). This chapter concludes with a brief summary (3.6).

3.1 Introduction

This thesis is located within the cognitive constructivism paradigm. Constructivism believes that knowledge and reality do not have absolute ideas or object value (Murphy, 1997). Glasersfeld (2012) indicates that the concept of reality in our living is based on our experiences and interactions with our environment.

The concept of constructivism in education is substantial. Glasersfeld (2012) argues that learning is not a stimulus-response from the perspective of constructivism. Learning requires self-regulation and builds conceptual structures through the reflection of experience. Learning focuses on the process, not the result. Learning is a construction in order to explain one's experiment (Murphy, 1997). Students' errors are regarded as a positive means to gain an answer for how they are constructing their experience. One of the most important contributions of constructivism is to focus on student-centered learning (Bada & Olusegum, 2015). Students learn by restructuring new information with the knowledge which they already have. Constructivism introduces the cognitive theory that learning is a process by which students find regulation and develop conceptual structures by themselves (Glasersfeld, 2012). Teachers cannot transfer knowledge to students directly, but students can construct and organize the knowledge actively when they learn from their teachers. A teacher facilitates the use of problem-solving skills that allow learners to go beyond the information they have already given. In other words, teachers' expertise affects students' performance directly. As a

facilitator of learning, the role of teacher is important in constructivism, and it is equally important for educators to provide a view of teacher expertise development because it has significant implications for how teachers teach and learn to teach (Tam, 2000).

This thesis will focus on the importance of development of expertise. Constructivism is important to examine if teachers can improve student's difficult situation with appropriate knowledge and skills. It is essential for teachers to teach as an expert and keep developing their expertise. The purpose of constructivism as a paradigm in education is thus to enable teachers to acquire and create new knowledge through expertise. In the context of this study, it is important to examine whether there is a possibility to attain inclusive education with Vygotsky's sociocultural theory as a theoretical framework. In addition, it will be discussed how development of expertise contributes not only to students but also to schools, and how it works if the skilled teachers are organized in a school or in a community. Rose's model of Removing Barriers to Achievement will be used as another framework to examine this discussion.

Before the analytical frameworks are presented, the core concepts of this study will be defined in order to make the relationship with the theories clear.

3.2 Definition of inclusion in this study

One of this study's objectives is to understand the contribution of dyslexia teacher training in order to support students. It assumes that when individuals are appropriately supported skilled teachers can provide equal education opportunity to all students. As a result, the learning environment will fulfill inclusion. Therefore, it is important for this study to define inclusive education.

Evans (2007) defines that inclusion is how students are supported to learn, achieve and participate fully in the life of the school. In order to educate all students together, it is necessary for teachers to give help to students with difficulties. This definition includes a constructivist perspective, in that educators support each student with various potentials. If the expertise makes students learn independently, that will expand students' possibilities.

The core concepts are that everyone who engages in the school support each other, and everyone has the same learning opportunities regardless learning difficulty or diversity. As mentioned in 2.2, educators should understand that all students have their own strengths, weaknesses, and learning preferences. Students with poor performance have the possibility to improve when teachers find an appropriate way to teach them. These views are shared by UNESCO's Salamanca Statement which stated that students with special needs should have opportunities to learn at regular schools with an inclusive orientation.

According to the Salamanca Statement (UNESCO, 1994),

Education systems should be designed and educational programmes implemented to take into account the wide diversity of these characteristics and needs.

Regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system.

The Salamanca Statement has influenced the ideas and philosophy of inclusive education policy and practice in Norway (Ogden, 2015). SEN schools in Norway are for children who suffer from mental disorders such as ADHD, communication problems or complicated learning difficulties. Only seven special needs schools are in Oslo and approximately 60 out of 180 schools can accept students with these kinds of difficulties (Oslo commune, 2019). Dyslexia friendly schools are also general schools that focus on support for dyslexia students more than other schools.

As will be explored in further detail below (3.4), Vygotsky's cognitive development theory asserts that social interaction with skilled people develops children's abilities. It is possible for children to construct their knowledge and skills effectively if they are supported appropriately. This theory will be applied to this study to prove that skilled educators can make dyslexic students' study independently. For example, dyslexic students learn how to choose the appropriate computer application for their study and how to utilize them by trained teachers with knowledge dyslexia support. Students with literacy difficulties will be able to manage their study with ICT, and they need less support by teachers. Thereby this affects all students positively, in that more students learn at their own pace. Most students perform better in the subject they prefer and have a possibility of poor performance for some subjects. This is not because of learning difficulties, but because of their preference. This study thus

explores whether trained teachers can make learning difficulties small and contribute to inclusive education.

3.3 Definition of development of expertise in this study

This study also aims to convey the importance of development of expertise. It assumes that different levels of skilled teachers can support dyslexic students more effectively. Although it is difficult to define what ‘expertise’ is, Palmer, Stough, Burdenski and Gonzales, (2010) categorized expertise by four factors: years of experience, social recognition or nomination, professional or social group membership, and performance-based criteria. Schools need various teachers who provide different experience, education and training because they can help and inspire each other. This research will examine the structure of teachers’ expertise and how it works in practice. For this reason, it is important for this study to define development of expertise.

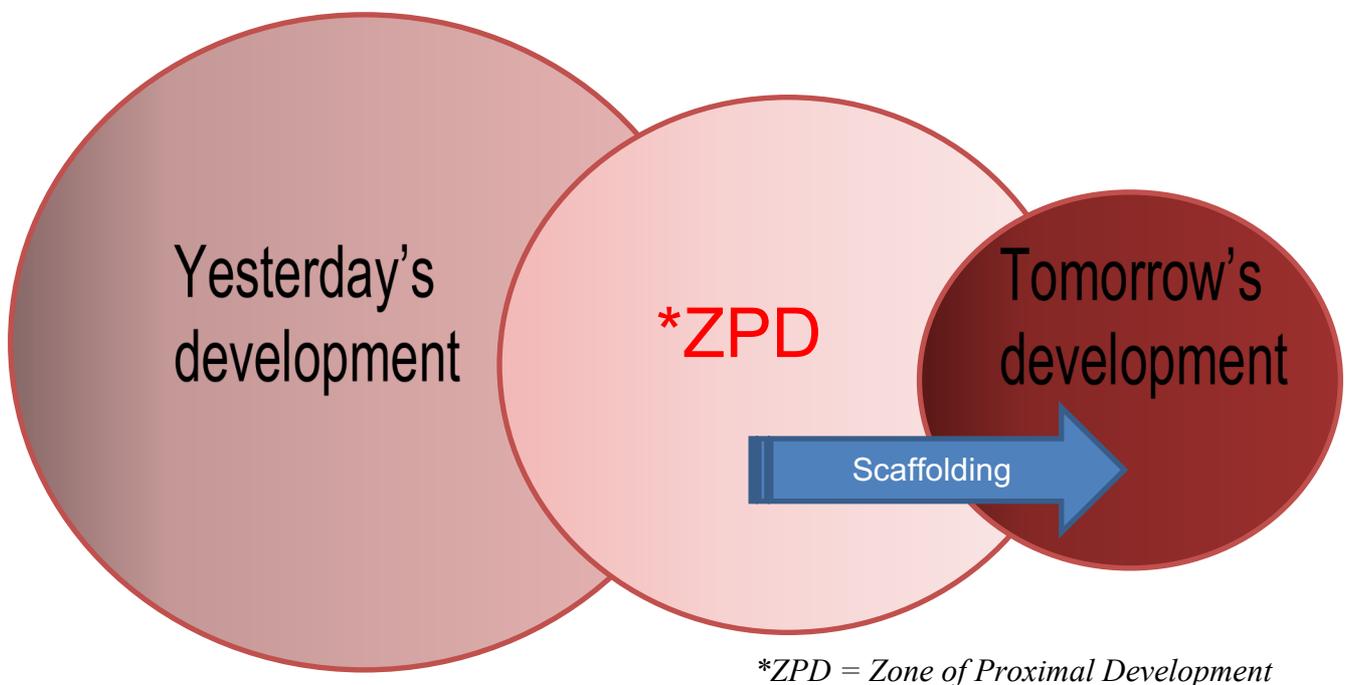
All qualified teachers should be required to have professional knowledge of subjects that they teach, understanding of learners’ background, and personal qualities as an educator. Even new teachers should understand that they are expected to have a high degree of competence. The professional identity of teachers is affected by many different types of interactions between personal values, work environment and professional views. Teachers might experience a gap between their experiences and personal values. Teachers manage their stance in their work culture and might compromise between their professional ideas and the external policy (Pollard, 2018). It is essential for students’ success that teachers must be committed to positive and effective teaching and new challenges. Teachers also need to reflect on their practices with evidence to maintain professional development.

3.4 Vygotsky’s cognitive development theory

Lev Vygotsky, a Russian psychologist, developed a theory of learning known as Cognitive Development theory in the early twentieth century. The theory asserts that children develop their abilities through social interaction with other people, who are usually more skilled. In

other words, social learning assists children to construct knowledge effectively. Children have three different levels of development (see Figure 2 below). *The Zone of Proximal Development* (ZPD) a conceptualization of the learning process of children by Vygotsky. ‘Yesterday of development’ indicates what students have already achieved, and ‘Tomorrow of development’ means what is developing in a person (Vygotsky, 1978). Children who have the potential ability to perform a task, but have not achieved it yet, are in the ZPD. If some people with more skills support them in order to perform the task, the children will do it successfully. This process has also been named *scaffolding* by Bruner and Ross (1976). As children are shown how to manage the task, they use this information as guides or advice to complete the task independently. *Scaffolding* does not provide educators with clear definitions how it should be used to succeed in their teaching. McDevitt and Ormrod (2002) focus on the techniques of scaffolding as different types of support: demonstration; advice to proceed with a task step by step; keeping an eye on students; indicating guidelines. *Scaffolding* as a term indicates that support by adults should be used carefully in order to help children’s development (Verenikina, 2003).

Figure 2: Vygotsky's Cognitive Development Theory



Source: Bada, S. O., & Olusegun, S (2015)

It is possible to apply this theory to dyslexic students' support. It is difficult for students with dyslexia to manage at school because of their reading and writing difficulties. It is assumed that they will have more things to do by themselves if teachers teach them the appropriate way to cope with their difficulties. Additionally, if teachers provide appropriate support, it should be possible for dyslexic students to study independently, thereby allowing more students with difficulties to be able to follow the mainstream curriculum. In other words, development of expertise will contribute towards an inclusive education.

3.5 Rose's model of removing barriers to achievement as a theoretical framework

This thesis focuses upon development of expertise, especially effective interventions by experts are a core theme. Therefore, it needs a conceptual framework for effective dyslexic students support in practice. Rose (2009) proposes Removing Barriers to Achievement which explains what expertise is needed and how it works in a school and in a community. He states that

Every teacher should expect to teach children with special education needs, and they need to be equipped with the skills to do so effectively (Rose, 2009, p.80).

He claims that all teachers need to be equipped with core skills and schools need several teachers with advanced skills. Every school should ideally provide a teacher with specialist expertise. However, the variable size and location of schools make it difficult to have 'dyslexia only' specialists in each school. Therefore, it is possible for teachers with special expertise to work with several schools in an area (see Figure 3 below).

Figure 3: Removing Barriers to Achievement: developing school workforce SEN skills



Source: Rose (2009)

Rose proposes three levels of skills for dyslexic students' support: Core skills, Advanced skills and Specialist skills.

Core skills are fundamental skills which are needed for all teachers in all schools. All teachers and support staff in schools should notice difficulties related to dyslexia so that they support colleagues to offer appropriate interventions for those students with reading and writing difficulties. They should provide minimum knowledge, including what kinds of suggestions teachers give children who may be at risk of dyslexia and where to find appropriate advice to support them. Teachers who have beginner readers should update their basic knowledge with in-service training.

Some teachers in all schools need to provide advanced skills. All schools need to have at least one teacher who has expertise in dyslexia. The teacher is able to choose appropriate interventions, command support programs, and monitor and evaluate students with literacy

difficulties. Guidance about a range of interventions should be written so that other staff and parents informed discussions with schools. Short courses should be offered teachers to gain this level of expertise.

Specialist dyslexia teachers can advise and tailor interventions for all students suffering from literacy difficulties. It is not realistic that all schools provide specialist skilled teachers, however, at least several specialists must work in some local schools in a community. A key role of specialist teachers is to help other school staff develop their knowledge and skills to support children with reading and writing difficulties.

Some studies have reported that there are similar consequences whether an intervention is done through individual tuition or teaching in small groups. One-to-one teaching by experts is not always essential. The studies concluded that the key element to gain a satisfying result was the quality of the teaching (Rose, 2009). Therefore, appropriate teacher training is essential in order to provide effective intervention. Therefore, dyslexia friendly schools should offer a number of teachers the opportunity to undertake specialist training in order to contribute as an expert in all schools and authority areas.

3.6 Summary

This chapter has clarified that constructivism is chosen as the perspective of this study. The core concepts of this research, inclusion and development of expertise, were defined first. Inclusive education in this study means equal learning opportunities for all. It does not mean that everyone should study in the same way. It is defined as teachers respecting students' weaknesses, difficulties or learning styles. Although students have learning difficulties, skilled teachers must understand them and give appropriate support in order to improve their situation and to develop their abilities.

Expertise in this study is required for all educators who work with children with or without dyslexia. All teachers are already equipped with the basic skills and knowledge for teaching their main subject. However, in addition to their original subjects, all teachers must be able to take care of students with dyslexia in their class. Several teachers who are motivated and interested in supporting students with dyslexia might learn more and become a highly skilled teacher.

This study examines how development of expertise affects both students and schools. There are two key assumptions: Individual teachers' expertise will fulfil students' self-learning; and structured development of expertise will contribute to both students and teachers. As analytical frameworks, Vygotsky's Sociocultural Theory of Cognitive Development and Rose's model of Removing Barriers to Achievement have been proposed. The former will be applied to examine the relation between expertise and inclusion while the latter will be utilized to discuss development of expertise.

4 Methodology

This chapter describes the rationale behind methodological choices and the study design. Qualitative research was chosen and a semi-structured interview with local primary and secondary schools' teachers in Norway. This chapter presents why and how the research was conducted. The structure of the chapter is Research strategy (4.1), Research sites (4.2), Participants (4.3), Data collection (4.4), Coding and Data Analysis (4.5), Reliability and Data validity (4.6), Ethical issues (4.7), Delimitations (4.8), and Summary (4.9).

4.1 Research strategy

A qualitative approach to this study was utilized. Qualitative research is often associated with an inductive view of the relationship between theory and research, in other words, the theory is generated out of the research. In addition, qualitative research focuses on understanding the social world, and that social properties are the result of interactions between individuals, rather than phenomena (Bryman, 2012). A primary goal of this study is to discover the differences between dyslexia friendly schools and general schools and to understand teacher's practice and the contribution of specialized teacher training.

4.2 Research sites – Oslo, Akershus and Oppland

Norway had 19 counties that were divided according to the largest in area and population in 2019. First of all, considering equivalence in the size of areas, three counties, Oslo, Akershus and Oppland were chosen in order to find municipalities of comparable size for this study. The population of Oslo, the capital city, is 673,469 (Oslo Kommune, Befolkningsutvikling, 2019), that of Akershus is 621,800 (Akershus fylkeskommune, Befolkningsutvikling, 2019) and Oppland has a population of 187,820 (Oppland fylkeskommune, Befolkningstall siste kvartal, 2019).

Municipalities are the smallest unit of local government in Norway. 422 municipalities are designed depending on a geographically limited area or community that has a certain degree of independence (Store Norske Leksikon, 2019). Municipalities are responsible for welfare

services, including primary education (until 10th grade). Therefore, schools in this study were selected from three municipalities: Oslo, Lørenskog, and Gjøvik. Oslo has a population of 673,469 (Oslo Kommune, Befolkningsutvikling, 2019). The population in Lørenskog is 37,406 (Akershus fylkeskommune, Befolkningsutvikling, 2019) and Gjøvik has 30,319 (Oppland fylkeskommune, Befolkningsutvikling, 2019). The number of primary and secondary schools are 162 in Oslo, 15 in Lørenskog and 17 in Gjøvik (Utdanningsdirektoratet, 2019).

Oslo is the biggest city in Norway, and has many libraries, schools and institutions. Many seminars and courses are often held in Oslo. For example, Dysleksi Norge and *Pedagogisk-Psykologisk Tjeneste* (PPT) (Appendix D) offer professional development courses in Oslo several times a year, as well as seminars about dyslexia open to the general public. Hence, it was assumed that teachers in Oslo would have more opportunities to learn if they want to. Lørenskog was chosen because the area has different features from Oslo. Lørenskog is a municipality in Akershus which borders on the eastern part of Oslo. This is a popular residential area for families, and 48% of residents commute to Oslo (Store Norske Leksikon, 2019). Akershus was the county that had the most dyslexia friendly schools in Norway and is the closest county to Oslo. That is the reason Akershus county was chosen for this research. Gjøvik was chosen as a representative local area in Oppland which is approximately two hours from Oslo by train. Gjøvik is located at the west side of Mjøsa, which is the biggest lake in Norway, and the main industry is agriculture (Store Norske Leksikon, 2019). Gjøvik was chosen for this study since it offers a potentially different perspective from that of a large city but, at the same time, the size of their population is similar to Lørenskog. As mentioned above, municipalities are responsible for primary education and, therefore, these three municipalities were selected in this study.

In terms of the number of dyslexia friendly schools, 19 were in Akershus in contrast with 5 in Oslo. Two out of 19 counties had no dyslexia friendly schools and one of them was Oppland (see Table 3 below). One local school was chosen from Oppland so that several clear distinctions were anticipated regarding dyslexic students' support and experience.

As can be seen in table 3, in 2019, only 16 out of 19 counties in Norway had dyslexia friendly schools, in addition to a dyslexia friendly Norwegian school in Spain.

Table3: The number of Dyslexia Friendly Schools in Norway

Region	Number of DFS (2019)
TROMS	3
NORDLAND	5
TRØNDELAG	8
MØRE OG ROMSDAL	17
SOGN OG FJORDANE	4
HORDALAND	3
ROGALAND	3
VEST-AGDER	8
AUST-AGDER	2
TELEMARK	4
OSLO	5
AKERSHUS	19
BUSKERUD	9
ØSTFOLD	2
VESTFOLD	6
HEDMARK	4
SPAIN	1
Total	103

Source: Dysleksi Norge (2019)

4.3 Participants

The only criteria for interview participants was experience working with dyslexic students. Therefore, the background of interviewees, such as length of experience, education history or teaching subjects were very different.

The study is based on 11 teachers who have been working with dyslexic students at local primary or secondary schools (*grunnskole*). All of them were currently teaching dyslexic students in grades 4-10. The extent of dyslexia in each class was varied. Some of them had only one student with dyslexia while others had several. Some teachers were special pedagogical teachers whilst others were homeroom teachers who had dyslexic student(s) in their own class, and others were subject teachers who supported dyslexic students during specific subjects such as Norwegian classes. In total 3 men and 8 women were interviewed. In terms of years of experience as a teacher, there was a wide range from 6 months to 29 years. Five teachers had worked for less than 5 years while 6 teachers had over 10 years of

experience. Regarding training for offering dyslexia support, only 3 teachers had taken part in a specific training program which had focused on dyslexia while 3 had never taken any such training. Five teachers had taken a SEN study which included a topic about dyslexia (see Table 4 below).

Table 4: Participants of this study

		Dyslexia friendly schools	Non-Dyslexia friendly schools
Number of teachers	Total (M / F)	5 (2 / 3)	6 (1 / 5)
Years of experience	0-5 years	2	3
	6-10 years	1	0
	11-15 years	1	1
	16-20years	0	1
	20-25years	0	1
	29 years	1	0

Throughout this thesis, Dyslexia Friendly School will be abbreviated to DFS and GS will refer to a General School. The acronyms (DFS1) for school 1 and (GS2) for school 2 are used. Teachers were also coded to preserve their anonymity (see Table 5 below).

Table 5: Acronyms

	Dyslexia Friendly School 1	Dyslexia Friendly School 2	General School 1	General School 2	General School 3
Teacher 1	DFS1T1	DFS2T1	GS1T1	GS2T1	GS3T1
Teacher 2	DFS1T2		GS1T2	GS2T2	
Teacher 3	DFS1T3			GS2T3	
Teacher 4	DFS1T4				

4.4 Data collection

4.4.1 Interviews

A pilot study was conducted in October 2018 to check whether the interview guide was appropriate. After improving some questions, request emails were sent to 150 schools in Oslo and Akershus from October 2018 to January 2019. The response rate was much lower than expected, given that all emails and responses were written in Norwegian. Only five schools

agreed to participate in this research. An initial visit was made to each school when the project was explained in detail to the person in charge of school management. After meeting, some teachers were introduced to the researcher and meeting appointments were set individually depending on teachers' schedule. Before starting an interview, interviewees read and signed a consent form which explained the details of the project and the ethical guidelines (Appendix A).

The interviews in Norway were carried out from November 2018 to January 2019. Interviews were conducted for approximately 30 minutes in a quiet classroom. During the interview, a digital recorder and interview schedule were used (Appendix C). Interviews were one-to-one and were conducted in English. Interviewees were varied because of their education background and the length of their teaching career. Some of them showed several original materials which they created by themselves, shared their school syllabus, and explained what they learned from their training with the brochures. It was sometimes necessary to rephrase some interview questions and to answer in Norwegian, because English was not the first language of either the interviewer or the interviewees. However, all interviews were conducted flexibly. Transcriptions were done continuously throughout the data gathering process.

4.4.2 Materials

Interviews were recorded by a digital recorder and were transcribed using a VLC media player and a personal computer. Although a letter of consent form (appendices A) was signed by participants before each interview was conducted, one more revised consent form following the advice from the Data Protection Office for Research, *Norsk Samfundsvidenskabelig Datatjeneste AS* (NSD) was sent to all interviewees later on (appendix B). One interview guide (appendix C) included all questions that were asked. Supplemental information about several institutions to support for SEN in Norway will be given (Appendix D).

4.4.3 Development of interview schedule

Three main themes emerged from the data: their backgrounds (education background and career as a teacher), dyslexia support in practice and training experiences. Semi-structured

interviews were chosen because the interviewee's point of view was in focus rather than the researcher's concerns (Bryman, 2012). Interview questions were formulated to answer each research question (Bryman, 2012) and aimed to gather teachers' experience and opinions. Although English was used throughout the whole interview, Norwegian was accepted when interviewees tried to explain specific concepts in Norway. The interview guide was structured from a wide approach to a narrow one. The first stage of the interview was about participants' background. Qualitative interviewing is flexible, and interviewer can expand questions depending on interviewees' reply (Bryman, 2012). Knowing participants' education and career in the beginning helped to explore richer answers. The next stage asked participants about their daily support. This topic was familiar to teachers and their various answers were explored more deeply depending on each teacher's experience. Participants were also asked about struggles and difficulties when they teach dyslexic students. This question aimed to highlight problems and the next stage would reveal what, if any, actions they took in order to improve the situation. The last stage of this interview was about their experience with training for dyslexic students' support. In cases where they did not have such experience, it was also very interesting to explore why they had not taken any training courses. The interviews were expected to last maximum 40 minutes at participants' schools. All interviews were recorded and transcribed. The following topics were covered through all interviews:

- Education background
- Career experience
- Unequal support between diagnosed students and not diagnosed students
- Dyslexic students' support in practice
- Teacher's struggles and difficulties
- Experience with training in professional development of dyslexia
- Opinions about what teachers need to know in practice
- The result of training in professional development of dyslexia
- The reason for not taking training in professional development of dyslexia

4.5 Coding and Data analysis

While the data collection was being conducted, the interviews were transcribed by the researcher. Thematic analysis which is one of the most common approaches to qualitative

data analysis was chosen in this study. Thematic analysis focuses on words or phrases in order to identify and describe both implicit and explicit ideas in the data collected from the research, that is, themes (Guest, MacQueen & Namey, 2011). In order to identify key ideas or themes, raw data is analyzed (Matthews & Ross, 2010). Thematic analysis is used to construct an index of central themes and subthemes. A framework is described as a 'matrix', is based on data ordering and synthesizing (Bryman, 2012). Thematic analysis is a process of working with the data which works from the raw verbal or visual data have been gathered. Codes are developed to represent the emerged themes and applied or linked to raw data. The codes are used as summary markers for later analysis. It is important to remain grounded in the raw data although the data must be interpreted, summarized and categorized (Matthews & Ross, 2010).

The coding scheme was developed as a theoretical framework and the data collected through a thematic analysis. In the interviews, subjects shared their experience as to how they taught dyslexic students, what approaches they conducted and what was difficult in practice for teachers. The subjects also discussed their ideas for effective training and their motivation. Similar opinions shared by the interviewees made common themes clear. Below is the coding scheme developed from the questioning (Table 6).

Table 6: The coding schemes developed from the questioning

THEMES	SUB-THEMES	EMERGING THEMES
Development of expertise about dyslexia	- Teacher's motivation	<ul style="list-style-type: none"> - Teachers' interests - Contents of training - Purpose of training - Top-down - Objections - Struggles
	<ul style="list-style-type: none"> - Pyramid of teacher skills - Removing Barriers to Achievement (Rose, 2009) 	<ul style="list-style-type: none"> - Core skills - Advanced skills - Specialist skills
Inclusion	- Inclusive education in Norway	<ul style="list-style-type: none"> - Dyslexia friendly schools - Necessity in society - Differences / expertise
Dyslexia support	- Skills / Knowledge / Expertise	<ul style="list-style-type: none"> - Analog / digital - ICT - Importance of training

This coding scheme was developed as the data was transcribed. Qualitative data is handled mainly in order to find a good understanding of the words, stories and to explain the research responses. The contents of each respondent's words illustrate the data description, the meaning of the data, the relationships between different parts of the data, and the similarities of the data (Matthews & Ross, 2010). The themes in Table 6 above emerged through the process and will be utilized in the following chapters.

4.6 Validity and Reliability

Reliability and validity are key elements in effective research and are important in order to make the research worth conducting. In qualitative data, validity might reflect the honesty, depth, richness, scope of the data, the participants approached or objectivity of the researcher (Louis, 2011).

Internal validity is relevant to this research. Internal validity is a demonstration in order to explain whether a particular event, issue or set of data which a piece of research provides can actually be maintained by the data (Louis, 2011). Reliability is deeply related to dependability, consistency, and replicability. It is also concerned with precision and accuracy. In qualitative research, it is important to consider continuity between what researchers record as data and what actually happens in the natural setting that is being researched (Louis, 2011).

4.7 Ethical issues

Participants were assured of confidentiality and anonymity before committing to this research. An 'Informed consent form' which included the purpose of this study and the way of handling personal data was given to each participant. Once he or she understood the project and agreed with the confidential terms, the consent form was signed. However, the consent form had to be updated because the new General Data Protection Regulation (GDPR) came into force in Norway during the fieldwork. After an information letter including the consent form were revised, it was sent to each participant again.

The study had also been approved by NSD. Personal data has been kept following the data management and storage policy from the University of Oslo. Whenever participants want to access their own personal data, it will be disclosed. Once this study has been completed, all personal data will be deleted immediately.

4.8 Summary

This chapter has reviewed the methodology that employed in this study. Semi-structured interviewing was selected as the best approach in order to collect the data so that themes could emerge through natural conversation. Research sites were explained including the number of dyslexia friendly schools in each area and participants were introduced as important information for findings chapter. The processes of data collection, coding and data analysis were explained and coding schemes were introduced. Reliability and validity and ethical issues were also noted.

5 Findings

This chapter will present the data collected from the 11 participating teachers, 5 from 2 DFSs and 6 from 3 GSs. The chapter is organized according to the themes that were identified in the data and include the comparative aspects between the two comparative dimensions, DFSs and GSs.

In the beginning, each school environment and their literacy skills assessment system will be described. Each school has different characteristics regardless school types. Data gathered through interviews with teachers serves as the main body of this chapter. The themes, as presented in Table 6, are: Teacher's environment (5.1), Support in practice (5.2), Challenges for teachers (5.3), Teacher training (5.4) and Teacher's needs (5.5), and Roles of dyslexia friendly school (5.6). The chapter concludes with a brief summary (5.7).

5.1 The teacher's environment: Identifying and meeting the needs of dyslexic students

First, school environment was considered. This information was essential in order to identify each school and its characteristics. This was also important because knowing about the work environment of the teachers might be helpful in understanding their responses. Therefore, each school's information was described, and literacy skills assessment and support systems were considered. There were several differences between schools, but interestingly these differences were not a result of the type of school (DFS/GS).

5.1.1 Dyslexia friendly school – School features and Literacy skills assessment system

Two DFSs participated in this research. DFS1, located in Akershus, had 26 diagnosed dyslexic students and more undiagnosed students who had reading and writing difficulties. The school organized an extra class by a small number of well-experienced teachers and they helped students who needed extra assistance. Approximately 10 students studied together in

the extra class during a Norwegian class in their homeroom class. Young teachers could ask senior teachers whenever they had questions about students' supports or materials. While it was not formally organized, young teachers and well-experienced teachers communicated a lot in their daily work at DFS1.

While DFS1 teachers shared their situations and supported each other, DFS2, located in Oslo, managed students' support individually. Two diagnosed dyslexic students at 7th grade were in the interviewee's homeroom class. Neither the teacher participating in the interview, nor the headteacher, knew how many dyslexic students were at school and which teachers had dyslexic students. Cooperation between teachers was not common and all responsibilities for dyslexic students' support were under the homeroom teachers remit. The teacher also did not ask other teachers about students' support because she did not know which teacher had dyslexic students at school, and she might be the better experienced teacher than her other colleagues.

The processes of literacy skills assessment were similar between these two DFSs. Both schools examined all students once a year with their original test that was prepared at school in order to examine their basic reading and writing abilities. If students seemed to have some problems, *Carlsten*⁶ (Brittmark, 2019) would be used to test whether these problems were related to dyslexia. DFS1 used *Nasjonale prøver*⁷ as well. If those internal examinations showed a high possibility of dyslexia, DFS1 called PPT, and DFS2 asked speech and language therapist⁸ to screen the students officially. As mentioned below, once students were officially diagnosed, several official supports would be given to them such as a fund to buy a computer or several dyslexia support programs by NAV. In order to get the right, a signed document by PPT, speech and language therapist or other authorities was required (NAV, 2019). Therefore, the diagnosis would be given by these official institutions.

Although a number of students had reading and writing difficulties, there were significant differences between diagnosed students and undiagnosed ones. Students with a diagnosis had the right to access several support programs, such as audiobooks for subject studies or *CD-*

⁶ Norwegian spelling and reading test for elementary and secondary school <http://brittmark.no/carlsten>

⁷ Compulsory tests that provide information on skills in reading, calculation and English.

⁸ Experts who specialize in the evaluation, diagnosis and treatment of literacy difficulties and communication problem.

ORD. In DFS1, an *iPad* was lent to all students. However, only students with a diagnosis were allowed to use special study support programs. Additionally, during exams, extra time was allowed for diagnosed students. These measures are determined by Norwegian law (Lovedata.no, 2019). In response to a question about learning support between diagnosed and undiagnosed students, all teachers from the two DFSs knew about students' rights and emphasized the importance of the screening.

DFS1T3: *Yes, there is. Of course. Because there is usually extra resources that has for the students at having screened at that time.*

DFS2T1: *They have to be screened, you know.*

5.1.2 General schools – schools and screening system

Three GSs participated in this research: Each had several dyslexic students. Two special pedagogy teachers were interviewed from GS1. They supported all children with learning difficulties at their school. About eight students with reading and writing difficulties were picked out from each homeroom class during Norwegian lessons and several different subjects.

In GS2, homeroom teachers were mainly responsible for dyslexia support. The number of dyslexic students in a class depended on the teachers' experience. However, if some students needed extra help, well-experienced teachers picked them out during Norwegian classes in order to support their study individually or to teach learning skills. GS2 had teacher meetings twice a week, once for the whole school, another for each grade. These opportunities were used in order to share information about students' situations, as well as discussing any problems or to share knowledge or skills. Additionally, this routine could create an open atmosphere between teachers. In their daily work, teachers who supported dyslexic students often discussed each situation and student. An interviewee said that it was preferable with an open environment in which teachers can share the similar problems in order to encourage each other. Even if they cannot find perfect solutions, well-experienced teachers can give some advice.

The number of students with reading and writing difficulties had been increasing for the past three years at GS3. Teachers always cooperated for teaching dyslexic students and shared

each situation with the entire school since GS3 was a relatively small school, so that there was one class at each grade with few teachers.

Each school often had official teacher meetings and they tried to communicate with other teachers in their daily work. However, experienced teachers seemed to have barriers in approaching their colleagues. Although SEN teachers or teachers with more experience could help their colleagues, it was hard for them to ask others about their struggles.

GS1T1: *I have opportunities to talk with my colleagues, and we can... yeah... prepare for the classes... Yeah, it's kind of, it depends... not all colleagues, no but are... (hesitate).*

GS2T3: *Really wouldn't ask my colleagues. Because I don't think they cannot do much this themselves. because he [the headteacher] thought I could do it. Because I have been looking so many years in school.*

When it comes to the assessment process, GS1 asked PPT to screen students whom they were concerned about for dyslexia after the 4th grade. Before that, extra help was given in the ordinary classroom. GS2 conducted an examination to check the reading and writing proficiency from the first grade. Homeroom teachers were responsible for noticing and reporting symptoms. If students who were suspected of having dyslexia older than around 10 years, homeroom teachers had a meeting with their leader and the social teacher first in order to discuss further support. Then the school would ask PPT to screen the students. The process of GS3 was different. A special teacher from their municipality visited different schools to find out if students had problems or not. It was important for them to conduct assessment because diagnosed students with dyslexia had a right to use dyslexia support programs on the computer. However, two teachers from GS2 did not know that dyslexic students had a right to get official support.

Other interviewees from GSs talked about the right to get official support such as a computer with special programs, audiobooks and extra time during exams. This was to benefit diagnosed students, but a teacher pointed out the inequality in this situation. After assessment, some students who were not diagnosed and could not get official support, still experienced reading and writing difficulties. The teacher emphasized the importance of being diagnosed because there was a significant difference between the students who could get official support and those who could not.

GS1T1: *It's very unfair. It's you have to have the diagnosis to get the benefits. Screening is really important.*

Regarding support systems and school environments, differences depended on individual schools, not the type of school. Some schools entrusted homeroom teachers to take care of dyslexic students, others had special pedagogy teachers or extra classes. Some schools discussed students' support regularly, others did not cooperate with other teachers and classes. The diagnosis process was similar in all schools because students had to be diagnosed by official institutions in order to get special support. The only difference was that recognition of official support was that all teachers of DFSs know the importance of being diagnosed while several GS teachers were not familiar with this process.

5.2 Individual support in practice

Next, the interview focused on what teachers carried out in their daily work. The following answers are based on a single question in which teachers were asked to reflect upon their support in practice. Although this question was broad, a clear distinction emerged between DFSs and GSs.

5.2.1 Support with ICT

A clear distinction was that both DFSs were very open to utilizing digital devices while almost no GS teachers mentioned the help with digital devices. At DFS1, all students were allowed to use *iPads* with a program called *CD-ORD* to help them write correctly. During examinations, they can ask for help in writing down or reading something by teachers or having tasks read out loud.

DFS1T1: *I think most of the support is this iPad. If they have good programs, like iPad or PCs, they can manage with school work.*

DFS1T2: *Every student has their own tablet, like iPad. I think that give them a lot of support.*

DFS1T3: *Mostly, students with dyslexia don't get any extra help except they can use the PC, they can get to use the iPhone to listen to the tasks, they can write they can use this all the time.*

This is interesting as students with dyslexia have a legal right to get all tasks on their *iPad* or on their computer, so they can listen to the tasks. In addition, diagnosed students have a right to get 3200kr from NAV to buy a computer or a tablet. Dyleksi Norge (2019) introduces a lot of different types of support programs⁹ and NAV provides some of them to dyslexic students if they need, but it is not everything.

Nav dekker ikke alle produktene i Hjelpemiddeldatabasen; noe må du kanskje kjøpe selv eller få lånt på andre måter. [Nav does not cover all products in the aid database; you may need to buy something by yourself or borrow in other ways.] (NAV, 2019¹⁰).

Not only dyslexic students, but all students in DFS1 borrowed an *iPad* for three years for free. Even if the *iPad* was already helpful, diagnosed students owned their computers including support applications by NAV. Teachers at DFS1 mentioned that diagnosed dyslexic students can manage their study without extra teachers because of *iPads* and computers. At DFS1, the students who needed extra help were not dyslexic students. Rather, they were other students who had not been diagnosed, as they did not have access to the same tools as the dyslexic students. Some had difficulties others than dyslexia, usually learning difficulties, such as complex language difficulties. Teachers organized small groups for these students in order to support their study with arranged tasks. Apart from support with *iPads* and computers, they generally did not talk about individual support. A teacher tried to prioritize students who had reading and writing difficulties to show teacher's attention to them. Another teacher helped them with each subject, made texts shorter and simpler to understand, and gave them different tasks. A teacher who was a leader in a support team was working to create an original textbook. This was for students with reading and writing difficulties and the textbook included a reduced version of the original text in order to reduce the reading burden.

At DFS2, different kinds of electrical devices were utilized effectively. Audiobook applications, for example *Brettboka* and *Smartbøker*, were normally used to listen to textbooks instead of reading books. Students could always write on their computer instead of by hand. *IntoWords* that are reading and writing support applications that can read textbooks out loud or show predicted words during writing. *CD-ORD* for a reading support program also helped them, and their homework was handed in through email. The DFS2 teacher

⁹ <https://dysleksinorge.no/datahjelpemidler-2/>

¹⁰ <https://www.nav.no/no/person/hjelpemidler/hvordan-soke>

emphasized that those tools were very useful, especially for those who read really slowly, because they do not have to read the entire text.

DFS2T1: *For example, I gonna we read they normally listen to audiobooks, that's one thing. And, and they can write as much on their computer they want instead of writing in their book, and I also really want them to have more of the writing programs but they have to search, now they have to apply to NAV, Norwegian, they have to apply to those Norwegian to get right programs, so I have nagged parents a lot to... to get those programs because I think especially Lingdys¹¹ really good so I want the kids to have that so we try to get them used to that one, and also especially one of the people I have she... just has a lot of homework on computer to hand it in electronically to me. We have something called IntoWords that we use, and that we have audiobooks from Brettboka and Smartbøker, and we have those... and we have a program called, CD-ORD yeah, we have those programs and have computers, I think maybe that's it..., and I really want to get the Lingdys, but the school hasn't bought the program so they have to apply to NAV to get one.*

Dyslexic students were encouraged to use their computer in the class. According to the teacher, *Lingdys* was really useful but the school was unable to pay for this program and not all parents agreed to purchase it because it was expensive. *Steps* was a learning material which could be chosen depending on students' level. DFS2T1 used *Steps* as homework for Norwegian, English and math. Students with learning difficulties could choose easier homework and followed the weekly homework schedule. There was only one teacher from a GS focused primarily with digital devices.

GS3T1: *I can also always say that you can use that computer and write it there and we will also give them maybe a little bit different tasks from the others that I... they don't have to write themselves that you can use the computer for all things I have to do, I think when they have a computer, in their bag, all the time, they can always use it, and then I think it's a good system.*

5.2.2 Support with analog tools and teachers' own study techniques

While teachers of DFSs were familiar with digital tools, most of the teachers of GSs did not mention such tools. Although their students had a computer with special programs by NAV, the GS teachers did not talk about that. Actually, one teacher did not know how to use the computer that her dyslexic student owned. Some teachers emphasized the need to improve

¹¹ A computer program to support reading and writing skills of dyslexic people (Lingit, 2019).

students' basic reading and writing abilities while no teachers in DFSs focused on this. More teachers in GSs had their own approaches, such as handmade vocabulary cards or additional reading homework. Some of them were apparently skeptical about the support with digital devices. Teachers worked a lot in order to make students' difficulties improve. They took time to find better strategies, to make students practice a lot, or to look for and create suitable materials. A teacher had his own study techniques based on his own experience, such as reading texts out loud for better understanding.

GS1T1: The main thing we focus on is to strengthen their reading abilities and writing. we work a lot with the understanding what you have read, reading and also writing to teach them the correct ways to write words.

GS1T2: Mainly I teach them study techniques. Usually I teach them how to attack texts. To read out loud, which has known that probably the best way to do it.

GS2T2: Main support is that we have to make sure that we met the amount of reading homework that they are given. Also, it's important to give them more practice reading because some of them have been avoiding reading before, because it's a problem area.

GS2T3: First of all, I have to find a text, simple text with the simple words that students can read about 80 %. She really has to read this. And I must read text for the pupils and point to every word we depend. After that, students try to read by herself. And after that, I must take three or four word to work more about it.

5.2.3 Class management

Apart from ICT support, DFS2T1 payed attention to class management as well. Students in her class were never asked to read by themselves or in small groups. Instead of that, the teacher went through the text together with the entire class. She found it helpful for dyslexic students to listen to the textbook if students have reading difficulties. Students who read textbooks in front of others were chosen in advance and dyslexic students were never chosen. Students understood the teacher's consideration and it did not have a negative impact on peer relations. The teacher said that the most important thing is just to keep in mind that they have dyslexia when she teaches them. GS2T1 considered that many simultaneous tasks will make dyslexic students confused. She told her student to do one thing at once. For example, students should memorize three words a day even if they had learned 30 words that day. The teacher also stopped by the student's desk more often than the others and picked one specific thing he should focus on. That way, it was easier for the student to follow the class.

There were several interesting findings. First, all DFS teachers were quite positive towards using digital devices for classroom management. They understood how helpful each device and application are. Although extra help was still needed for several students with serious difficulties, most dyslexic students could manage their studies with their digital tools. DFS teachers accepted students' disabilities and utilized digital tools as support tools effectively. Teachers of DFSs understood that dyslexia is a symptom that is difficult to cure with training or medical treatment (2.1.1), and they offered their students practical solutions.

While DFS teachers did not expect their students to be good readers, GS teachers spent more time helping dyslexic students become better learners. In GSs, several teachers made their own materials. These included small cards with a word written by hand in order to teach syllables, or short sentences for reading practices instead of using students' computers. One teacher taught his students reading out loud in order to understand texts more. Again, teachers knew that diagnosed students had their own computers and with support applications. However, almost no teachers in GSs talked about utilizing digital devices.

5.3 Challenges for teachers

Both at DFSs and at GSs, teachers dedicated themselves to supporting dyslexic students. They were knowledgeable and diligent. However, there were a lot of struggles in practice among teachers. There was one question that asked interviewees to talk about their struggles with dyslexic students. The result showed a clear difference between DFSs and GSs. More GS teachers felt struggles than DFS teachers.

5.3.1 Challenges for dyslexia friendly schools

Most DFS teachers mentioned that dyslexic students usually managed their study with *iPads* and their computers. In response to a question about struggles, a teacher thought that her students worked a bit slower than the others, but she had no struggles with teaching dyslexic students. Another teacher talked about learning difficulties which include some complex problems with reading and writing difficulties. Students with learning difficulties needed extra support. However, this teacher also emphasized that dyslexic students did not often need extra support because of their electrical devices.

DFS1T2: *Mostly, students with dyslexia don't get any extra help except they can use the PC, they can get to use the iPhone to listen to the tasks, they can write they can use this all the time.*

Even if iPads and computers were useful, the devices were not always the perfect solution. When students worked in a small group in a class, dyslexic students might have to write without the help of a computer. Once they wrote by hand, there were a lot of mistakes in their text. A teacher said that writing support was his struggle because if he pointed out all their mistakes, the whole text would be marked in red. It was difficult to know how many of their mistakes he should correct. Another teacher pointed out that her struggle was students' embarrassment.

DFS1T1: *I think it embarrassing, if I come into the classroom and take them read with me, because when you are young, it's you would like to be with the other students, you will not be someone that needs support.*

5.3.2 Challenges for general schools

While DFS teachers did not regard dyslexia as especially challenging, GS teachers felt many struggles and difficulties when they taught students with dyslexia. The most common keyword among GS teachers was 'patient' or other words related to taking more time. They needed to be patient when they made students read, write or memorize some materials.

GS1T1: *We have to be very patient because things... things take time and often needs a lot of repetition.*

GS2T2: *The challenge is most of timewise because everything takes more time.*

GS2T3: *If the student doesn't really want to learn to read, that can be difficult. But you have to be very patient with... with the children.*

GS3T1: *It's very difficult to know how to help him because it stops all the time, he was working reading hard, but, but there is really no progress, and I don't know really how to help him.*

I'm not experienced enough, (...) I have help them people a lot and don't always see their progress, so sometimes I think I also need more help from others to know how to do this.

GS teachers expected students to improve their reading and writing skills and to follow the class. Although every dyslexic student had their own computers including special support

programs, GS teachers did not encourage them to use it. Computer support depended on students' preference, and teachers sought to devise their own ways to help dyslexic students.

Both SEN teachers at GS1 had the same struggles. They realized that it was important to cooperate with homeroom teachers. They taught their students learning techniques, such as reading out loud. Students followed the advice when they were in their SEN class. However, when they were in their homeroom class, the students did not use the learning techniques because they were embarrassed that they were doing something different from the others.

GS1T1: *My biggest struggle is to transfer what we do in my special needs class and into the homeroom.*

GS1T2: *I think main problem is that they don't want to be different from the others that is the main issue they, they want to read internally, for instance they don't want to go out and read out loud, even though I teach them and then they do this with me when while we are out of the class, I can make sure that they do it when they are in the class... I try to tell the teachers at be aware and tell them to go through step by step we have worked on but you know it teacher could have 25 students, and... so that is hard thing so...*

They had already talked with each homeroom teacher all the time to share information about the students' progress and special tasks. Although they asked homeroom teachers to give dyslexic students different tasks or to remind students to follow their advice, it was hard for homeroom teachers to remember all the time because there were about 30 students in a class. Other teacher pointed out students' motivation. Her student was actually academically stronger than other students, therefore he did not want to admit that he had a diagnosis. This student never used his computer because he hid that he was dyslexic from his classmates. He tried to do all tasks the same way as his other classmates but could not. This teacher struggled with how she could help the students without reducing his motivation.

GS2T1: *I think maybe the most difficult thing is giving him feedback on his work without kind of crashing his joy of writing and reading. That's hard, like finding the balance between how much should I correct him. (...) because it is not corrected, he will not learn. But if you correct too much, he will just lose, like, joy, I think what I found most difficult is... the balance is one of the hardest things.*

One teacher felt that it was difficult to find appropriate materials for dyslexic students. Her student who was 12 years old could not read and write at all. The teacher needed to teach reading and writing following the specific method that she learned from a dyslexia training

course. She was advised to use a textbook in order to pick up appropriate words and sentences for the student. However, it was difficult to use books aimed at much younger children.

GS2T3: *I must find the text for the people. And when the people are twelve and thirteen, the books and texts are too childish. That's very difficult. You have to, often you have to make your own sentences, your own text.*

Teachers in GSs tended to describe their students in terms of personal ability such as *less intelligent, IQ, smart, and stupid*. Almost all teachers from GSs used these common expressions. In response to a question about skills, knowledge or understanding teachers need in practice, four GS teachers answered with expressions related to *IQ*.

GS1T1: *They have to be patient and we have to remove something that makes you stupid. If you get right tools, strategies, or computer or whatever they can then expect to understand what they are doing.*

GS1T2: *I think you have to kind of understand what dyslexia is, and as I said before you have to understand that student is not less intelligent, is just they have difficulties with reading and writing.*

GS2T2: *I think it's important... ah... have an understanding about why dyslexia is a very specific diagnosis that doesn't have anything to do with the IQ or like. I think that's important like remembering they are not stupid.*

GS2T3: *I think probably just awareness is the key point. the most important point I think that it's in a society in general that there is increased awareness of dyslexia and that it's not linked to being smart or stupid.*

One of the teachers in the GS claimed that students should be open about their diagnosis. Some students refused to use their computers in class because they felt ashamed to be different from their peers, even though it was helpful for dyslexic students to use their computer. Therefore, she also pointed out that teachers need to encourage students to be open. In an interesting contrast, no teachers of DFSs used these words related to personal abilities at all. As mentioned, the common understanding among DFS teachers was that dyslexia is not a serious problem if students can use digital devices appropriately. When they struggled, it was with problems unrelated to digital devices, such as students' motivation or students with complex learning disabilities. Even young teachers with less than five years of experience as a teacher could manage using digital support programs.

The comments above were only from GS teachers and showed their struggles. A consequence of this was that dyslexic students were confused, embarrassed and felt themselves *stupid*, but that it was not true. GS teachers tended to consider dyslexia as a serious problem and try to improve it.

DFS teachers accepted the dyslexic difficulties, while GS teachers were more creative in order to improve students' disabilities. They tried to teach learning strategies or to be patient with many repetitions, but it was hard to find something better for their students. As a result, while not so many struggles showed up from DFSs. It was evident that GS teachers felt that it was more difficult to support dyslexic students. It did not matter whether teachers were well-experienced or not. The two comments below, one by a DFS teacher and another was by a GS teacher, represents these differences clearly.

DFS1T3: *If they have good programs, like iPads or PCs, they can manage with schoolwork.*

GS1T1: *It's a very hard disability to have, I think, a lot of them struggles with being dyslexic.*

5.4 Professional development training

This section presents the experience of additional trainings for dyslexia support. Teachers who had taken training courses were asked what kind of skills and knowledge they learned, whether they were helpful, and whether the training had an impact on their confidence. Teachers who had never attended additional training courses were asked the reason they had not. Both comparative dimensions showed satisfactions and dissatisfactions. Satisfactions after taking course related to several factors. The number of teachers who attended teacher training were less than 50% of all those interviewed (see Table 7).

Table 7: The number of teachers who had attended additional trainings

	Dyslexia Friendly School	General School
Attended	3	2
Never attended	2	4
Total	5	6

5.4.1 Satisfaction

Three out of five teachers at DFSs had previously attended professional development training. Their level of satisfaction was related to their motivation for attending the course and what they learned. In addition, schools supported their study, and this was reflected in their satisfaction. Some teachers who took training courses did so based on their personal interest, and it was these teachers who expressed more satisfaction. They mentioned that the subject was related to their specialty or they felt that it was essential for their careers. When teachers realized that the course was practical or affected their salary or promotion, their experience of satisfaction was also high.

DFS1T2 attended a one-year training course and learned about basic reading strategies in all different subjects for all students. The course was based on her interest and that motivated her from the beginning. The strategy taught in this course was that strong reading skills are essential to study any subjects. This course was a positive experience for her because the study stimulated her interest and she felt confident that this strategy would work with all students, including dyslexic ones. She also obtained plenty of opportunities to discuss real cases with other teachers from all over Norway. It was very important for this teacher to share experiences, learn theories and connect with teachers who had different experiences. She became a member of the reading teachers' network in this community. Her school offered her one paid study day per week. After training, she was promoted at school and her salary increased a little. Although the subject she learned was not specific for dyslexia support, the teacher became a leader of all reading programs in this school including dyslexic students, and she had created reading classes and materials after this training course.

Another teacher from a GS took courses twice by Statped. The course taught the differences between writing and speaking a language, how dyslexic students recognize letters, and how to show the letters to them. This was a one-day course with several different topics by the same lecturer. Pure interest and needs for daily practice were her motivation. She realized that each topic in these trainings inspired her and was conducted in practice as well. This teacher learned basic knowledge about what dyslexia was, and said it was very helpful for her to understand how dyslexic students experienced their difficulties. This teacher felt that the training had an impact of her expertise. After the training, she was confident in talking with parents about what kind of help their children needed and how she could support them. She

convinced parents to purchase computers for students, for example. Although her school did not reflect her efforts into career advancement, this teacher was satisfied with learning at the course. Another teacher from a DFS took both a weekend course and a two-year course. She felt that the weekend course was more interesting and practical for her as the subject was about pedagogic psychology, which stimulated her interests. She felt that she learned a lot from the weekend course. However, in terms of being confident, the two-year special pedagogic training course gave her more confidence. In terms of her career development, the teacher felt more secure because her leaders trusted her after she had taken the training courses. However, she did not feel that the training had an impact on her students and their parents. She believed that experience as a teacher was more important, so training was not enough to be trusted by students and their parents.

As demonstrated by the above examples, satisfaction from attending additional training was highly related to teachers' interest and practicality. Additionally, if schools reflected the effort into their career, such as entrusting them with a new position or on increased salary, their satisfaction became higher.

5.4.2 Dissatisfaction

Some teachers were not adequately satisfied or had struggles after their training. One teacher from a DFS followed the recommendation from the school to attend additional training. The topic of the course was different from the one that she was actually interested in, and she was not satisfied that the length of the training was enough to learn skills and knowledge.

Although she attended several courses, she did not feel herself to be well-trained. The teacher learned small techniques in order to ease students' difficulties. The skills she put to use were generally incremental changes to teaching routines. While she considered these to be helpful, overall she was not impressed with the course. She did not feel that the training had an impact on her students or their parents. Since she had already built a relationship with these parents for years, a few hours of training would not have an impact on her confidence and relationship with the parents. The teacher thought that it is the most important to learn about the dyslexia ICT support program *Lingdys*. She emphasized several times that teachers should know digital devices such as *Lingdys* well and remind students to use their support programs and tools.

Another teacher from a GS also took a two-day course by Statped. She had been a teacher for 26 years and had a grade 8 student who could not read or write. She was a special teacher for the student and provided help in all subjects in order to follow the class. The teacher took this course in order to support this specific student. The course introduced a specific method of teaching vocabulary using syllables. In the beginning, the teacher needed to find a simple textbook where students could read about 80 %. The teacher read the textbook for the student and pointed to every word. After that, the student tried to read the words by herself. Then, the teacher clapped in order to count the number of syllables. The student had to learn syllables so as to both read and write. The teacher sometimes cut out pieces of paper with each vocabulary written on them to show the syllables. Afterwards, the student looked for the words which she had learned with syllables from the textbook and tried to write the word by herself. The teacher made original handwritten vocabulary cards so that she followed the method she was taught in the course. Actually, she was not allowed to improvise any methods of her own to support this student because the teacher had to follow each instruction that she had learned from the additional dyslexia course exactly. Even though she learned this method in only two days, she understood it well and it contributed to her students' learning in practice. However, she seemed to struggle to follow the aspect of the method at the same time. In response to a question about skills and knowledge from the teacher training, this teacher answered,

GS2T1: *I CAN'T answer because I just have to work with this student, and if she has progress in a reading I can see it she is maybe more, can read a bit more. But I didn't know this student from before and now I just have to work with her two, three months. So, I cannot answer.*

This teacher studied this method for only one dyslexic student who was unable to read and write and had to follow all the instructions, whether she agreed with them or not. The teacher spent so much time finding the appropriate textbooks and to create the handwritten materials. However, these efforts did not always satisfy the student. This student did not want to be taken out from the class to study with a special teacher. She seemed to feel that it was shameful.

GS2T1: *when your student get the old, she or he is shamed that they cannot read. And they think they are stupid. (...) You must convince them that they can really learn and not they are stupid. And when they are thirteen and fourteen, get old, very important for them to compete between friends, and maybe they don't they don't want to struggle for reading.*

Interviewer : *So, in this case, what do you do?*

GS2T1 : *Today, I threw her out. Because she didn't want to work. She didn't want to work. You have to follow this program and in and I hope afterwards she will learn a little bit. That the only thing to do.*

This teacher had not found a good solution working with this method, although she was trying to manage it. However, she did feel that what she learned from course had an impact on the parents of her student. The mother of this student trusted the teacher more because of her expertise. However, she could not say with certainty whether it was helpful or not, because it would take a few years to accurately assess the result of the program with her student's progress. In terms of her career development, it had no impact. She believed it could be possible that young teachers may be able to obtain financial benefits or a promotion if they were to expand their expertise through such training. However, she did not believe this would be the case for her, as she was nearing retirement.

5.4.3 Priorities

At both DFSs and GSs, few teachers attended additional dyslexia training in general. The reason that teachers did not take further training was asked. Four teachers pointed out that it was difficult to prioritize training in their work.

Two out of five teachers at DFSs and four out of six teachers at GSs had never taken additional training for dyslexia support (Table 7). The most common reason these teachers mentioned was that it was difficult for them to find the time to attend the course. Teachers must conduct lessons for their own class every day. Their priorities were to motivate their students and dedicate their time to personal support. Therefore, it was not preferable that additional training programs were held during the working hours of the weekday. In addition, if it was held at the weekend or after work, it was also hard to find the time because teachers preferred their private time with their family or friends. A teacher also mentioned that it would not be realistic to attend something after work because they would already be exhausted. Therefore, most teachers wished their schools would offer flexible hours or training at their school during working hours.

GS2T2: *I think that... maybe less likely that I would go so I think it would hard to be the course during a day, and then we have to certain another teacher to take my classes that day. Because you should work 8 to 4 and like in the evening, you don't really that's not go (laughing a lot) sit down hard even more because it's so tired.*

I think it is like in my work time and they would have put in another teacher to set my classes that I wouldn't need anything else.

One teacher emphasized that it was more important to show up to her class every day than to attend a training course. Therefore, if some of her colleagues joined a training as a representative of their school and shared the knowledge with everyone, it would be much more effective.

None of interviewees requested tuition fees. Although one teacher referred to tuition fees, he did not mind covering it by himself as he did not consider it too expensive.

GS1T1: *Sometimes, of course if this is something like that I wanted it's pretty expensive I ask whether we can spread or whatever, but this is my...I... I love my work so, if I can go on a course, and learn something new, it's good for the school, and I believe as good for me. Also, personally, and professionally, I think.*

Promotions were also never pointed out.

GS1T2: *I'm not sure that a lot of teachers think about career in teaching ... ah... I think like when you have decided to become a teacher that's... then you are a teacher and you don't kind of there is no ladder to climb unless you want to be a management. So, I'm not sure if that's incentive for people to study more.*

One teacher suggested that schools must recommend their teachers to attend learning courses, and it is also important that a school should share knowledge and skills with the teachers who have not attended the course in order to improve the school environment.

GS1T1: *I believe that the school has the big responsibility to be updated what's up there, and send us on courses. I think that the school must be ah... more proactive and send teachers on courses and (...) follow up. If they have learnt something, (it is) shared with rest of the staff, if the course was good, ok is there something that we can buy a material or a stuff? Ah... how can we cooperate this if it is good, how can we incorporated they usually we are sent on the course.*

This teacher had a different reason not to take any specific trainings about dyslexia. The teacher was dyslexic himself and he believed his own experience was helpful in understanding his students.

GS1T1: *I didn't choose writing and reading difficulties (teacher training), I chose math and behavior because since I have a firsthand experience how it is to be dyslexic myself.*

Mainly you know my experience with, first of all I have dyslexia myself so eh... that is why it's I very often gets work with those kids because I know at least what they mean.

That's my philosophy, and I don't know with something you can find in the book, so whatever that what my teacher told me when I got my diagnosis. I just felt like that work really good for me.

As mentioned, the main obstacles to attending additional courses were that it was difficult to find time. However, it was also true that some teachers who committed a year or more for their study sacrificed their weekend or working hours.

5.5 Teachers' needs

All teachers, whether or not they had attended additional dyslexia training courses, were asked what skills and knowledge were necessary to teach dyslexic students in practice, as well as what themes teachers hoped to learn about in the future. Some teachers had clear interests that they wanted to learn more about if they had a chance.

5.5.1 ICT knowledge

Among DFS teachers it is already common to use digital devices for help, while GS teachers did not focus on it to the same extent. However, several teachers were interested in learning computer knowledge, especially *Lingdys*. For example, GS1T1 had been planning to take her first teacher training the following week. This three-hour course would be about *Lingdys*. GS 1 had ordered computers for dyslexic students, so she needed to know how to use the program and hoped there would be enough computers for whole school. This teacher also hoped to take a master's degree focusing on children with dyslexia in the near future.

Another teacher of a GS also was interested in learning *Lingdys*, because her students use computers with this program. The teacher was not so familiar with the program, but she felt it should be important.

GS31: *I think it will be very important to have more computer skills. We also and I think I need too because Lingdys program for listening to. I didn't know about it just few years ago, and we have to know more than people do so we can't help them, of course. I think that's very important.*

Another teacher of a DFS already used a lot of digital devices and took several training courses. However, she still wanted to learn more about *Lingdys*.

DFS2T1: *I will probably, like I think the most important thing for me is to learn the probably what I would do, just to like I wanna to learn a course how to use the programs...for example, Lingdys.*

5.5.2 Linguistic knowledge

Although teachers were not planning to take additional training in the near future, some teachers were affected by their previous dyslexia course. One of them who learned how to cultivate basic reading skills believed that the skills help all students, including dyslexic ones.

DFS1T1: *I think it's the most important that they understand what it means to read in their subject. Many teachers think that reading is the only in Norwegian, the subject Norwegian. That's not right. Every teacher is a reading teacher and must be.*

Another teacher who learned special methods struggled to adjust these to her student, and the important thing to her was based on her daily practice following this method. She pointed out the importance of learning their mother tongue systematically as early as possible. She believed that it was very important for all children to understand syllables and it is helpful for both reading and writing. The theory was not from the course, but she felt that based on her experience.

GS2T1: *Main things is to know how important is to know how you make it vowels. And that you have to learn at teach children how we make it we say them, how to use the tongues and mouth and their teeth. And be sure they understand that the vowels have letters that the two different things. They have to know very much about this pre-school-pre-reading, That's very important. You must work very, very much about this before you learn this. Teach them to read.*

5.5.3 Other skills in practice

Apart from several practice skills, such as ICT and linguistic points of view, one teacher wanted to know tips or advice in order to support her student appropriately. The interests were based on her struggle that she had not managed so yet. It was a specific request for what she wanted to learn. The teacher struggled with building a relationship with her dyslexic student. She wanted to know specific examples from other teachers who have similar students or situation to her own. She felt that training courses about dyslexia were usually too general to fit with her case.

GS2T2: I would like to learn very specific things on like regarding how to adjust my teaching to him. Yes, yes like... like very concrete very specific like tips an example, so how to do things. I think it will be better if someone presented something they had done that this student had this and this problem we are going about this I did exactly this, so it's concrete, not just talking in general about what's important because... it just hard to transfer that into something concrete by yourself.

There were several different opinions on what teachers need in practice. Regarding teachers' attitudes, a patient and good relationship with both students and their parents were listed.

GS1T2: I think that's very important and you have to have a good relationship with students to make sure that students understand but also that student feels he can tell you if it is too difficult or if they don't understand. And you also have to have a good relationship with the parents because you have to communicate with them.

Some practical views were also mentioned. One teacher found it important for teachers to know how to adapt the lesson and assignments for the dyslexic students. Another teacher emphasized that teachers must encourage students with reading and writing difficulties to practice more.

5.6 Roles of dyslexia friendly school

As an additional question, interviewees from GSs were asked whether they knew what DFS was while interviewees from DFSs were asked whether they noticed any differences between DFSs and GSs. Surprisingly, none of the GS teachers had heard about DFSs. As explained before, dyslexia friendly schools are general schools with a label that is approved by Dysleksi Norge. Both DFSs in this study were approved by Dysleksi Norge in 2017, which means they

were relatively new as a DFS. Many teachers had thus experienced the school before and after being a DFS.

One teacher who also worked for school management was very critical about being a DFS, while other teachers were relatively positive. He mentioned that he did not find any differences before and after being a DFS.

DFS1T4: *I don't think that school is more dyslexia friendly... than it was before, They (Dysleksi Norge) have nothing to do with that we do it, that's (= all materials are prepared by) ourselves. (...) I think it's more about politics, more about an organization trying to make the way to political landscape to have a certification, just so somebody consider this is all good, I think actually this kind of certification could be danger to work, with dyslexia students.*

From other teachers, however, relatively positive answers came out. An interesting finding was that when they compared their school as a DFS and other GSs, they felt a clear difference. Being labelled 'dyslexia friendly' gave them a certain status among other schools in the area, and GSs would seek advice from them regarding how to help their own dyslexic students. In this case, DFSs must have more knowledge than GSs. However, if the focus was on the internal difference before and after being a DFS, they did not feel that this difference was big. They focused on supporting dyslexic students and were already familiar with digital devices before being a DFS.

DFS1T1: *We are popular school also because we are a DFS... ah... I think a lot of schools came to us for advice, so we have to be more aware all over the practice. We think about dyslexic a lot, and how we practice.*

DFS1T1: *We have always in that period (=before being a DFS) we have given personal computer to dyslexic students. And... have reading course, but I think... the awareness, that's good. Not among all the teacher, it was for typical Norwegian teachers.*

DFS1T2: *It's little bit of different, you feel little bit more plikt (duty).*

In order to become a certified DFS, a GS must fulfill 10 requirements by Dysleksi Norge. As DFS1T4 mentioned, they have no support resources from Dysleksi Norge (1.2). One assumption is that a school admitted as a DFS is a school that has already been well-prepared to apply. If this is the case, it is possible to say that DFS is just a 'label' for a school that have already contributed to dyslexic students.

5.7 Summary

This chapter presented the data collected from two DFSs and three GSs. Each school environment was very different although there were smaller differences in terms of their assessment system. Regarding students' support and teachers' struggles, DFSs widely accepted digital tools and serious struggles did not appear. In GSs, however, teachers seemed to struggle more even as they spent a lot of time to support their dyslexic students. The reasons of satisfaction and dissatisfaction with additional dyslexia training and teachers' priority were explained. After that, what subjects or fields that should be taught in order to develop teachers' expertise were listed. In the end, DFSs stated that they were expected not only to provide advanced support for dyslexic students, but also to have the role of a specialist or an advisor in their society.

6 Discussion

6.1 Introduction

This chapter will focus on discussing the key themes which emerged from the findings. First, research questions which were posed in Chapter 1 will be answered (6.2). The discussion will draw upon and expand on the concepts introduced in the literature review in Chapter 2, theoretical frame works in Chapter 3 and findings in Chapter 5. The themes of the discussion are expertise (6.3), professional development training (6.4) and individual support in practice (6.5). The chapter concludes with a brief summary (6.6).

6.2 Expertise

An important finding in this research was how expertise was implemented in practice. Almost all teachers in this research were well-experienced and educated. However, for some teachers, it was challenging to support dyslexic students. There were various reasons: the nature of the challenges experienced were very different for each student; teachers were not familiar with dyslexia; students could not accept their own difficulties; and teachers were sometimes isolated. In other words, several teachers felt difficultly in asking or working with their colleagues regarding dyslexic students' support. Even if a teacher was dedicated to their students, the work was not always effective because of lack of support between teachers.

Most of the teachers in this research worked individually. Both in GSs and DFSs, several teachers lacked the opportunity to discuss their struggles with their colleagues because they did not know which teacher at their school had dyslexic students. At one of the schools in this research, not only the teacher but also the headteacher was unaware of which teachers had dyslexic students. Another teacher also did not ask for help even though she struggled a lot to follow a dyslexic support program. The reason was that she was one of the most well-experienced teachers. She felt that it was her role to give advice, not to be helped by her younger colleagues. Two SEN teachers felt it difficult to cooperate with homeroom teachers. Even if they reminded homeroom teachers to take care of dyslexic students, homeroom teachers did not always remember it themselves. These SEN teachers also struggled with

asking for support from their colleagues because they were more knowledgeable than homeroom teachers. Even if schools had specialists or long-experienced teachers, their expertise was not effective in practice because it was not clear who should be asked. There were also several barriers between younger teachers and senior teachers that prevented them from helping each other. As a result, not only junior teachers, but also advanced skills teachers were isolated in a school. Cooperation and understanding between teachers will develop expertise, and the skills and knowledge will contribute to everyone in a school. The quality of a teacher is more effective than any particular method or model of intervention for students to develop essential literacy skills (Westwood, 2008). The responsibility of taking care of students is not only the job of an individual teacher. It is essential for schools to consider that all teachers are involved in all students' support.

A further issue is the importance of the school itself in supporting expertise. Rose's model of Removing Barriers to Achievement (3.5) makes the importance of support structure at school clear. The model explains how effective expertise works in a school and in a community. It is not necessary for all schools to provide specialists, but some local schools in the community should provide them. Applying this model (3.5), all teachers in all schools should have core skills and knowledge so that they observe students carefully and realize whether their difficulties warrant interventions. If all teachers are provided with basic skills to understand students with literacy difficulties and to give appropriate advice to dyslexic students, these students will not be overlooked. At least one teacher with advanced skills should be in all schools. Their role is to be a leader of other teachers to facilitate appropriate interventions, organize support programs for students and provide short training courses for their colleagues. Those are key factors for supporting dyslexic students, and it is essential that reliable support is provided by the school. If teachers do not understand what dyslexia is, it would be impossible to give students adequate training in reading and writing or to improve their difficulties. Misguided approaches will only add to the struggles of both students and teachers. There are no perfect remedies against dyslexia (2.1), therefore appropriate understanding and approaches to managing the difficulty is needed. It is this expertise that teachers are expected to have by students and their parents.

One DFS in this research was more structured than other schools. Twelve teachers who taught Norwegian worked as a team, much in line with Rose's model of Removing Barriers to

Achievement in section 4.5. All teachers in the team had core skills so that dyslexic students could exist in any classes. Several experienced teachers engaged in students with complicated literacy difficulties. They also supported less-experienced teachers with advice. A newly hired teacher managed five students with literacy difficulties in his class because he had basic knowledge about ICT support and could ask several experienced teachers for advice at any time. At least one teacher had specialist skills. A support class was organized by the leader who took professional development training. After one year of training, the teacher became a leader of this team and worked with curriculum planning and organized special classes to help student with literacy difficulties. Teachers could advise students on how to manage their difficulties and support dyslexic students with appropriate knowledge. They did not expect students to be cured of their difficulties. As a result, more students were able to study without special support. Dyslexic students learned with their classmates in the mainstream class.

As mentioned in 2.1.2, early identification is also considered important for dyslexic children. Students must be monitored to see whether there are any problems with their language development early on. When their study progress seems to be affected by literacy difficulties, specialists can give study advice. If the difficulties are not improved, official assessment will be needed to give a diagnosis. In this research, when teachers recognized that a student seemed to have literacy difficulties, some schools supported them with SEN teachers or special support groups. Another school had a weekly meeting to report such situations and discuss support. All schools conducted individual assessment of literacy skills once a year for all students. However, not only official support, but also quality of intervention has a significant impact towards students' progress (2.1). In addition, not all students are given a diagnosis, and students who suffer from undiagnosed reading and writing difficulties need extra help and understanding (5.3.1). Several teachers in this research mentioned that it is harder to support students who have not been diagnosed. In these cases, it is useful for teachers to share their knowledge, information and experience to provide quality intervention.

There is still room for discussion in many aspects of this topic: when students should be assessed; how schools support students with literacy difficulties before and after assessment; and what is an effective intervention for an individual student. However, all teachers should be able to recognize when a student is someone with literacy difficulties. The quality of the learning environment is essential for all students. Teachers need to cooperate with their

colleagues, ask for advice and support each other. Wearmouth (2001) mentions that the responsibility of dyslexic students is no longer for individual teachers but is the responsibility of all school staff and school management because dyslexia is becoming a school-wide issue. The key aspect of inclusion is 'teamwork', in other words, teachers and parents who support dyslexic children should cooperate together. Within school communities, local authorities, and other systems of management supported by government ministers, teamwork is crucial to fulfill inclusive education (Reid, 2016).

In Norway, the government supports dyslexic people with an official diagnosis, whose contribution has made knowledge of dyslexia common among teachers and schools. As several teachers emphasized (5.1.1), it is essential to diagnose students who suffer from dyslexia because they have a right to be provided official support. As mentioned in Appendix D, NAV, Statped, PPT, Dysleksi Norge or other institutions related SEN take the initiative to advise local schools or individual students and parents. In addition, DFSs could be a leader of the community to give advice to other GSs. One of the DFSs in this research mentioned exactly the same idea as Rose's model. Several teachers commented that the DFS was regarded as a specialist in their community and some GSs asked for their advice regarding dyslexia support. There seemed to be a consensus that DFSs are more familiar with utilizing digital devices and teaching techniques for dyslexic students. The label of DFSs could be useful to show where specialists might be.

According to several teachers in this research who work at a DFS (5.6), however, they did not feel any internal differences before and after being a DFS. Knowledgeable teachers and well-experienced support at the school were not there because it had become a DFS. The teachers have been working at the school and they had been already keen on supporting their dyslexic students. All the tools they used for this support had been used before getting the 'dyslexia friendly' label.

It is possible to say that schools which have already contributed more to dyslexic students than other schools are interested in being a 'dyslexia friendly school'. In fact, not all general school teachers in this study did know what a 'dyslexia friendly school' was and that they existed in Norway. Although the 10 criteria for being a DFS includes sufficient extra tools and teachers' expertise, schools are not provided extra tools or specialists from Dysleksi Norge, and DFS teachers mentioned that their internal systems and support have not changed

before and after being certified as a DFS. Therefore, it is possible to consider that schools that already have the necessary criteria have applied for DFS status once they learn about the concept. This is a possible reason why the number of DFSs has been increasing in these years.

Even if DFS teachers thought that there were no changes internally, their external reputation had changed. They were expected to serve as a specialist to help other schools. Not only GSs, but also parents and students with reading and writing difficulties expect special support from DFSs.

6.3 Professional development training

Professional development training is essential to provide appropriate support to dyslexic students and to raise teachers' awareness. As discussed in 2.4.3, appropriate procedures with enough knowledge and skills will lead dyslexic to students receiving successful support (Peer & Reid, 2003).

As mentioned in 6.2, structured expertise in each school is one of the most important factors in terms of effective interventions to support dyslexic students. According to Rose's model of Removing Barriers to Achievement (3.5), all teachers in a school need at least basic knowledge and skills. Ideally, all teachers should implement skills from several courses and keep learning in order to maintain their motivation. It is, however, not realistic that all teachers will find the opportunity to attend additional courses in order to equip core skills equally.

In this research, 5 out of 11 teachers had taken additional training related to dyslexia support. Sixty per cent of DFS teachers took professional development training while 33% of GS teachers did. The main reason why few teachers were willing to take courses was that teachers prioritized working with their students as much as possible. As a result, it was hard to find time to attend such training. Some teachers mentioned that it was difficult to manage their schedule because additional courses were usually held during the day. Taking courses after work or during weekends was not always feasible. Others did not prioritize them because they

were experienced teachers. A teacher hoped that one of their colleagues would join a training and share the knowledge and skills with their colleagues.

The main barriers for teachers to attend training courses are not only difficulties with scheduling, but also the fragmentation and discontinuity of the learning. In many cases, staff development is not compulsory, and teachers can choose what they learn by themselves. This might be called a fragmented approach. In other words, it is difficult to connect such courses with what they actually need to know or their previous study (2.4.4). As a result, one-off workshops that are provided by external experts with the same content have been common (2.4.4) as these are repeatable and can be provided to many teachers simultaneously. The trainings are usually unstructured and not satisfying for teachers who want to learn about each specific case (2.4.4).

As this research shows, few teachers in each school take dyslexic training even if they have several dyslexic students. Few teachers tend to take the responsibility to support dyslexic students and have the opportunity to attend teacher development. Their priority is with their daily work more than training. Realistically, schools should take the initiative to support teacher development if they expect higher expertise.

In this research, among teachers who have attended further dyslexia training, some were satisfied with the experience and others were not so interested. Factors that accounted for satisfaction with training included: a workshop which does not consist of 'top-down' lectures; extrinsic incentives, and contribution to their students directly. Even if some teachers did not have positive feedback, it was acceptable for them if the course did not give them too much pressure. However, if new skills were taught repeatedly and the skills and knowledge were not adapted to their work in practice, it was hard for teachers to keep their motivation and interest. It is not effective if staff development is held too often. Teachers felt stress in managing their schedule.

Support and understanding from their school will motivate their teachers and encourage them to attend staff training (2.4.2). Although extrinsic incentives such as promotion or rewards are possible factors in order to encourage more teachers to enhance their expertise (2.4.2), most schools in this research did not offer such incentives. Only one teacher answered that she was

offered several extrinsic incentives from school, such as paid study days, a leadership position and salary increase. The school expected that the teacher would be a leader that could organize a new reading program for all students. This was seen as a positive in terms of this teacher's motivation. However, it is not currently a realistic solution that all teachers take an additional training equally: cost of trainings is something that should also be considered because additional funding will make it possible for teachers to concentrate on development of expertise. A possible suggestion is that schools provide a training day for all teachers at the same time. This training should be held at school and be included in their official work schedule.

Implementation in practice is an important factor in professional development courses because what teachers actually have learned will be reflected to students directly. When teachers could reflect what they had learned to their students, they felt positively about the training. A teacher spent a year studying how to cultivate basic reading skills. She contributed not only to dyslexic students, but also all students at her school to make them good readers. This was because she learned that good reading skills are based on all subjects. She was working as a leader of other teachers after the training and created new programs and classes. Another teacher joined several one-day courses and studied basic knowledge of what dyslexia is. She understood more than before the difficulties her dyslexic students felt. This knowledge was helpful to know why dyslexic students took more time to do activities in her class and how she behaved towards them. The learning opportunity motivated the teacher to learn more about dyslexia and she continued taking other training courses.

On the other hand, there were not only positive response about additional training. Teachers were not satisfied with the training if implementation did not work in practice. Depending on the contents, environment or the way the course was provided, some teachers ended up, confused or demotivated (2.4.2). In this study, a teacher from a GS struggled a lot. Her school advised her to attend a dyslexia support training course since she had a student who needed special support. The course focused on a special method to teach syllables with handmade cards as a reading training for dyslexic students. The teacher was taught the method in a top-down manner by an outside dyslexia expert, and she was only allowed to teach her student with this method. It was hard to motivate the teacher because her student did not like the method and the teacher was also not sure whether the method suited her students. It was also a struggle to follow

the method that she has just learned. She could manage this situation with different approaches based on her experience so that the student remained motivated. However, it was not allowed for her to implement any other approaches for the student.

As this research shows, teacher developments conducted on a top-down basis risk teachers' resistance. Pressure by experts can force teachers to implement their new skills in a context which is not appropriate for the teachers' purpose. It is also hard to expect teachers' involvement and their commitment (2.4.2, 2.4.4). According to Cognitive Development Theory of Vygotsky (3.4), the role of teachers is to lead students to succeed in their tasks. Teachers must be professional in order to contribute to students, and teacher development should give them appropriate knowledge and skills for this. However, as this research shows, there is the possibility that teacher development makes both teacher and student confused. Different types of support by skilled adult is needed to expand children's potential. Teachers can demonstrate, advise, and keep an eye on students (3.4). However, a specific method should not be forced upon them. It is important that teachers understand and agree with what they have learned. Teachers should feel that the method is appropriate for their students and encourage students to understand that.

Staff development is essential, both to identify dyslexia and provide support for dyslexic students. Teacher's awareness will be able to lead students with dyslexia successfully. In practice, however, few schools focus on supporting dyslexic students and provide their own specialists at school. Hopkins (2015) suggests that three different categories should interrelate to improve the school environment; the school, working groups with colleagues and individual teachers. Schools should take responsibility for management, resources and strategies of staff development. Working groups should support the details of staff development arrangements in order to provide appropriate training for individual teachers. Then, each teacher focuses on their classroom and students in practice. According to Hopkins (2015), these three categories mutually collaborate in effective schools. The key factor of satisfying results is the quality of teaching. If the quality of expertise is enough to lead students successfully, one-to-one teaching by experts is not always necessary (Rose, 2012). Therefore, appropriate training is significant in order to provide effective intervention. Schools should consider that all teachers need the opportunity to take additional and specific training to provide basic skills and expand their expertise.

6.4 Individual support in practice – Challenges for teachers

One of the clearest findings in this research was in relation to the degree of familiarity and competence teachers had with digital devices both at GSs and DFSs. It was surprising that DFSs were more familiar with ICT and utilized it in their daily support. At both DFSs in this research, teachers were positive to utilizing *iPad* and computers with dyslexia support apps. It was not special for both teachers and students at both DFS1 and DFS2 to use ICT in order to reduce students' study burden. Students could listen to textbooks instead of reading them, write papers on their computers instead of by hand.

In this research, one of the DFSs lent all students at school an *iPad*. Diagnosed dyslexic students were allowed to use extra applications for their study support. Teachers did not expect students to improve their fundamental reading and writing skills and they believed that dyslexia was not such a serious difficulty if students could manage their study with digital devices. Dyslexic students normally learned in their mainstream classroom. Thanks to ICT, teachers struggled less with dyslexic students. This school also had specially arranged classes, but this was for students with complicated learning difficulties or students who had not been diagnosed.

On the other hand, GSs were skeptical or not so interested in using ICT. Once students got a diagnosis, they had a right to utilize dyslexia support programs. Some of teachers had never seen their students using their computers and actually did not know what applications their computer had. One of those teachers who were not familiar with ICT struggled with how to reduce the student's learning gap. There was a big difference between the student's literacy difficulties and his IQ. The teacher felt sorry that her student was falling behind in her class although he was actually very able. All teachers in the GS spent much time to create their original materials or techniques such as handwriting, repetition or speaking out loud. Students with dyslexia usually learned several subjects in the form of specialized interventions removed from the rest of the class. Teachers also expected students to improve their reading and writing skills, and these teachers encouraged students to read and write more for practice, to memorize new vocabulary or to learn syllables. However, the expectation caused a lot of

struggle for these teachers and they thought that dyslexia was a very serious problem. These schools do not work as a team. In other words, individual teachers have the sole responsibility for dyslexia support and works with their own knowledge, experiences and beliefs. This situation is a real example that expertise does not work effectively. As mentioned above in section 6.2, schools as institutions and their leadership must also take responsibility for quality interventions.

In terms of effective interventions for dyslexic students, there are many options. Phonological awareness training has an impact especially toward improving reading skills. This has been studied and experimented on by a lot of researchers. For instance, audio-visual training which connects print and phonology has showed the improvement of reading skills (Magnan, Ecalle, Veuillet, & Collet, 2004). Development of morphological awareness and skills by well-educated special teachers can improve reading and spelling skills of dyslexic students (Arnbak & Elbro, 2000). Systematically prioritized phonological skills for reading and writing are effective for teaching reading to children with dyslexia (Rose, 2012). These methods have already been proved as effective interventions and a lot of dyslexia support trainings focus on the traditional approach. The skills- and knowledge-based forms of additional courses are focused on practical, understandable and usable skills so that teachers are able to utilize their new skills within their own teaching situation (2.4.2). At the same time, utilizing ICT has been increasingly emphasized and many dyslexia support apps exist. As mentioned in 2.5.1, ICT can remove study barriers related to literacy difficulties and extend students' potentials (Statped, 2019). In other words, studying without technology means they lose the right to equal learning opportunities. Thomson (2008) stated that the support of ICT was one of the most practical solutions for dyslexic students in secondary school. ICT makes it possible for dyslexic students to cultivate their individual learning styles in order to attain their goals.

The literacy difficulties experienced by students with dyslexia affect their performance in the classroom. On the other hand, it is widely believed that dyslexia does not affect their IQ. In other words, if students can manage the literacy difficulties, they can follow the subject studies at school. Dyslexia is not cured even if students are trained. Instead of treating dyslexia, it is possible to ease the difficulties. If dyslexic students struggle with reading texts, they can listen to them instead of reading them on paper. If they have a problem with poor

handwriting, they can write papers on their computer. There is room to improve if they learn the phonological systems or basic study skills for dyslexic students. There are many approaches that have already been acknowledged and an increasing number of new computer applications for study support is being created.

One of the most important jobs for teachers is to choose the appropriate apps and teach their use to their students with dyslexia. Teachers who have appropriate knowledge and skills help dyslexic students reduce their difficulties, as was evident in the DFSs. In other words, it is very challenging to support dyslexic students if teachers cannot choose the appropriate intervention to their students. For example, 30 different types of learning resources, such as study support apps, are listed by *Kunnskapsbanken* (2019) a webpage provided by NAV. They also list seven related webpages in order to get more information about support programs. While it is helpful to have more information, too much information can be cumbersome. Therefore, it is important that teachers possess enough knowledge: the differences between apps and which apps are appropriate for different types of students. Although teachers have learned a specific approach, it is hard to say that one approach will be suitable for all students.

Vygotsky's cognitive development theory (3.4) gave a perspective on how children will achieve difficult tasks if they are supported by more skilled people. Applying this theory to this research, when skilled teachers provide appropriate help to students with dyslexia, the students have more things to do by themselves. In this research, teachers who focused on only teaching phonology or extra writing practice felt that it was difficult to support their dyslexic students, while teachers who utilized ICT did not share with this view. However, one should not dichotomize such approaches, such as trusting only in ICT or only repeating traditional ways. Both approaches have their advantages and disadvantages.

Teaching basic study skills, especially related to reading and writing skills, requires a certain amount of time. It takes relatively a long time, and both students and teachers must be patient in observing the results. In addition, the quality of expertise of teachers might affect the students' improvement significantly. Well-educated teachers can expand students' abilities, while teachers without appropriate skills might worsen the situation of students. As mentioned above, the impact of teaching basic skills is significant, and an understanding which is focused on dyslexia itself might be able to improve such difficulties. Therefore, it is

effective to combine several approaches depending on the purpose. For example, morphological training studies involving new computer technology might help students learn to read with speech feedback: students might read words on a computer screen segmented into morphemes. The computer could read aloud any morpheme the students were not able to read by themselves. This kind of remedial training might be very effective (Arnbak & Elbro, 2000). In this study, a DFS chose both approaches. The school lent an *iPad* to all students and encouraged dyslexic students to utilize *iPads* and dyslexia support applications. At the same time, the leader of Norwegian classes at the DFS learned how important basic reading skills were in one-year teacher training. The teacher believed the basic reading skill is based on all subjects, and she contributed to organize the classes to focus on building these basic reading skills.

There are no perfect solutions and it is advisable to combine both advantages for dyslexic students' support. For short term goals, utilizing ICT should be absolutely effective. Students can listen to text instead of reading and can type on the computer instead of writing by hand. This solution will be able to release both students and teachers from many of their struggles. At the same time, learning study skills should also be respected. It is necessary for dyslexic learners to have knowledge of the phonological aspect and of dyslexic features. Although it is hard to eliminate their difficulties, it is possible to improve the situation with learning how to manage them.

6.5 Summary

This chapter focused on discussion about the three key themes which emerged from the findings; expertise, professional development training, and individual support in practice. In terms of schools' environment, Rose's model is practical to take appropriate actions by teachers. Observing children and taking care of them before and after assessment are essential at all schools and if teachers have different levels of knowledge, it should be valuable for both teachers and students. 'Dyslexia friendly school' was a label which signaled their professionalism to other local schools. They were expected to be a specialist in the community, but they had actually been 'dyslexia friendly' before getting a label.

Professional development training is essential for providing effective support for dyslexic students and identifying dyslexia. A school, colleagues and individual teachers should interrelate to improve quality support. In other words, not only individual support in classrooms, but also school management and collaboration with working groups. Regarding students' support, both utilizing ICT and learning study skills are effective, and it is better to combine both advantages than to focus on only specific approaches. It is significant for teachers both to update their knowledge and skills and to respect traditional approaches.

7 Conclusion

This chapter concludes this thesis with a summary and recommendations. First, this chapter presents the overall picture of this thesis. Then, recommendations that emerges from the discussion chapter will be presented. The structure of the chapter is Summary of thesis (7.1), findings in relation to research questions (7.2), recommendations for policy makers (7.3), recommendations for future research (7.4), limitations (7.5) and conclusion (7.6).

7.1 Summary of thesis

This thesis examined dyslexia support between dyslexia friendly schools and general schools in Norway.

Chapter 1 presented Introduction. The rationales of this study made it clear why this thesis would focus on dyslexia and development of expertise, especially dyslexia friendly schools in Norway. Research questions were important to present what would be explored.

Chapter 2 presented the Literature review that showed relation to studies have been already done. In this chapter, basic knowledge of dyslexia and the concept of dyslexia friendly schools were explained in order to understand the background of this thesis. Inclusive education, development of expertise and ICT for dyslexic students were also expanded on.

Chapter 3 described Theoretical frameworks. First, key concepts of this thesis, inclusive education and development of expertise in this study were defined. Then, two theoretical frameworks, Vygotsky's Cognitive Development Theory and Rose's model of Removing Barriers to Achievement, were introduced.

Chapter 4 presented Methodology in order to make the background of this research clear. The research sites, choice of interviewees and data collection methods were described. Two different types of local schools, dyslexia friendly schools and general schools, were chosen. In total, 11 teachers participated in this research.

Chapter 5 described Findings and presented the result of this research that reflected the opinions of local school teachers in Norway. The interviews focused on the teachers' work environment, individual support in practice, challenges for teachers, professional development training, teachers' needs and the role of dyslexia friendly schools.

Chapter 6 expanded discussions. Each topic from Chapter 5 was combined and was presented regarding its relation to ICT support for dyslexia, development of expertise and additional training.

7.2 Findings in relation to the Research Questions

Three research questions were presented in Chapter 1. This section will answer these questions based on the findings in Chapter 5.

7.2.1 Research Question 1:

What are the similarities and differences between dyslexia friendly schools and general schools in Norway?

The processes of literacy skill assessment were similar between DFSs and GSs. All schools in this research conducted the assessment once a year for all students at school. Students who showed some problems took a further assessment. If a high possibility of dyslexia was found through the internal assessment, schools asked an official institution to diagnose the student(s) in question (5.1.1, 5.1.2).

Support systems and school environment were various. There were no clear differentiation in features depending on the type of school (GS or DFS). Each school had different characteristics regardless of category. In some schools, homeroom teachers had the responsibility to take care of dyslexic students individually. Other schools had special pedagogy teachers or extra support classes (5.1.1, 5.1.2).

Recognition about official support was different. All DFS teachers agreed that being diagnosed was important while several GS teachers did not know whether diagnosed dyslexic students could be provided official support (5.1.2).

7.2.2 Research Question 2:

What impact does teacher expertise have upon teaching dyslexic students?

All DFS teachers were familiar with utilizing ICT while teachers of GSs were not so much. DFS teachers preferred that their dyslexic students use ICT. All teachers in a DFS were entrusted *iPads* to support their students. They emphasized that students could manage significant tasks by themselves if they utilize ICT appropriately. A teacher of another DFS utilized many different types of ICT tools for both learning support and class management. With ICT, students will keep up the same study pace as their classmates. It would provide equal learning opportunities for all because teachers did not have to take extra time to teach their dyslexic students (5.2.2).

Some teachers who did not take professional development training emphasized improvement of students' literacy skills. Their approaches were based on their experience and they gave additional reading homework or encouraged students to memorize words. Other teachers who took additional courses to study dyslexia focused on reducing students' burden. They learned what difficulties dyslexic students had or what approaches were effective. They tried to find better approaches to their students based on what they learned from the course (5.2.3).

As a result, teachers who took professional development training did not feel it difficult to support dyslexic students while teachers who used their own approaches tended to feel struggles (5.3.2).

7.2.3 Research Question 3:

What influences does professional development training have on teachers with dyslexic students?

Intrinsic incentives, self-efficacy and self-confidence promoted satisfaction from attending professional development training. When the contents of additional training were based on their intrinsic incentives, teachers chose the course even if it was weekend courses or a long-term course. When teachers felt the course improved their self-efficacy, in other words, that what they had learned was practical, their satisfaction become higher. Additionally, if their schools offered extrinsic incentives, such as promotion, paid study days or an improved salary, these factors motivated teachers more (5.4.1).

On the other hands, professional development training could have negative impact on teachers working with dyslexic students. When the training limited teachers' self-efficiency, teachers might be confused. It might be possible that teachers lose confidence if an additional course does not allow them to implement what they learn in a flexible manner (5.4.2).

7.3 Recommendations for policy makers

Dyslexia has been widely studied and new approaches are proposed continuously. Some teachers believe that traditional approaches are more reliable, while others try utilizing newer approaches such as ICT. Educators still experience challenges with dyslexia support and there are no clear answers as to the best way to teach dyslexic students. It is recommended to take advantage of a combination of approaches depending on students' difficulties, learning environment and the goal of their study.

ICT can eliminate many difficulties for both dyslexic students and their teachers. When dyslexic students study in a general class, listening to textbooks and typing on the computer, they may be able to follow the class. As mentioned, dyslexia is not related to IQ. Dyslexic students can understand subjects and can express what they want to say if they are supported in their reading and writing. ICT has a significant potential to realize inclusive education in terms of eliminating learning difficulties. Educators should understand how important and

useful utilizing ICT is for dyslexic students' support. Learning ICT for education should be encouraged, and teacher development to learn ICT support must be provided to all teachers. At the same time, basic learning study skills should also be respected. Although it is hard to eliminate learning difficulties completely, there are many tools available that can improve their difficult learning situations. Some dyslexic learners may be able to read more than before if they have knowledge of phonology. Others may be interested in writing if they learn the features of dyslexia, such as that bigger and colorful letters are useful. The most important thing is that educators have a wide knowledge of various approaches. Traditional approaches should be learned and implemented for long term solutions. At the same time, teachers should be updated on new approaches and share these with each other.

Dyslexia friendly schools have the potential to encourage more teachers to take teacher training. 'dyslexia friendly school' is a label which signals support quality and understanding for dyslexic students. According to Dysleksi Norge, dyslexia friendly schools have the responsibility to be a leader and provide appropriate advice or knowledge to other general schools in the community (3.2). Dyslexia friendly schools should encourage specialists and advanced skills teachers to visit to general schools in order to evaluate their support and to give advice on their approach (Peer & Reid, 2013).

Therefore, it is advisable that dyslexia friendly schools take advantage of opportunities such as an annual professional development training by Dysleksi Norge or more training courses should be held to improve their own teachers' skills and confidence. Dyslexia friendly schools are able to provide further training to other general schools. Their encouragement will inspire other schools to focus on students with literacy difficulties. It is essential for both dyslexia friendly schools and general schools to cooperate to learn and to improve their students support. Dyslexia friendly schools should be specialists in their community and improve the quality of inclusive education.

7.4 Recommendations for future research

As mentioned in section 1.1.3, the number of dyslexia friendly schools has been increasing dramatically since 2016. It will be worth focusing on the reasons why more schools want to be a labelled as a dyslexia friendly school: whether there are specific reasons, or if it is just a

trend. In this research, teachers of dyslexia friendly schools mentioned that there are no differences in terms of internal student support before and after being labelled as a dyslexia friendly school. On the other hand, not all teachers of general schools in this research knew what dyslexia friendly school was. It is assumed that schools that have already been focusing on dyslexia support are interested in being a dyslexia friendly school. If this assumption is correct, it will be an important means of bridging the divide between dyslexia friendly schools and general schools in terms of dyslexia support.

Contributions by dyslexia friendly schools will be also an interesting theme for future research. It should be examined whether a dyslexia friendly school really does act as a leader of the community to provide additional training, share support tools or consult with general schools' teachers. In this research, teachers of dyslexia friendly schools were familiar with ICT tools and utilized different kinds of apps depending on their purposes while general school teachers did not. These differences were significant, though it should not be so. There are no perfect solutions for all dyslexic students, so educators should be open to learning new approaches and to combine them. It is important to examine how many dyslexia friendly schools in Norway work with other schools. If the number is small, Dysleksi Norge should encourage dyslexia friendly schools to contribute more because inspiring other schools as experts is one of the purposes for which they are labeled. Not all schools have to become dyslexia friendly schools if dyslexia friendly schools can act as leaders of other general schools. Teachers should be interested in development of expertise and schools should support their learning. Future research will be able to advise educators on what they should do next.

7.5 Limitations

Whilst great effort was taken to address issues of validity and reliability in this study, there were limitations which should be noted. The sample sizes were not completely equal across schools. If more schools and more teachers had been involved in this research, the result would have been richer and deeper. It can be difficult to determine how many people should be interviewed. There are no strict rules, as the sample size that is able to provide convincing conclusions is likely to vary depending on the number of comparative dimensions and the purpose of sampling terms (Bryman, 2012). In order to find more participants, emails were

sent to 150 schools three times each, but few responded. Some schools were interested in this study and gave an opportunity to visit for learning more details. However, many teachers were too busy to find the time for an interview. Two different types of schools had to be chosen. Participants were required to have worked with dyslexic students in order to answer the research questions. In some cases, several interviewees worked at the same school, while in others, another school may be represented by a single interviewee. As a result, the final sample comprised of 11 teachers from 5 schools.

Although the variation and number of participants were not perfect, this study still has credibility. Qualitative interviews provide rich and detailed responses in order to collect significant interest in the interviewee's point of view (Bryman, 2015). In other words, rich data is prioritized to a large degree than sample size. It was significant for this research that both dyslexia friendly schools and local schools participated, and several schools from both comparative dimensions joined in this study. In addition, the 11 teachers' background varied widely. Teacher career was from half year to 29 years. Some work as a homeroom teacher, others work as a SEN teacher or a management position. Some have dyslexic students every year, others never did before. All opinions in this study were interesting because of the variation of teachers.

Another limitation was interview language. All interviews were conducted in English which was not the first language for interviewees although most of teachers communicated in English fluently. If they have been allowed to answer throughout the interview in Norwegian, which is their mother tongue, some different views might have come out. One possible solution was to hire a translator. However, several limitations also existed, such as costs and scheduling. Moreover, it was a concern that participants might feel extra pressure if a third person was listening to their interview. Therefore, all interviews were conducted in English.

Most of the interviewees accepted having interview because they were confident in speaking English. Some teachers preferred to answer some words or several sentences in Norwegian in order to express what they actually wanted to say. Almost all the words were specific SEN terms or Norwegian institutions' names, which were easy to translate in English. It was allowed to speak in Norwegian if needed, however, only a few teachers did. In those cases,

there were only a few sentences. Therefore, Norwegian, mother tongue for interviewees, was not an essential factor in this study.

7.6 Conclusion

This thesis has examined dyslexic students' support in Norway. It has been situated in the specific context of dyslexia friendly schools in Norway and its features, support and potential for the future. The case has been made that dyslexia friendly schools are comparable with other general schools but the results were surprising in that teachers at dyslexia friendly schools were more familiar with ICT. It is clear that utilizing ICT could ease both students' burden and teachers' struggles. Further, trained teachers had more confidence and felt less stressed and, indeed, dyslexia friendly schools had more trained teachers. However, they had been already keen on supporting dyslexic students with ICT before being a dyslexia friendly school. As an interviewee mentioned, before and after being a dyslexia friendly school, there were no internal differences in terms of students' support.

In this research, much has been learned about teachers' challenges in practice, including several factors which affect teachers' motivation, the importance of professional development training and the contribution of ICT. In our modern society, development of technology will never stop and it affects educational support as well. Therefore, it could be said that more useful digital devices and applications for dyslexia support will be developed day by day. Thus, it is important for teachers to update their knowledge in order to provide the best advice to dyslexic students. At the same time, it is possible for teachers to learn more about dyslexia and share successful approaches with their colleagues.

Looking to the future, dyslexia friendly schools should work with other local schools to share their implementation and find the best approaches. Additionally, successful implementation in Norway may have an impact upon other Scandinavian countries. It is important to monitor on dyslexia support in Norway for future developments.

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9 Appendices

9.1 Appendix A: Consent forms

Samtykkeerklæring for deltakelse i forskningsprosjekt

Dyslexia - Development of expertise in teachers

Jeg er japansk masterstudent ved Universitet i Oslo. Jeg arbeider for tiden med en engelskspråklig masteroppgave i som vil bli avsluttet mai 2019. Masteroppgaven min skal være om lærerutdanning for kompetanse med elever med dysleksi. Jeg er interessert i effekten av lærerutdanning på deres studiestøtte. Med dette arbeidet ønsker jeg å vise hvor viktig personalutvikling for lærere som støtter dyslektiske studenter er, og hvilke lærerutdanninger som har konsekvenser i Norge.

Jeg ønsker å intervjuere lærere om deres utdanning og erfaringer, og relasjonen den har med deres erfaringer med elever som har lese og skrivevansker. Jeg vil også spørre dem hvorvidt de har tatt noen bestemt læreropplæring knyttet til dyslektiske elever eller ikke, og hva de tenker om det. Intervjuet, som vil foregå på skolen, vil ta i underkant av 40 minutter.

Ved publisering vil resultatene bli presentert i anonymisert form, og ingen enkeltperson vil kunne gjenkjennes i den ferdige oppgaven. Når prosjektet avsluttes skal alt datamateriale makuleres. Studiet er godkjent av Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Dersom dere velger å delta, vil det være til stor hjelp for oppgaven min og bidra til økt kunnskap om dette temaet. På forhånd takk for hjelpen! Med vennlig hilsen

MA-student: Urara Nakai / Universitet i Oslo (uraran@student.uv.uio.no)

Veileder: Dr. Claire Poppy the University of Bristol / Universitet i Oslo (claire.louise.poppy@gmail.com)

中居うらら



Declaration of consent for participation in research project

Dyslexia- Development of expertise in teachers

I am a Japanese master student at the University of Oslo. I am currently working on a master's thesis in English, which will be completed in May 2019. My master thesis will be about teacher training for competence with dyslexic students. I am interested in the effect of teacher training for their student support. With this work, I want to show how important staff development for teachers who support dyslexic students and what impact development of expertise in Norway.

I would like to interview to teachers who have experience to support students who have reading and writing difficulties. I also want to ask them whether they have taken any specific teacher training related to dyslexic students or not and what they think about that. The interview, which will take place at school, and will take less than 40 minutes.

Upon publication, the results will be presented in anonymized form, and no individual will be able to be recognized in the completed assignment. When the project ends, all data material must be shredded. The study has been approved by the Data Protection Officer for Research, Norsk samfunnsvidenskabelig datatjeneste AS. I would like to publish my assignment in a reputable journal.

If you choose to participate, it will be of great help to my task and contribute to increased knowledge of this topic. Thank you in advance for your help. With best regards.

MA-student: Urara Nakai / Universitet i Oslo (uraran@student.uv.uio.no)

Supervisor: Dr. Claire Poppy the University of Bristol / Universitet i Oslo (claire.louise.poppy@gmail.com)

中居うらら



9.2 Appendix B: Revised consent form

Declaration of consent for participation in research project *Dyslexia- Development of expertise in teachers*

This is an inquiry about participation in a research project where the main purpose is to increase the knowledge about dyslexic support and development of expertise in teachers. In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project

I am currently working on a master's thesis in English, which will be completed in August 2019. My master thesis will be about teacher training for competence with dyslexic students. I am interested in the effect of teacher training for their student support. With this work, I want to show how important staff development for teachers who support dyslexic students and what impact teacher trainings have with comparison between dyslexia friendly schools and local state schools in non-dyslexia-friendly schools in Norway. In this investigation, some dyslexia friendly schools and non-dyslexia friendly schools will be invited to attend.

Who is responsible for the research project?

University of Oslo is the institution responsible for the project.

Why are you being asked to participate?

I want to interview to teachers working at local elementary schools or secondary schools in Norway. Interviewees need to have experience to support dyslexic students because the main focus on this thesis is about support for dyslexic students in Norway. I also want to ask them whether they have taken any specific teacher training related to dyslexic students or not and what they think about that. I assume that 10 to 20 teachers will participate in this research.

What does participation involve for you?

If you chose to take part in the project, this will involve that you have an interview. It will take approx. 40 minutes. The interview includes questions about your education background, your career, your daily support for dyslexic students and your experience of teacher training. Your answers will be recorded electronically.

Participation is voluntary

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data

We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

Fengshu Liu, in connection with the University of Oslo responsible for the project, will have access to the personal data. I will replace your name and contact details with a code. The list of names, contact details and respective codes will be stored separately from the rest of the collected data. I will store the data on a research server and your data will be locked away. Dr. Claire Poppy of the University of Bristol who is my supervisor will also have access to the data that can be directly linked to individual participants, or to collected data that has been de-identified.

Upon publication, the results will be presented in anonymized form, and no individual will be able to be recognized in the completed assignment.

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

The project is scheduled to end in August in 2019. When the project ends, all data material must be shredded.

Your rights

So long as you can be identified in the collected data, you have the right to:

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

What gives us the right to process your personal data?

We will process your personal data based on your consent.

Based on an agreement with University of Oslo, NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?

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

University of Oslo via Fengshu Liu, by email: (fengshu.liu@iped.uio.no) or by telephone +47 22 85 61 63

Our Data Protection Officer: University of Oslo via Fengshu Liu, by email:

(fengshu.liu@iped.uio.no) or by telephone +47 22 85 61 63

NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: +47 55 58 21 17.

Yours sincerely,

Project Leader Supervisor: Dr. Claire Poppy / the University of Bristol
(claire.louise.poppy@gmail.com)

Student : Urara Nakai / Universitet i Oslo (uraran@student.uv.uio.no)

Consent form

I have received and understood information about the project 'Dyslexia- Development of expertise in teachers' and have been given the opportunity to ask questions. I give consent:

- to participate in *an interview*
- for information about me/myself to be published in a way that I can be recognised.*

I give consent for my personal data to be processed until the end date of the project, approx. 08.31.2019

(Signed by participant, date)

9.3 Appendix C: Interview guide

Interview questions for teachers (both DFSs & GSs)

1. Background of teachers

- 1) How long have you been a teacher?
- 2) Could you tell me briefly about your education background and your career as a teacher?

2. Experience with dyslexic students

- 1) Do you often have students with dyslexia or reading and writing difficulties in your class?
- 2) In your school, are students who have reading and writing difficulties always screened?
- 3) In terms of learning support, are there any differences between screened and not screened students?
- 4) Thinking back over your support toward dyslexic students or students with reading and writing difficulties?
- 5) Could you tell me about your struggles or difficulties when you teach students with dyslexia or reading and writing problems?

3. Teacher training

- 1) Have you ever taken any courses for support dyslexic students?
Yes – Why? How? / No – Why?
- 2) Do you have opportunities to ask your colleagues how to support students with dyslexia or reading and writing difficulties?
Yes – Why? / No – Why?
- 3) What kinds of skills, knowledge or understanding do teachers need in practice?
(for teachers who have experiences teacher training for dyslexia support)
- 4) Do you have more confidence after teacher training for dyslexia support?
- 5) What kinds of skills / knowledge are more helpful after teacher training?
- 6) Do you think teacher training has the impact of your expertise on the students or their parents?

(for teachers who have not had experiences teacher training)
- 4) What kinds of support do you want from your school if you take a teacher training course?
e.g.) tuition fee, flexible schedule, promotion etc
- 5) What kinds of skills / knowledge do you want to learn? Why?

4. Dyslexia friendly school

- 1) Do you know about a dyslexia friendly school? (for general school teachers)
Yes / No
- 2) Do you feel any differences before and after being a dyslexia friendly school?
(for dyslexia friendly school teachers)
Yes – what are the differences? / No – why not?

9.4 Appendix D: Supplemental information

9.4.1 Education in Norway

The school system in Norway is compulsory for all children between the ages of 6 to 16 and is based on the principle of a unified mandatory school with one single national curriculum. Most schools are run by municipalities and are free of charge. The first ten years of school, called *Grunnskole*, is compulsory (Statistics Norway, 2019). Some schools have only the primary or secondary section, but others combine both sections in one school. After compulsory education, there are two different types of upper secondary schools in Norway. One is qualified for higher education entrance; another is for vocational qualification. Many young people spend a year at a community college after upper secondary education in order to study one specific subject such as music, arts or sports. Completing upper secondary education, students can choose higher education. Only those who complete masters' degree or 6 years university education are eligible to study at PhD level (Utdanning.no, 2019).

Utdanningsdirektoratet (The Norwegian Directorate for Education and Training) is responsible for the development of kindergarten and primary and secondary education. The Directorate is the executive agency for the Ministry of Education and Research. The objective of the Directorate is to ensure that all children, students and apprentices receive the high-quality education to which they are entitled. The Directorate is responsible for Supervising kindergarten education and the governance of the education sector, as well as the implementation of Acts of Parliament and Regulations, Managing the Norwegian Support System for Special Education (Statped), state-owned schools and the educational direction of the National Education Centers, and all national statistics concerning kindergarten, primary and secondary education (Utdanningsdirektoratet, 2017).

The Norwegian government has defined the following three sector goals for primary and secondary education: The students shall have a good, inclusive learning environment; The students shall master basic skills and have sound subject knowledge (Utdanningsdirektoratet, 2017). The government has a whole responsibility for creating a network of SEN including all types of disabilities. All children in Norway have an unconditional right to attend elementary

school, and to receive SEN and / or assistance, if needed (Ogden, 2015). Inclusion in mainstream schools is a very important goal of Norwegian educational policy (Statped, 2016).

National tests are conducted for all schools to identify basic reading, numeracy and English skills in Years 5, 8 and 9. These examinations are the same tests that are given at all schools across the country. It is taken place at the beginning of school year. National tests are compulsory, however, students who have the right to SEN can be exempted. The results of national tests should primarily be used to get an overview of the level and variation in skills. They will also be useful information in order to form the basis of formative assessments (Store Norske Leksikon, 2019). Some schools use this national test as one of dyslexia screening tests.

In Norway, the principle of inclusion was based on social political ideals, and SEN was restructured and reformed from 1990. The number of students with SEN in Norway has dramatically increased over the last decades. SEN in Norway focuses more developmental disabilities and physical disabilities. Speech and language difficulties are not prioritized to the same extent a priority as SEN in Norway although language difficulties are also considered as SEN in some Nordic countries (Ogden, 2015).

In ordinary schools in Norway, three types of arrangements are usually provided for students with SEN. The most common way in elementary schools is to have an additional teacher in class. Small group instruction is more common in middle schools. Individual instruction outside of class is also often seen in ordinary schools. Norway has provided the education in one-track system with the regular education to students with special needs. This is a shared opportunity for both mainstream students and SEN students. Ability groups who are organized continuously are not recommended and inclusive education is based on educational philosophy in Norway.

9.4.2 PPT (Educational Psychology Service)

Pedagogisk- Psykologisk- Tjeneste (PPT) is Educational Psychology Service. This is a public service agency that provides educational and psychological counselling services. PPT offers

guidance and advice on the establishment of measures to schools, municipalities and county municipalities. PPT also takes initiatives for children and adolescents with special needs.

Children have the right to SEN if they do not receive sufficient benefit from a standard education because of learning difficulties. SEN shall be adapted to all children needs, which means that students can work with different educational goals, or that teachers observe and support the students at school or that special adapted equipment are provided to the students (Utdanningsdirektoratet, 2017).

Schools are obligated by law to provide an appropriate learning environment to the student. A school should have interviews with students and parents if the school environment is not appropriate for them and conduct the necessary assessments of the children. The school also should request that PPT conducts an assessment by an expert to provide the opinion the student. The parents should be involved and consent before the school requests PPT to assess the child. If such measures are insufficient, the school and PPT must assess and advise on what the student's needs. Then the school must take an action for individual needs. Once it has been determined that a child needs special education, PPT will issue a document and the children can be provided the advices on the measures and initiatives. The school will inform the parents and the student that they have a right to SEN. Schools also refers to PPT for discussion of the concern with the parents. Such decisions can be appealed all the time and an individual subject curriculum which includes the learning goals, content of the SEN and support and tools for teachers shall be prepared. PPT may collaborate with other local level agencies such as the health services or NAV (the Norwegian Labor and Welfare Administration), and at the national level with, for example Statped or speech-language pathology services to study professional areas or to assist the students (Utdanningsdirektoratet, 2017). PPT functions as the intermediary between Statped and students and educators (Statped, 2017).

9.4.3 Statped (National service organization for special needs education)

To be included in school – To achieve inclusion and a good learning outcome for children with disabilities and complex learning difficulties is possible.

This is a comment by Tone Mørk who is a Director General of Statped (2019). Statped is a Norwegian national service for SEN for municipalities and county municipalities. Statped that is qualified in the field of teaching resources for people with SEN provides local authorities and schools with guidance and competence. This is a special teaching services at individual and system level in areas in which the 430 local authorities do not have sufficient competence. Statped offers part-time courses for students with special needs and their parents, and for educators who support these students. Statped works for the development of hearing, vision, language / speech, brain damage, complicated learning difficulties (Statped, 2016).

9.4.4 NAV (the Norwegian Labor and Welfare Administration)

Nav is the Norwegian labor and welfare administration which is one of the biggest public agencies in Norway, subject to the Ministry of Labor and Social Affairs. NAV is responsible for organizing and financing labor market initiatives, social security benefits and social assistance (Store Norske Leksikon, 2019). Nav is known for support welfare service and job search, however, one of its main goals includes providing the right services and benefits which are tailored to the user's needs and circumstances at the right time (NAV, 2019). It is also available for people with special needs.

NAV provides for special customization of computer equipment that allows people with special needs in order to use standard equipment at home, in the workplace or at school. Special customization can be reading list, screen reader, synthetic speech screen control, for example. Anyone with reading and writing difficulties is allowed to utilize this special customized software on their computer though the computer is not covered by NAV. These programs compensate for lack of skills and improve functional ability for both as a learning support and practical support intermediary. (NAV, 2019).

If children with reading and writing difficulties have a document to prove the need for digital devices for schoolwork at primary school or secondary school, they can receive 3,200 kroner to buy a computer or a tablet and customized it with the special designed software by NAV. The document must be signed by PPT, a speech therapist or similar specialists, and explained clearly that the digital device should be included in the educational arrangement at school (NAV, 2019).

9.4.5. Dyslexia Friendly School in Norway

Dysleksi Norge is an organization which works for all people with reading, writing, mathematical and language difficulties in Norway. It was founded in 1976 and has approximately 9,000 members in 2019. Their core missions are: offering good customized training for students with dyslexia, dyscalculia and special language difficulties; providing support tools such as audiobooks or textbooks for all students; and furnishing more computers to more people with difficulties (Dysleksi Norge, 2019). Dysleksi Norge approves a local school which provides enough conditions for dyslexia support as dyslexia friendly school.

The concept of dyslexia friendly school in Norway is based on ‘dyslexia friendly schools’ of the British Dyslexia Association (BDA). Dyslexia friendly schools are schools which are characterized by good systems in order to support all students with difficulties (Dysleksi Norge, 2019). Dysleksi Norge was inspired by British dyslexia friendly schools which started in 1997 in Britain. Dyslexia friendly schools are not a SEN schools, they are general schools which are approved as a dyslexia friendly school by Dysleksi Norge. Being approved a dyslexia friendly school, a general school must meet 10 criteria which Dysleksi Norge provides. These criteria are about learning environment such as teachers, tools, curriculums and so on.

Dyslexia friendly schools in Norway are inclusive and accepting environment. have good systems and competence to find students’ difficulties, conduct mapping and registration of all students’ reading skills systematically, support for reading development, work quickly, have good skills of utilizing ICT, have all teachers who have competence to support students with reading, writing, language and mathematical difficulties, are both in small or big, poor and rich municipalities, do not spend more time or resources than other schools, but they possess knowledge about systems and create good routines, show a room to improve and change practice (Dysleksi Norge, 2019). A special feature of dyslexia friendly school in Norway is that they focus on what each student should be able to achieve, and that teachers have competence about measures and methods to support students in order to reach their goals. The teachers must have competence to be able to change the previous strategy and practice if necessary. To enhance teachers’ competence is expected to affect largely (Dyleksi Norge, 2015).