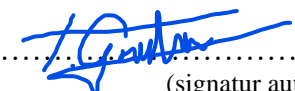




The Faculty of Arts and Education

## MASTERS THESIS

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# **THE “SPECIFIC LEARNING DISABILITIES” WITH A FOCUS ON DYSLEXIA, DYS CALCULIA AND THEIR RELATION TO EMOTIONAL STRESS**

## **ABSTRACT**

Dyslexia and dyscalculia are the most discussed learning difficulties in Norwegian classrooms nowadays. These students have a big portion as a vulnerable group in schools and need more assistance to be successful in academic subjects. However, the emotional well-being and mental health of these students is the key to their “life mastery”. In this thesis, I studied the emotional stress of students with learning disabilities, focusing on dyslexia and dyscalculia.

The goal and research question of my study was to explore "how special pedagogues/ pedagogues approach and assist students with dyslexia and dyscalculia in dealing with stress and avoiding emotional difficulties." I conducted qualitative research and interviewed four special pedagogues/pedagogues from secondary schools.

My study showed that students with specific learning difficulties have distinctive characteristics and behaviors due to the difficulties, particularly in reading, writing, and mathematics. They require additional support to succeed in academic disciplines. The emotional and mental health of these students is critical to their "life mastery." These students, especially in secondary school, have decreased self-efficacy and emotional stress because of their learning difficulties. Most students with dyslexia and dyscalculia use maladaptive and short-term stress-coping strategies. Individual and environmental factors are very essential and can play a significant role in promoting students' well-being and academic accomplishment. As a result, schools must pay greater attention to providing a friendly, inclusive, and positive atmosphere in which these students can get help and advice for both their academic and mental health and well-being.

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## ACKNOWLEDGMENTS

This thesis is the completion of my master's degree in special pedagogics at the Faculty of Arts and Education. The topic of my thesis is "specific learning disabilities (SLD)" with a focus on dyslexia, dyscalculia, and their relationship to emotional stress. To choose the topic SLD, my job background played a big role. I worked for many years as a mathematics teacher, both at secondary and high school levels. In my classes, I had some students who had dyscalculia, as well. The mental and emotional challenges I observed with these students have always been my motivation for studying this subject. Because students who have dyscalculia may also have dyslexia, I studied both subjects under the general title "specific learning disabilities" and their relationship to a higher risk for emotional stress. I believe that the topic is very exclusive and needs more attention from all stakeholders in the educational system should pay more attention to it. Students with SLD require additional help and direction to manage the problems they face in their everyday, emotional, and academic lives.

I worked extremely hard and put forth a great deal of effort in order to accomplish something valuable. This process, which included my studies and thesis, was extremely rigorous and challenging. However, I have gained a great deal of knowledge. For the time being, I feel more comfortable, informed, and prepared to teach and be a part of the lives of students with specific learning difficulties.

First of all, I would like to thank my informants for sharing their precious observations and experiences with me. Furthermore, I want to express my sincere gratitude to my supervisor, Assistant Professor Ingrid Midteide Løkken, for her thoughtful feedback and beneficial recommendations. Last but not least, I would like to thank my husband, Sefa, and our children, Leyla and Yasar, for their patience, love, and unconditional support during these challenging academic years in my studies.

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## ABBREVIATIONS AND DEFINITIONS

<b>Abbreviation</b>	<b>Definition</b>
ICT	Internet, Communication and Technology
LD	Learning Disabilities
NESH	The National Research Ethics Committee for the Social Sciences and Humanities
NSD	Norwegian Center for Research Data
SLD	Specific Learning Disabilities

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# 1 INTRODUCTION

## 1.1 Background of the study

School is the most important place for students personal, academic, and social development because they spend most of their time at school. It is necessary to ensure a place where each child can be enabled to fulfill their potential. Education in school is not only about academic learning of subjects, but also about the whole person (Bru, Cosmovici Idsøe & Øverland, 2016).

According to educational law of Norway § 9A (Opplæringsloven, 1998), each student has the right to have a learning environment that promotes health, well-being, and learning. A safe and learning-stimulating environment reinforced by teachers who are safe, have good classroom management skills, and can give emotional and academic support is important for all students, but it is especially crucial for students who are vulnerable for various reasons. (Midthassel, Bru, Ertesvåg & Roland, 2011).

A study by Havik, Bru, and Ertesvåg (2015) indicates that it is not possible to achieve good learning results without having a clear focus on students` emotional well-being and mental health. Therefore, teachers have a major responsibility to help students improve their skills that they need to master the challenges and stress they will face in life.

In the school year 2020-21, the new national curriculum "Kunnskapsløftet 2020" is valid for 1-9 grades in primary school and 11th grade in secondary school. The term "life mastery", "livsmestring" in Norwegian, is included as a natural part of this curriculum by addressing the experience of stress, stress management skills, and mental health. In this manner, "life mastery" becomes one of the goals in every subject in order to teach students how to work on the factors that are important for success and how to deal with personal and environmental challenges in the best possible way.

Nowadays, dyslexia and dyscalculia are the most discussed groups with regard to learning disabilities in Norwegian schools. These students have a big portion as a vulnerable group in schools. In this thesis, I studied students with learning disabilities, focusing on dyslexia and dyscalculia. It is a fact that these students need more assistance to be successful in academic subjects. However, the emotional well-being and mental health of these students is the key to their "life mastery". Therefore, schools are required to pay more attention to providing students with an environment where they can get support and guidance for both academic and mental health and well-being.

According to statistics given by Dysleksi Norge, dyslexia affects about 5 to 10 percent of the population in Norway, while about 5 percent have dyscalculia. 50 percent of those who have dyslexia also have dyscalculia (Dysleksi Norge, 2021). The statistics prove that it is very likely that teachers will be responsible for some children with these difficulties in their classes. Hence, teachers must be equipped with the necessary education and skills to be able to teach and support students with special learning difficulties (SLD).

20 percent of those who drop out of school have dyslexia and 50 percent of those who are outside of working life have dyslexia (Dysleksi Norge, 2021). As this statistic shows, a considerable number of students with SLD consider themselves unsuccessful and decide to leave school. There could be many factors for this decision, but studies argue that students with SLD need more support and guidance to be able to meet the challenges in their daily, mental, and academic life.

To choose the topic SLD, my job background played a big role. I worked for many years as a mathematics teacher, both at secondary and high school levels. In my classes, I had some students who had dyscalculia, as well. The mental and emotional challenges I observed with these students have always been my motivation to study this subject. What I have learned during my master studies is that dyscalculia is likely connected to dyslexia. That means the student who has dyscalculia may also have most of the time dyslexia. Therefore, I would like to study both subjects under the general title "specific learning disabilities" and their relation to a higher risk for emotional stress.

Students' academic success is a central focus area in schools and it relies mostly on reading, writing and calculation capabilities. Dyslectic and dyscalculic students struggle with these main skills and it causes difficulties in their social and school lives. In recent years, because of the PISA results, expectations for higher academic achievement have been steadily increased in Norwegian schools, and that has caused additional stress and emotional problems for these students. According to some research, academic support for progress in reading and mathematics is not adequate. For a lifelong achievement, they need to learn how to utilize their academic, social, and career potential. One of the main responsibilities of the school is to help these students improve their stress-coping strategies in order to reduce stress and avoid emotional problems. By law, all students are entitled to get the adaptive education in relation to their abilities and prerequisites they need in Norwegian schools (Opplæringsloven, 1998). Therefore, it is important for pedagogues and special pedagogues to have information about how to help these students dealing with stress and emotional challenges by

- reinforcing self-efficacy, self-confidence, and motivation,
- assisting them to succeed and feel sense of achievement,
- promoting positive mental health.

## 1.2 Goal

There are many international and Norwegian studies about dyslexia and dyscalculia from different sources. Most of these studies deal with the cognitive part of having dyslexia and dyscalculia. (Landerl, Fussenegger, Moll, & Willburger, 2009; Peters, Op de Beeck, & De Smedt, 2020; Wang, Tasi, & Yang, 2012). Some research has studied the effective methods for teaching reading, writing, and mathematics to these students in order to increase their academic achievement (Elvemo, 2006; Gjessing, 1977; Jones, Wilson, Bhojwani, 1997; Kearns & Whaley, 2019; Lunde, 1990; Lunde, Hole, & Hansen, 1999; Vaidya, 2004). I searched for articles, studies, and books by using internet search engines, the library of UiS, and Orio. I have found some studies and literature in Norwegian academic sources focusing on dyslexia and emotional effects (Aspeland, 2009; M. O. Lunde, M. O., 2013; Tønnessen, Bru, Heiervang, & Psykiatrisk opplysning, 2008). However, within the limited time of my research, I have realized that there are not many studies about the psychological impacts of having dyslexia and dyscalculia, from a more general perspective. I could not find studies taking into account both dyslexia and dyscalculia together and the possible emotional stress that is caused by these learning disabilities. Therefore, in this thesis the main focus will be on dyslexia, dyscalculia, and their relation to emotional stress from the perspective of pedagogues and special pedagogues in Norwegian schools.

The experiences and opinions of special pedagogues and pedagogues are very important to be able to understand the emotional stress of students with "specific learning disabilities". Therefore, the goal of the thesis is to figure out how special pedagogues/pedagogues are approaching and helping students with "specific learning disabilities" to cope with stress and avoid emotional problems.

This study may contribute to increasing the understanding and knowledge of academic studies in the area of special learning disabilities. Additionally, it may provide new insights and ideas to improve the measures/means used by special pedagogues/pedagogues to help students with SLD deal with stress.

### 1.3 Research questions

The main question of the research is:

*How are pedagogues/special pedagogues approaching and helping students with “specific learning disabilities” to cope with stress and avoid emotional problems?*

In order to be able to find the answer to this question, I prepared the following three research questions:

1. How are specific learning disabilities and emotional stress connected to each other?
2. What kind of stress handling strategies do the students have?
3. How can individual and environmental factors help to promote the wellbeing and learning achievement of students?

### 1.4 Limitations

I interviewed four special pedagogues/pedagogues to gain knowledge about how special pedagogues/pedagogues are approaching and helping students with “specific learning disabilities” to cope with stress and avoid emotional problems. Four informants can be considered a small sample size in such a study. The small sample size is due to limited time, the constraints arising from the Covid-19 epidemic, and the lack of participation willingness from the school administrations. I didn’t receive any response to my interview request from many schools. Some of the schools also refused due to their busy schedules and extra overloads arising from the Covid-19 pandemic. Another limitation was finding special pedagogues/pedagogues working and having experience on dyscalculia, because I think dyscalculia hasn’t been widespread in Norwegian schools. This thesis was conducted by one researcher. According to me, this is also a limitation on the reliability of the study and sample size. Two or more researchers may discuss the findings and decrease the subjectivity of the data perceptions. Additionally, they may reach a bigger sample size.

### 1.5 Structure of the thesis

This thesis is written in eight parts. The first part is an introduction to the thesis with the background, goal, limitations, and structure of the thesis. The second part presents the literature review and explains the theory that creates a basis for the thesis research questions. Part three

includes the details of the method used in the study. In part four, I summarized the findings of the interviews and discussed these findings in part five. Part six is the conclusion of the thesis. Part seven and eight present references and appendices, respectively.

## 2 LITERATURE REVIEW

### 2.1 Specific learning disabilities (SLD)

There has been around 80 percent increase in the number of children who have been diagnosed with SLD since the beginning of the twenty-first century (Keen, 2001 cited in Macintyre & Deponio, 2003). Today there are a significant number of students in schools who have SLD. In other words, there are more children, parents, and educators than ever before who are more aware of these difficulties.

*“Specific learning difficulties” is an umbrella term which indicates that children display discrepancies across their learning, exhibiting areas of high competence alongside areas of significant difficulty*” (Macintyre & Deponio, 2003, p.1). People who have “specific learning disabilities” are defined as individuals *“who are intellectually normal, who have normal vision and hearing, who do not have any chronic medical or mental disease, and who receive adequate education- but still do not succeed academically”* (Frank, 2014, p.2). The main reason for their failures is neurological, and their disabilities are characterized by specific brain-based cognitive abnormalities. They may also have generalized working memory deficits (Swanson, 1993; Witruk, 1993; Eden, et al., 1995; Swanson, Ashbaker, & Lee, 1996; Demonet, Taylor & Chaix, 2004). SLD is a lifelong condition, which means it can not be cured totally and is carried in some forms into adulthood. These affected people may perform similar learning and academic activities by finding compensatory methods, but at a slower pace (Frank, 2014). As adults, many of them have been doing well in their social and working lives, but they always have to carry their dyslectic identity with them as a sore spot (Bru, 2008). Research show that SLD has a high genetic transformability character (Frank, 2014; Høien & Lundberg, 2017; Shaywitz, 2003; Shalev, Manor, Kerem, Ayali, & et al., 2001).

SLD is mostly identified and measured by referring to academic underachievement, but it may also have other difficulties, such as motor coordination, motor execution, and study organization. They may have behavioral problems, social deficits, low self-esteem, and oppositional attitudes, as well (Frank, 2014).

SLD forms a very heterogeneous group of disorders in which the difficulties are mostly related to reading, writing, and arithmetic skills. Dyslexia is the most prevalent type, while dyscalculia is a lesser-known type of SLD. Dyslexia and dyscalculia are the focus of this study and will be explained in detail in the coming sections.



### 2.1.1 Dyslexia

Reading and spelling disabilities, called "Dyslexia", are the best-known and most-researched types of SLD. There is not one generally accepted dyslexia definition in literature. Høien and Lundberg (2017) underline the low phonological awareness of dyslexic people and define dyslexia as a perpetual disability in the decoding of written language caused by the malfunctioning of the phonological system. And they underline that dyslexics are as bright as other people. Dyslexia is a neurodevelopmental linguistic disorder that hinders the acquirement of the correspondence between letters and sounds of speech (grapheme-phoneme correspondence), which is an important prerequisite for reading. Consequently, dyslexic children can not differentiate morphologically similar letters and have challenges learning how to write them (Frank, 2014). It is a disability in certain language functions of the brain which are important for being able to realize written language codes and automatize word-coding. Hence, they can not connect letters to the sounds they make. Dyslexic people experience specific cognitive abnormalities and deficits in phonological awareness. In relation to that, they have inaccurate oral reading and poor spelling skills (Alfonso & Flanagan, 2018). Although dyslexia is mostly defined as a reading and spelling disability, there are also other learning areas that are affected in dyslexic people. They may have lower organizational and sequencing skills, time concept, short-time memory skills, auditory and visual perception, and spoken language (Macintyre & Deponio, 2003). Since people with dyslexia have low memory skills (Frank, 2014), processing and remembering given information can be difficult for them. Dyslexia is heritable and continuous like other SDL (Høien & Lundberg, 2017). If a child has dyslexia, there is a 50 percent possibility of having a sibling with reading difficulty and a 30-50 percent chance of having a dyslectic mother or father (Shaywitz, 2003).

Students having problems with word-coding will use an indirect reading strategy which makes reading a very time-consuming process (Høien & Lundberg, 2017). In order to be able to automatize word-coding, these children need to exert more effort and need a lot of training, which creates extra overload and stress on them. Poor decoding can cause problems with their reading comprehension skills, as well.

Miles and Miles (1999) list some possible indicators of dyslexia in primary age children and emphasize that dyslexic children may have difficulty with several of the following items. They may have trouble saying long words, subtracting, learning tables, saying months of the year, and recalling digits. They may confuse left and right, and they may have trouble confusing b and d for longer than most children. They may have a family history of similar difficulties.

Høien and Lundberg (2017) consider Pennington (2009)'s six main symptoms of dyslexia and list them:

1. Word decoding is not automated by dyslexic people.
2. Dyslexics have difficulty reading nonwords (pseudowords).
3. They show poor spelling abilities.
4. Dyslexic people's reading difficulties are resistant, and it is a lifelong difficulty.
5. There are significant differences between the listening comprehension skills and reading comprehension skills of dyslexic individuals.
6. Research shows that reading difficulties are hereditary.

It has been developed many dyslexia tests to distinguish dyslexic and non-dyslexic individuals around the world. In relation to dyslexia research, both Torleiv Høien and Ingvar Lundberg are very important researchers in Norway. Høien developed the "Logos" test and today it is the most commonly used dyslexia identification test in schools. It is designed with subtests to measure the sub-skills that are considered critical by research for reading fluency (Logometrica, 2021).

### 2.1.2 Dyscalculia

"Dyscalculia", defined as a deficiency in calculation and mathematics, is the less known type of SLD. Developmental dyscalculia is a term used to describe a specific learning disability affecting learning number-related concepts, calculations, and using mathematical symbols, found in children with normal intelligence who haven't acquired neurological injuries (American Psychiatric Association, 2013).

While dyslexia is associated with deficits in phonological processing, dyscalculia is associated with deficits in the processing of numerosity (Landerl, Fussenegger, Moll, & Willburger, 2009). Like dyslexia, dyscalculia has a familial predisposition (Shalev, Manor, Kerem, Ayali, & et al., 2001) and is largely independent on a cognitive level (Landerl, Fussenegger, Moll, & Willburger, 2009). Dyscalculia has proven to be an enduring SLD, persisting into adulthood (Shalev, 2004).

Students with dyscalculia have multiple difficulties with mathematics, such as;

- Learning mathematical concepts (Shalev & Gross-Tsur, 2001),
- Remembering and utilizing arithmetic facts (Shalev & Gross-Tsur, 2001),

- Automatic processing of numerical data (Geary, 1993; Landerl, Bevan, & Butterworth, 2004),
- Performing calculation procedures (Geary, 1993; Landerl, Bevan, & Butterworth, 2004)
- Developing problem-solving strategies (Geary, 1993; Landerl, Bevan, & Butterworth, 2004).

These children need more time to solve mathematical problems, ending up with high error rates. Failure in mathematics may have a negative impact on students' academic, social, and emotional lives (Frank, 2014).

Dyscalculia and dyslexia have a combined prevalence of 10 percent or more, and the likelihood of comorbidity of dyslexia and dyscalculia is significantly high, with a rate of around 40 percent (Wilson et al., 2015). The particular features of dyslexia, such as disabilities in reading, speaking, writing, spelling, short-term memory and lack of organizational skills, may impact the student's mathematical ability negatively (Hunter-Carsch, 2001). Poor working memory skills in dyslexic children can also cause difficulties with mental arithmetic and learning of number facts, particularly times tables (Riddick & National Association for Special Education, 2010). Consequently, children with comorbid mathematics and reading difficulties are disposed to be more vulnerable than children with developmental dyscalculia only (Frank, 2014).

## 2.2 Relation between SLD and emotional stress

Reading and calculation are mostly considered as the central and crucial skills in school because it is mainly accepted that acquiring knowledge and other important abilities are based on them. Underachievement in these skills may increase the risk of underachievement in other school subjects. Students with SLD face bigger challenges in school activities and may experience failures in many cases. The failures or negative experiences lead the students with SLD to lower their expectations of learning. If they consider that the possibility of success is low, they may be unmotivated to make the required effort. Many young people with SLD have long experience with these feelings. Research show that academic underachievement can be a significant source of stress for students with SLD and they are mostly more vulnerable than others to meeting the school's demands. As a consequence, underachievement experiences may cause low self-esteem and create a background for emotional problems (Skaalvik & Skaalvik, 2018).

Frank (2014) argues that SLD is not just an academic problem but also an important condition with possible profound effects on individuals. In reality, individuals with SLD may have emotional problems, social deficits, and low self-esteem. He explains that significant effect with four reasons:

1. SLD affects children's formal learning in school where academic achievement is very important.
2. SLD accompanies individuals throughout their lives.
3. SLD may have motor coordination deficits and behavioral comorbidities.
4. The diagnosis of SLD may be delayed due to several factors. Any delay could cause more serious behavioral and emotional problems.

According to many studies, dyslexic students have lower self-esteem and lower expectations of themselves (Thuen, (2008). Riddick et al. (1997) compared the self-esteem of 16 dyslexic university students with matched controls. Their interviews showed that the dyslexic group students displayed significantly lower self-esteem than the ones in the control group. The study, which was conducted on 3000 schoolchildren in Norway, found out that children with SLD have lower self-esteem and confidence than their contemporaries (Gjessing & Karlsen, 1989). Because of lower self-esteem and lower expectations of themselves, these students may not be able to meet the academic demands of school. As a result, they may experience a high level of stress.

This thesis focuses on emotional stress experienced by dyslexic and dyscalculic students and would like to emphasize the importance of early help/support for them to overcome this stress. Because studies show that if these students can not learn how to cope with their stress at early ages, the accumulated emotional stress will harm them more seriously in the future. Therefore, in my literature review, I'd like to include also studies that reveals a link between SLD and emotional problems.

The potential negative effects of SLD on students' emotions are confirmed by another study in Norway, which was conducted with seventy students between ten and fourteen years old. Dahle, Knivsberg, and Andreassen (2011) found out that internalized difficulties such as anxiety, depression, and somatic disorders are common in children with dyslexia. Furthermore, over twelve percent of students speaking of such internalized difficulties mentioned suicide, as well. Results from the "Barn I Bergen" research (2002-2006) had a supportive argument which shows

that there is a clear relation between dyslexia and different types of psychological difficulties at Norwegian primary school (Heiervang & Torsheim, 2008).

Children with SLD potentially reveal more anxiety, backdown, depression, and low self-esteem compared to nondisabled students (Shapiro & Gallico, 1993; Beitchman & Young, 1997). They can suffer the social and emotional consequences of academic failure, and this situation can create a risk factor for depression (Frank,2014). Aro et al. (2019) studied the effect of dyslexia and dyscalculia on adult age mental health, education, and employment. They compared a learning-disabled group (430 people) with a group (2149) without learning difficulties (LD). They found out that a higher proportion of adults with LD had mental health problems compared to the control group. A more considerable number of individuals with a history of LD showed a lower proportion of being able to attain degrees after compulsory education and had difficulties gaining employment. This study made a comparison between mathematically disabled individuals and reading disabled individuals. The results stated that dyscalculic adults were more strongly associated with antidepressant use and unemployment than dyslexics (Aro et al., 2019). This result underlines that low numeracy can cause not only difficulties in individuals' daily lives but also affect their employability.

Some children with SLD may not have the necessary social skills and may be less socially competent than their peers who have average norms. They may have challenges having empathy for others' feelings, especially in complex or uncertain emotional situations. Social, behavioral, and emotional problems may retain and continue into adulthood, and many grown-ups with an SLD background are in need of getting counselling and psychotherapy for low confidence, social isolation, anxiety, or depression (Frank, 2014).

To summarize, dyslectic and dyscalculic students may be under increased stress as a result of everyday school activities, and they have to figure out strategies to deal with stressful occasions, such as avoidance and less reliance on peer assistance. Low confidence, social isolation, anxiety, and depression are some of the emotional difficulties which arise if students with SLD are unable to seek help managing their stress. In order to decrease the emotional stress and prevent the emotional problems of these students, they need to improve their achievement in school subjects and get emotional and social support. Therefore, they need additional support in reading and math. Additional academic and behavioral support may result in improvement in emotional and behavioral problems (Frank, 2014).

## **Learned helplessness**

There is another term, "learned helplessness", used in academic studies for students who don't have any belief in themselves for success. Learned helplessness can be observed in a lot of students with SLD.

According to Seligman (1992), those people in learned helplessness situations have been affected by repeated underachievement or failures in the past. They think that they lack the skills and capabilities to learn. Additionally, they think they can't find external resources to help them.

Seligman (1992) argues that there are three interlaced factors regarding learned helplessness:

1. The external environment in which not all important outcomes are under control.
2. The response of the people is to give up.
3. The accompanying understanding of people that they can not control the outcome.

The likelihood of dyslexic students being in a "learned helpless" situation is higher than their peers.

*Poor readers tended to "blame themselves" by attributing failure to their own incompetence and success to environmental factors such as luck, whereas good readers attributed success to their own ability. Again, the question can be raised as to whether attribution style is a cause or an effect of poor reading or both. This style of thinking fits well with Seligman's notion of learned helplessness. Seligman (2006) claims that individuals who have been put in a negative situation from which they cannot escape and over which they feel that they have no control will become apathetic and demoralized. More importantly, when these individuals are put in a more positive situation they persist in their apathetic behavior and thus display learned helplessness (Riddick & National Association for Special Educational, 2010, p.39).*

## **2.3 Stress theory**

The role of emotions and social development in education is extremely crucial, and this thesis focuses on the stress experienced by students with SLD. Therefore, in this study, "Lazarus' stress and coping theory" is used as the main theory. The Lazarus theory presents a model which incorporates personal and environmental factors having an impact on coping with stress.

### 2.3.1 Stress and coping

Among many different stress definitions, Lazarus and Folkman (1984) and Lazarus (2006)'s psychological stress definition were used in this study. Lazarus and Folkman (1984) and Lazarus (2006) define stress as an outcome of an interaction or transaction between the individual and the environment. Psychological stress comes up when environmental demands exceed the individuals' resources, especially in situations that are important for individuals. Individual differences affect the appraisal of stress (Lazarus & Folkman, 1984).

In Lazarus stress and coping theory, emotions play a big role in the stress-coping process. Lazarus (2006) emphasizes the interdependence of stress and emotions, which means if an individual has stress, he or she also has emotions related to that stress. On the contrary, Lazarus argues that both positive emotions and negative emotions can cause stress, as well. These 15 emotions are listed in his theory as anger, envy, jealousy, anxiety, fright, guilt, shame, relief, hope, sadness, happiness, pride, love, gratitude, and compassion.

"Coping" is defined as a response to psychological stress (Lazarus & Folkman, 1984). Even though many researchers assert that coping is linked only to stress, Lazarus (2006) argues that stress, emotions, and coping are interlinked. He claims:

“We should view stress, emotion, and coping as existing in a part-whole relationship..... The three concepts, stress, emotion and coping, belong together and form a conceptual unit, with emotion being the superordinate concept because it includes stress and coping.” (p.37)

Lazarus (2006) states there are many different stress terms used in many theories. However, almost all of them have common terms: stress stimulus or stressors, and stress response or reaction. Stress stimulus or stressors refers to the external input and stress response, or reaction, refers to the output. In his theory, Lazarus (2006) highlights the importance of individual differences and argues that a stimulus alone can not define stress. Individual differences play a considerable role in perceiving a stimulus as a stressor. Some people seem to be more vulnerable to a certain stimulus as a stressor and others are not. And the way people respond to stressful stimuli can not be predicted without considering individual differences (Lazarus, 2006).

### 2.3.2 A transactional-relational approach to stress and emotions

Lazarus (2006) used a transactional and relational approach to define psychological stress. He called the model the "Cognitive Transactional Model". He asserted in his model that stress is a

transaction between the person and the environment. Lazarus' theory is a cognitive theory which has an emphasis on emotional well-being and argues that stress is experienced by an individual if personal and social resources can not meet the demands. To what extent the desires, goals, or needs are satisfied in a situation, determines the emotions and the level of stress.

The transactional process includes the interaction between the person and their environment based on a model in which the person is an active and exercising agency. There is a direct relationship between the external demands made upon the person and his or her response to these demands (Cassidy,1999). Lazarus (2006) states that the effects of stress on a person are determined by the relationship between the personal resources and environmental factors required to cope with stress. If there is a lack of fit between these stimuli, physical or psychological problems may occur.

According to Cassidy (1999), the stress an individual experiences encompasses the demands loaded on the person, and his or her emotional, cognitive, behavioral, and psychological responses to those demands, and the outcome of the psychological and physiological adjustment.

### 2.3.3 Coping stress and the appraisal process

The Ways of Coping Questionnaire (Folkman & Lazarus, 1988) proposes eight coping strategies. Confrontative coping is the strategy of showing aggressive behaviors to change the situation. Distancing is the opposite to the confrontative strategy and is used by the individual to disconnect and isolate themselves from the situation. Some individuals may think that it is easier to handle their stress by assuming control over their own feelings and responses. This is called a self-controlling strategy. Seeking social support strategy may be chosen if the individuals have friends and loved ones who can support them to cope with their stress. Accepting responsibility strategy is explained as recognizing the role of the individual in the problem and trying to solve it. It shouldn't be confused with blaming yourself. Ignoring the problem and trying to avoid dealing with it may be used by some individuals, but it doesn't help a lot to cope with the stress, because the cause of the problem remains and can continue to disturb the individual. A planful problem-solving strategy aims to deal with stress by analyzing and planning the solution. Positive reappraisal is mostly considered as religious thinking. The approach is trying to grow from the experience of coping with stress.



Some coping strategies are consistent from occasion to occasion, while others may vary depending on the situation, the person, and the outcome which are being considered (Cassidy, 1999). Choosing one of these coping strategies and determining the behavior depends on cognitive appraisal. Lazarus (2006) emphasizes that cognitive appraisal and coping are interrelated to each other and the quality of the appraisal is critical for good coping.

### **The Appraisal Process**

According to Lazarus (2006), cognitive appraisal processes have a central role for coping stress. He defines appraisal process as the negotiation between environmental demands and resources, the goal hierarchy, and the personal beliefs of the person. Lazarus (2006) claims that "appraisal" is the most important source of variations in stress activation, because it is a decisive factor on perceiving the situation as stressful. The individual must first realize that a potential stressor is present with his individual assessment. Secondly, the individual needs to identify some resources that he or she can use to deal with that stressful situation (Cassidy, 1999). In Lazarus theory, the balance of the demands and resources is explained with a seesaw analogy, in which the environmental demands sit on one of side and the individual resources on the other side. If the personal resources outweigh than the environmental demands or the resources are more or less equal to the demands, stress doesn't occur. On the other hand, if the external demands exceed the personal resources, then the person must deal with a stress situation.

The way individuals appraise or perceive the events determines the strategies they choose to deal with external demands or stressors. Lazarus (2006) explains this process with two types of appraisals: Primary appraisal and Secondary appraisal.

Primary appraisal is about the assessment of the influences which are relevant to the person's values, goal commitments, beliefs about self and world and situational intentions. The demands arisen in a situation are compared with the resources the person has. Lazarus (2006) claims that the goal commitment plays a crucial role to arouse a stress reaction. The situation will not be stressful if it isn't in relation with a specific goal commitment. If the individual makes an assessment that the condition is stressful, then he will foresee the consequences as either harm/loss, or threat, or challenge.

Secondary appraisal refers to an evaluative process to identify the available resources and the coping strategies how to deal with stress. It occurs especially when a primary appraisal of harm/loss, threat, or challenge has already taken place. Evaluation of coping opportunities and choice of coping strategies characterizes secondary appraisal. Individuals are an active part of

this cognitive evaluative process. Therefore, the evaluation of experienced situations is different person to person. While an individual considers an event threatening, the other may not. If the person assesses that he doesn't have enough resources to cope with the stress, negative emotions arise. As a result of this process, if negative emotions arise, then the person may face emotional difficulties.

Lazarus (2006) highlights that there isn't any certain order between primary and secondary appraisals, but the contents of appraisals are different. Primary appraisal includes the evaluation of the situation and events to see if they are worthy of attention and mobilization. On the contrary, secondary appraisal is focused on actions and how to cope. These two appraisal processes should be considered as two parts of a common process, but not two separate assessments. In any stressful occasion, the individual must evaluate the coping options, determine one of the alternatives, and how to set them into action.

Because of the cognitive-transaction characteristics between stressor and people's appraisal, according to the model, stress can be reduced by changing people's perceptions of stressors, by supporting them in gaining effective coping strategies, and by making them believe their ability to cope with stressors. Lazarus (2006) states that confidence is a crucial factor in overcoming obstacles and dangers, because inadequate confidence promotes threat and anxiety in people. A person's confidence can be seen to be closely related to their sense of control (Burden & Snowling, 2005). Control plays an important role in the coping process, and if individuals have high confidence and efficacy, they can appraise negative events as challengers rather than threats (Lazarus & Folkman, 1984).

## 2.4 Factors that may help students who have SLD cope with stress

### 2.4.1 Environmental factors that have an influence on stress coping of students with SLD

#### 2.4.1.1 Structure in learning environment

The environment with its demands is identified as a source of stress, but there is also a clear acceptance that the environment buffers individuals against the demands and provides resources that help people to cope with stress (Cassidy, 1999). Therefore, structuring a positive environment for students with SLD is very important to increase their learning, social functioning, and psychological well-being.

In order to reach all the learners in the classroom, teachers need to provide more differentiated instruction. In particular, working with students with SLD requires a differentiated approach to

get them actively engaged in the learning environment and to decrease the emotional consequences of academic failure (Santi, Hawkins & Christensen, 2018). An appropriate curriculum can give children successful learning experiences. Individualized educational plans are sometimes necessary for students with SLD (Macintyre & Deponio, 2003). To have knowledge of what students have is a crucial start point for this process. Teachers must find the instructional needs of these students and match them to the learning needs to help them to get the required skills for academic and socioemotional success. Teachers mostly focus only on the weaknesses of students with SDL and take into account pre-existing expectations because they need to improve their skills to be able to achieve academic success. However, first these students should be observed, and their initial situation should be identified. Afterwards, the teachers should support and instruct them in a way that they can find ways to achieve success. In this approach, teachers can help students to leverage their strengths to overcome their difficulties and become successful (Santi, Hawkins & Christensen, 2018).

A good learning environment for these students requires solid routines and structures that promote learning. With certain routines and structures in the learning environment, it is needed to compensate for the areas of learning difficulties. These routines have to be understood by students and consistently followed. In a good learning environment with solid routines and structures, students with SLD feel safe and confident in their ability to learn (Santi, Hawkins, & Christensen, 2018).

Inclusive practices in the classroom for students with SLD are crucial. Using digital tools for dyslexic and dyscalculic students can give these students opportunities to do the same activities as their friends (Karlsen, 2020).

#### 2.4.1.2 Relation between teacher and student

Students' social development has a direct effect on their success and wellbeing in life. And a supportive and positive teacher-student relationship at school affects not only students' wellbeing at school but also their wellbeing in their whole life. Especially for students who are at risk of school failure, emotionally connected and supportive relationships with their teachers may end up in improvements (Hamre & Pianta, 2005).

Metanalyses have proven that the relationships between students and teachers have proven to have an effect on students' motivation to learn, attitudes and cognitive skills (Allen, Witt & Wheelless, 2006; Cornelius-White, 2007). A positive and supportive teacher can give the

required structure in learning activities to students with SLD and stimulate students' belief in their ability to achieve their goals.

Harter (1999) suggested that the relationship between the teacher and students can affect the self-esteem of children in a positive way if the teachers approach with affection, empathy, emotional openness, engagement and support. This positive approach will help children to embark on these positive attitudes and develop positive self-evaluations. On the contrary, when teachers are unresponsive, demoralizing, rejecting, punishing, or negligent, children may develop negative self-concepts and view themselves as unlovable, unskillful, and worthless.

Teachers should convince children that they have the power and skills to overcome their difficulties and challenges. It is vital to communicate to the students that it is not their fault to have these difficulties and they should never be held responsible themselves. It should be considered to ask children, especially older ones, about the difficulties they have. They are mostly capable of mentioning the most pressing difficulties they suffer. This will help the teachers to find the most convenient support. (Macintyre & Deponio, 2003).

#### 2.4.1.3 Students' peer relations

According to Ladd et al. (2014), students have different activities and transactions with their peers in school; they work together, study in groups, form relationships with different levels of engagement. These interpersonal social transactions may create challenges which students need to face in their daily lives. Therefore, not only academic skills, but also relationships with peers may have an impact on the educational performance of students.

Wentzel (1998) argues that students who are supported by peers feel more secure and involved in academic activities. She also claims that it has been proven that youths who have friends have a higher level of emotional welfare, which results in more positive attitudes in the classroom, academic engagement, and success.

Ryan & Deci (2000) argue that supportive interpersonal relationships are one of the key resources for students' academic achievements. Supportive relationships may help students to meet their basic psychological needs for social relatedness. Wang & Eccles (2012) state that the fulfillment of basic needs provides students with comfortable connections with teachers and peers, which also increases their motivation to behave properly and focus on education. Interpersonal support may also help students to cope with stress in challenging situations and to increase their concentration on academic activities.

Students with SLD show, by nature, some differences which may differentiate them academically and socially from their peers and make them more vulnerable to being isolated and bullied (Denault, 2018). Therefore, these students with SLD need to have more supportive relationships, especially with peers, in order to be able to feel secure, comfortable and happy. So, they may be more motivated to learn.

#### 2.4.1.4 Culture

Many have argued that students with learning disabilities are supported mostly from academic perspectives while their emotional needs are disregarded (Nelson & Harwood, 2011). But research shows that academic support is not adequate. It is very critical to establish the school environment in accordance with the needs of children with SLD. The conditions of the environment should not affect them socially and mentally in a negative way and should prevent the growth of low-self-esteem and long-term psychological damage (Goodley & Rapley, 2001).

Therefore, an inclusive and accepting social culture is required to support the positive psychosocial development of individuals by giving them recognition, respect, belonging, security, and empathy (Midthassel, Bru, Ertesvåg & Roland, 2011).

A survey was conducted with 27 Scottish secondary schools and 14 English secondary schools which were nominated as having developed good practice in relation to SLD. As a conclusion, four major areas were identified in which the students could be supported in these schools.

1. These schools focus on specific difficulties and offer direct help to students with SLD to improve their basic skills.
2. They are good at improving curriculum access.
3. In these schools, students with SLD are encouraged to use effective coping strategies and independent learning.
4. They aim to build up confidence or self-esteem in students with SLD (Dyson & Skidmore (1994) cited in Riddick & National Association for Special Educational, 2010).

Dyslexia Norge has a more detailed definition of schools which have an inclusive and accepting environment and good practices for students with SLD. Dyslexia Norge started a project called "Dyslexia Friendly Schools" in 2005. Nowadays, there are 150 dyslexia-friendly schools in Norway, at primary, secondary and high school levels. Schools should apply to have the certificate "Dyslexia friendly school". Dyslexia Norge has ten criteria for certifying a school as "dyslexia friendly".

These ten criteria are explained in Dyslexia Norge (2021, 3 March). I think that schools should be dyslexia-friendly, and this approach should be understood very well, especially by special pedagogues/pedagogues. Therefore, I translated these criteria from Norwegian to English and listed them below.

1. The administration of the school and all teachers should discuss what they can do for students with dyslexia, dyscalculia, and/or speech difficulties and should agree that their school has the goal of becoming dyslexia friendly. The application to Dysleksi Norge should be debated in all departments of the school and put into the corporate plan.
2. Dyslexia-friendly schools should provide an environment for students not only with reading and writing difficulties, but also with mathematics learning and speech difficulties. Schools should describe a plan for each of these difficulties by involving details on how to work with these students.
3. Dyslexia-friendly schools should have a continuous competence development plan for their staff working with dyslexia, dyscalculia, and speech difficulties. The staff should also have the courses or training to use effective internet, communication, and technology (ICT) tools for helping students with SLD.
4. Dyslexia-friendly schools should have a wide range of teaching materials that all students have access to. The school should have good, solid routines for using reading and writing supportive technological tools, digital learning books, and/or audio books.
5. The school should work to create a good learning environment in which there should be a focus on classroom management and good structure. The school should continuously work to ensure that all students feel safe and respected. The school should have good routines for both student participation and parent collaboration. It is important that a dyslexia-friendly school, all together with administration, staff, students, and parents, should be open-minded and cooperate to deal with specific difficulties.
6. The school should have a testing routine introduced and utilized for evaluating the development of the students. When a student is considered to have specific difficulties, the school should have a plan to follow up with all necessary steps and procedures.
7. The school should have a good research-based reading training plan with widespread practice in the classroom. The daily routines should be in use by implementing research-based practices for students who are at risk of having reading-writing, mathematics, or speech difficulties. The effect of the practices should be evaluated and improved in a way that the best practice is offered to the students.

8. The school should work actively to promote differentiated education by facilitating different kinds of working methods. These methods should ensure that students learn in an active learning environment which has good routines for "assessment of learning".
9. The school must have knowledge of the laws and regulations regarding students with SLD. They should establish routines to protect the rights of students with dyslexia, dyscalculia, and specific language impairment and should be ready to provide the necessary information about any consequences for students.

The school should give students the right to use reading and writing technology in all written work, to do differentiated homework, to demonstrate their abilities through speech where possible, to use digital textbooks/audiobooks in all subjects, to have extended time on tests/exams, and to have the assignments read out loud.

10. The school should give information to parents about a plan which will be followed by the school for their children. And the school should be open for communication with parents about their concerns about their children's study plan and progress.

#### 2.4.2 Individual factors that have an influence on stress coping of students with SLD

##### 2.4.2.1 Goals and goal hierarchies

The role of motivation is important in the appraisal process because motivation affects stress and emotions. Individuals must be motivated for something or have a goal in order to experience stress (Lazarus, 2006). Being motivated and having goals help to cope with stress, while unachieved goals create the potential for stress and unpleasant emotions. If there are several goals, it must be decided which goal has the greatest importance. Lazarus (2006) calls that the "goal hierarchy". *"The goals people aspire to, the value of those goals, and the effort they are willing to expend to attain those goals give a measure of commitment."* (Cassidy, 1999, p.102).

In the school context, students' motivation to learn and goals to achieve are important. Successful learning processes can be possible with motivated and emotionally healthy students. Setting appropriate goals for students with SLD is also very crucial to increasing their motivation. Because goals give direction to behaviors and show direction to us.

Reeve (2009) identifies two types of goal setting: performance goals and mastery goals. Students with performance goals try to do better than others. Their aim is to show good performance and get higher grades. Therefore, they have a high fear of failure and mostly lower self-esteem. Reeve (2006) defines mastery goal setting as making progress. These people who set mastery goals are very interested in learning something new and improving themselves as

much as they can. They can choose meaningful learning tasks which are appropriate for them and, in this way, they are not afraid of failing (Reeve, 2009).

By taking into consideration Reeve (2009)'s approach, the best goal setting method for students with SLD is mastery goals, because it may reduce their level of stress and help them a lot cope with it. Teachers should set the highest possible expectations which are appropriate for the level of the students.

#### 2.4.2.2 Beliefs about self and world

According to Lazarus (2006), how we conceive ourselves and our place in the environment have an important impact on stress coping. Because they are very effective to shape our expectations and emotions. Bandura (1997) introduced self-efficacy theory in order to explain this concept.

#### **Self-efficacy**

Self-efficacy is a component of Bandura (1989)'s Social Cognitive Theory in which behavior, personal factors in the form of cognition, and the environment exist in a triadic reciprocal relationship. Self-efficacy beliefs play an important role in human behavior by having control over individuals' thoughts, feelings, motivation, and actions (Bandura, 1986). Bandura defines self-efficacy as "*beliefs in one's capability to organize and execute the courses of action required to manage prospective situations*" (1997, p.2). This theory claims that each person has a self-system which helps him/her to practice a control mechanism over their thoughts, feelings, motivations, and deeds (Pajares, 2003).

According to Bandura (1997), individuals need to believe in their own abilities to achieve their goals. In his "self-efficacy" concept, he explains how that belief can lead to success. Individuals' behaviors occur as a result of individuals beliefs about their capabilities. Individuals with high self-efficacy have more beliefs in themselves and a higher self-concept. It can also help individuals to set certain goals in their lives and to have higher motivation to work towards these goals. Self-efficacy is the perception of a person about his or her skills to perform, which may not reflect the reality of what the individual can do (Santi, Hawkins & Christensen, 2018). Knowledge and skills are important but not adequate to achieve a certain goal. Behavior is directly related to individuals' beliefs about their capabilities. It is self-efficacy that forms the behavior by using beliefs independent of the capabilities and leading the person to success.



Santi, Hawkins, and Christensen, (2018) highlight a number of factors that contribute to self-efficacy which are:

- past experiences with similar tasks,
- watching others' performance on similar tasks,
- the feedback received,
- and the emotional response to performance and feedback.

If people experience failure(s) while performing a task, they may ignore that task next time because they have lost confidence in their own abilities to achieve it.

Placed in the context of an educational setting, it can be concluded that self-efficacy plays an important role in increasing the academic performance of students (Pajares, 2003) and can be taught in school. Both self-efficacy and motivation are crucial for the application of learning in new situations in life, and today these two important elements are actual topics in schools (Skaalvik & Skaalvik, 2018). The self-efficacy level of students differentiates the intellectual performance of students with the same cognitive level. Teachers who work with students with SLD should consider that these students have mostly low rates of self-efficacy.

*What self-efficacy theory suggests is that academically unsuccessful dyslexics are likely to be lacking in confidence about their capabilities for becoming successfully literate, will choose to avoid tasks involving reading and/or writing, will be inclined to expend less effort on such tasks, to lack resilience, and to be more vulnerable to stress and anxiety in academic situations (Burden & Snowling, 2005, s.23).*

If the students experience a failure while performing a task, they can ignore that task because they lose their belief in their own ability to achieve that task. The consequences of these kinds of failures in school subjects, especially in reading and mathematics, can cause low self-efficacy. Klassen and Lynch (2007) also argue that students with LD show a lower level of self-efficacy than their classmates without any LD.

The self-efficacy of students with SLD must be increased and they must be taught that they have the ability to accomplish what they want to achieve. In this way, it can create an effective stress-handling situation and can be helpful in reducing stress for these students.

## **Growth Mindset**

A growth mindset is defined by Dweck (2007) as the belief that skills and abilities can be enhanced by effort and commitment. On the contrary, an individual with a fixed mindset believes that his/her personality, character, intelligence, and talents are inherent, fixed, and constant. He/she can not change his/her potential. People with a fixed mindset stick to what they know, and they don't try many new things. They make little effort to change or improve their skills. They are afraid of being criticized and looking stupid. They take difficult situations as a challenge. They compare themselves with others and feel threatened by other people's success. That is why they avoid challenges and give up very easily. On the other hand, an individual with a growing mindset believes that his/her personality, character, intelligence, and talents can be continuously developed. His/her potential can grow with time. They have a continuous desire and put a lot of effort into learning. They are open to criticism and not afraid of failure. They embrace their weaknesses and view difficult situations and challenges as growth opportunities. They also find inspiration in others' success. They realize that their efforts have a direct impact on their success. The growth mindset emphasizes that basic skills are starting points and these skills can be improved by effort and hard work (Dweck, 2007).

According to Santi, Hawkins, and Christensen (2018), it is very important to have a growing mindset to promote self-efficacy. They argue that encouraging the growth mindset of students can help them to establish their self-efficacy. Students have to learn that learning requires work and effort, which may not always end up with achievement. They need to learn that it is worth taking the failure risk because they can even learn from their failures and the consequences of their failures. Individuals with a growing mindset have proven that they want to take risks, deal with challenges and keep working to achieve their goals (Dweck, 2007). A growing mindset teaches students to be in charge of their learning activities by acknowledging the fact that it is up to them to be successful and confront the fear of failure. From this perspective, teaching and encouraging the growth mindset in children with SLD would help them to establish self-efficacy and to improve their school achievements.

### **2.4.2.3 Personal resources**

As Lazarus (2006) argues, individual variables influence what we are able and unable to do when we try to satisfy our needs, achieve our goals, and handle the stresses arising from demands, limitations, and opportunities. Personal resources are listed below:

- *Intelligence,*
- *Money,*
- *Social skills,*
- *Education,*
- *Supportive family and friends,*
- *Physical attractiveness,*
- *Health and energy,*
- *Sanguinity, and so on* (Lazarus, 2006, p.71).

According to Lazarus (2006), people are born with many of these resources. The missing resources may be gained by continuous effort over time. No matter how the resources are acquired, congenital or later, they have a huge impact on coping with stress and the achievements of the person.

### 3 METHODOLOGY

Research design is the process of conducting a survey from the beginning to the end. This thesis is conducted as qualitative research, which necessitates its own unique design rather than a traditional research approach. In the following sections, I will present the details of how the study was designed, how the sample was selected, and how the survey was carried out.

#### 3.1 Design

Questions and topics which the researcher is interested in are the starting point of a research (Thagaard, 2018). My personal experiences and interests were the starting point of this research project and created the topic. I was very interested in students with SLD as a math teacher, and in my master's study, I realized that the learning difficulties also affected these students emotionally a lot. My goal was to explore the different perceptions and perspectives of special pedagogues and pedagogues on the socioemotional effects of these difficulties on students.

I took into consideration the guidelines for the following questions as a beginning plan.

- What should the research focus on?
- Who are the relevant informants?
- Where is the survey being carried out?
- How is it performed? (Thagaard, 2018).

By considering the differences between quantitative and qualitative research, I concluded that the qualitative research approach would comply with the goals of my thesis. Goertz and Mahoney (2012) argue that the difference could be best understood from the perspective of the mathematical foundations. While quantitative research is based on inferential statistics (probability, statistics, etc.), qualitative research is founded on logic and a set of theories. They assert that the types of data, the explicit and implicit practices, and the best and possible practices determine which methodology should apply to a specific research.

As Silverman (2020) argues, there is a global view about qualitative research. According to him, qualitative research finds out the experiences of people and their opinions about important things. It differs from researchers being able to provide insights and understanding of people's experiences. Therefore, the analysis and results are subjective and just the opposite of

quantitative research, which is looking for the facts. He asserts that there is a consensus on the goals which should be pursued in qualitative research:

- Understanding people's experiences.
- Designing and conducting interviews in order to focus on the direct personal opinions of the people regarding the studied area.
- Putting forward the emphatic skills of the researcher to achieve the goals of the study.

As Silverman (2020) describes, my focus was on the direct personal opinions and experiences of people regarding SLD, dyslexia and dyscalculia. I finalized my research questions by consulting and clarifying with my supervisor. I selected special pedagogues and teachers from secondary schools in order to get more detailed information about the stress observed on students with SLD. In Norway, students start getting grades at secondary school and there are high expectations for subjects in Norwegian, mathematics, and English. These are the main subjects where students with SLD struggle a lot and have many challenges. That is why I think it is very important to do research on the experiences and challenges of students at secondary school who have dyslexia or/and dyscalculia from different perspectives. In my thesis, I studied this wide area in terms of the observations of special pedagogues/pedagogues.

My research needed a deep understanding of the observations of special pedagogues and pedagogues who could express and elaborate on their lived experiences. From this point of view, my study was a phenomenological qualitative research design. Van Manen (2014) argues that phenomenology is a temperate reflection of the lived experiences of people. He claims that phenomenological research starts with curiosity and phenomenological questions should discover the experiences of living through them. It aims to capture the essence and meaning of an event. According to Creswell (2013), phenomenology research should be used when the study necessitates a deep understanding of the experiences of a common group. He states that the study group should include min 3 and max 15 people. The people should be selected among the people who can express and elaborate on their experiences.

The traditional research approach, which is also called the typological or linear approach, has a formulated model based on logical progression of stages or tasks in a planned and optimal order. However, as Grady and Wallston (1988) argue, qualitative research should be flexible and not in any regular sequence, which necessitates a different approach than the traditional model suggested. In my thesis there wasn't any regular sequence, and I was flexible about going back to theory or research questions to make changes. I had goals, research questions, and a

conceptual framework which identified the current issues, situations, people, and the theories, preliminary studies, etc. to be used (Maxwell, 2009). All the processes were integrated and interacted, rather than planned in a linear order.

### **Interview and Qualitative Interview**

Brinkman (2013) claims that qualitative interviewing has become a key method for studying human and social sciences, for example, such as education and healthcare. Conversations are a rich and inevitable means of obtaining knowledge about personal and social aspects of human beings' lives. An interview is the best method to bring out the informants' attitudes, perceptions, and experiences. In this study, I aimed to utilize qualitative interviews in order to be able to conduct phenomenological research and understand the observations and thoughts of special pedagogues and teachers about the stress experiences of dyscalculic and dyslexic students.

As Kvale and Brinkman (2015) state, there are many different forms of interviews – daily life, literature, science, or subject related. These different interview forms may require diverse goals and approaches. A research interview can be designed in three ways (Kleven & Hjordemaal, 2018).

- **Structured Interview:** It gives fixed-answer alternatives to the questions.
- **Unstructured Interview:** The interview is informal with open-ended questions such as adapted to individual interview situations.
- **Partially Structured Interview:** This method uses an interview guide which gives the researcher an opportunity to move forward or backward on questions.

Since I wanted to get a balance between structure and flexibility, I designed a partially structured interview guide. The partially structured interview is strongly related to phenomenological research and is the most widely used in qualitative interview designs (Kvale & Brinkman, 2015).

## **3.2 Sampling**

### **3.2.1 Strategy for selecting the sample**

Since it would be very unpractical and expensive for research to study a whole population, sampling is the best method that gives the opportunity to study a subset of the population. By sampling, researchers reduce the number of targets but can also have information about a population in relation to results (Kleven & Hjordemaal, 2018).

In this qualitative study, purposive sampling, which is a sub-category of the non-probability sampling method, was used for sampling. Purposeful sampling relies on the judgement of researchers. It was the main topic to choose a good representative sample that has certain characteristics related to the research topic (Kleven & Hjordemaal, 2018). In order to perform time-and cost-effective research in this study, my sample consisted of four special pedagogues/pedagogues who were working at secondary schools and had experience with students with specific learning disabilities, dyslexia and/or dyscalculia. While two interviewees had experience with both dyslectic and dyscalculic students, the other two informants had experience mostly with dyslectic students.

I wanted to find more informants who are mathematic teachers and can speak about dyscalculic students. The mathematics teachers I reached rejected my interview requests for the reason that they didn't have the necessary knowledge of dyscalculia and/or experience with dyscalculic students. By taking into consideration my work experiences and study in Norway, these rejections reinforced my opinion that dyscalculia was not known very well, even by teachers who might have one or more dyscalculic students in their classes. On the other hand, dyslexia is a more active and accentuated topic in daily life and at schools.

### 3.2.2 Invitation, coordination and contact with informants

After the project was approved by the Norwegian Social Science Data Services on the 7th of January 2021, I started sending out the interview requests to many secondary schools. My request mail included an information letter and a letter of consent. I sent invitation letters to more than sixty secondary schools until I finally got my sample. Some schools didn't reply to my mail. Some others replied very quickly that they forwarded my mail to their related teachers. Some of the schools refused due to their busy schedules and extra overloads arising from the Covid-19 pandemic. Schools and teachers had extra responsibilities on school days in order to prevent infections among students, and many schools didn't want to load an extra task on their teachers. Some schools were positive towards my requests and facilitated reaching out to the related special pedagogues and pedagogues. I also contacted some of my teacher friends to be able to reach more informants.

When I got the statement of consent from the informants, I made contact with them for an appropriate time for a Teams meeting on the internet. Coordination with informants was done by e-mail. Before the interviews, I sent the interview guide to informants to clarify the content of the topic, to give them the opportunity to think about the questions and subjects, and to have a more convenient and comfortable interview.

### 3.3 Collection, coding, and analyzing av data

#### 3.3.1 Interview guide

One of the main goals of qualitative research design is to obtain rich data that provides deep information about a social phenomenon. Researcher conducts a number of qualitative interviews in which sufficient data can be collected to perform a deeper analysis and have insight into the topic (Thagaard, 2018).

Since the goal of this study is to contribute more information and increase knowledge of the topic, data collection was based on qualitative interviews with special pedagogues and pedagogues. An interview guide was prepared and submitted to the interviewees in advance. So, they might think about the specific areas and identify the issues/challenges better.

The interview guide had five subthemes and eighteen sub-questions in order to get a deeper overview on my research questions. The first part in interview guide included simple questions in order to both make a warmup and to get an overview of the informants' experiences about students with SLD. The other parts of the guide were prepared in relation to the theoretical part of the thesis. I asked one last open question, which was, "Is there anything more you want to say about that topic?" And three of them came along with more interesting information.

#### 3.3.2 Conducting the interviews

The interviews were conducted by using Teams meeting because of Covid-19 pandemic. A sound recorder was used to record the interviews to be able to store and retrieve the data as accurately as possible. In this way, I didn't want to lose time for taking notes. I could focus more on the interactions, eye contact and make the interview more interesting. In this way, I tried to create an open and collaborative relationship between me and the interviewees, which was helpful in constructing the data naturally (Kvale & Brinkmann, 2015). I conducted my interviews in Norwegian and also transcribed them in Norwegian.

Before I started the audio recording, I explained briefly the purpose of the study, anonymity, and confidentiality. The informants were open and engaged in the questions. I was a good, interested and curious listener with my small responses, such as "yes", "ok", but did not interrupt their engagement. All the informants tried to give detailed answers to the questions. The interviews took approximately 30-45 minutes.

#### 3.3.3 Data processing/coding and analyzing

Transcribing was an effortful process that required a lot of time. However, transcribing the interviews from oral to written text made data analysis easier for me. During transcribing, many



valuable thoughts started coming to my mind regarding the findings and discussion. After completing the transcription, I read the interviews in order to get an overall impression of the data material. Nvivo was very helpful with coding and showing the common points which were stated/emphasized by the informants.

In my interview guide, I preferred to categorize the questions in accordance with the main topics in relation to the theory. This helped me to create a better structure for the analyzing process and made it easier for me to relate the theory with the findings of the interviews. By using Nvivo, I coded some topics and used these codings in the discussion part.

### 3.4 Quality in qualitative research

Thagaard (2018) argues that there are three concepts to be used to identify the quality of qualitative research. These are reliability, validity, and transferability. I discussed the quality of my research from these concepts.

#### 3.4.1 Reliability

Thagaard (2018) emphasizes the importance of the reliability of qualitative research. The reader should be convinced by explaining the study process and how the data was collected. He suggests that the research process should be transparent and trustworthy to increase reliability. Therefore, I have provided all the detailed descriptions, information, and activities of my study process.

My thesis is qualitative research aimed at understanding a situation deeply and clearly by involving one of the key stakeholders. In order to increase the reliability of the thesis, I preferred to perform in-person and in-depth interviews to be able to receive more data to analyze the situation. Since selecting the interviewees and preparing the interview questions were two important pillars of reliability (Kvale & Brinkmann, 2015), I spent quite a lot of time searching for the targeted interviewees and preparing the interview guide and questions.

I chose the informants in accordance with my research goals, school level and type of qualifications. My informants were selected among secondary school teachers. They were special pedagogues or pedagogues who were dealing and having experience with targeted students. This helped me to find the related information and data which I needed to increase the reliability of my study. The interview questions were crucial to receiving the data in accordance with the research questions and to increasing the reliability of the thesis. Therefore, I preferred

open-ended questions rather than yes-no or multiple-ready answers to be selected. Additionally, I prepared a partially structured guide. I sent the interview guide and questions in advance, so that my informants would feel more comfortable, be prepared, and give more detailed, wide-spread, and accurate information.

Another aspect of reliability is providing the interviews with identical terms and conditions. That is why the interview guide and questionnaire were sent in advance by giving the informants sufficient time. The interviewees had the opportunity to select a convenient date and time for the interview. Online team meetings were used for all interviews. A sound recorder was used to record the interviews rather than taking notes. This was important to motivate the informants to give more information, to focus more on the conversations and repeat or elaborate on the questions if needed. I also used the recorder to transcribe the accurate data given by the informants.

I knew one of the interviewees before, but I paid more attention to conducting the same interview process, providing him/her with the same terms and conditions, and eliminating any negative impact of this acquaintanceship on reliability. Before this interview, I also tried to put an extra emphasis on freedom of participation.

#### 3.4.2 Validity

Thagaard (2018) links the term validity to the effectiveness of the results presented in the research. The data studied itself is not the real situation, but a representation of the real situation. Validity is the degree to which this representation reflects the general phenomenon studied in the research. In qualitative research, the interpreted content of the gathered data would help to understand the phenomena more. The validity of qualitative research is how deep, consistent, and meaningful the findings are interpreted in terms of the theories studied and generally accepted. I used the same approach in my study to increase the degree of validity. Firstly, I tried to reflect the views of all interviewees. Then, I presented the data in a structured, detailed, and clear way. Lastly, I discussed these findings and connected them to the related theories I studied beforehand. I wrote my thesis in English, but I preferred to conduct the interviews in Norwegian. I tried to translate the statements of the informants as directly as possible. Even though I know using direct citations may contribute to increasing the validity of a thesis, it wasn't an option for me. I didn't use my translations as direct citations in my studies.

### 3.4.3 Generalizability / Transferability

If the results of research can be used in other situations and can be generalized in a wider spectrum, then we can talk about generalizability or transferability. Thagaard (2018) argues that not the gathered raw data but the interpretations of the findings can be used as the basis of transferability. In qualitative research, transferability is about how the reader is able to recognize themselves or their situations with the results concluded in the study. According to Thagaard (2018), the sample is the focus of the transferability of a qualitative study. In my thesis, my sample included four special pedagogues/pedagogues from four different secondary schools who had different backgrounds and experiences with different students. I was aware of the fact that the sample size was not sufficient to generalize the results, but the goal of my study was to get the observations and experiences of special pedagogues/ pedagogues working closely with students having SLD. From the transferability perspective, my study may help the reader to recognize themselves or their situations with the findings and discussions in the study. My interpretations can give valuable insights and perceptions to all teachers working with students with SLD. In addition to that, my results can be utilized by further studies/research within the same subject area.

### 3.5 Ethical evaluation

I did the ethical evaluation of my thesis under four sub-sections.

#### **NESH application and approval**

Qualitative research is mostly characterized by studying the processes and problems related to human beings (Thagaard, 2018). The mutual interaction within the interview creates ethical responsibilities, especially for researchers. "The National Research Ethics Committee for the Social Sciences and Humanities (NESH)" is a professional and independent institution in Norway and formulates the general requirements for ethics in research" (NESH, 2016, p.4). NESH provides guidelines for research ethics and in my thesis, I followed these guidelines.

If the researcher uses the qualitative interview method to collect data, it creates an additional responsibility for the researcher to respect and protect the interviewees privacy. It is important to make an evaluation about how sensitive and private the collected data is. Researchers must inform and obtain a consensus from the interviewees who participated in the research (NESH, 2016). In relation to NESH regulations, a Letter of Consent was submitted to the interviewees for participation.

Before the study started, an application form was sent to the Norwegian Center for Research Data (NSD) for approval. Before the interviews, I registered my studies in the NSD database and received the necessary approval on the 7th of January 2021.

### **Interviewee consent form**

Kvale and Brinkmann (2015) and Thagaard (2018) argue that the interviewee consent form ensures the voluntary participation of the informants. In my thesis, I prepared an interviewee consent form and a supplementary information letter including the necessary information about me and the research subject. It was emphasized that the interviews were confidential, the participation was voluntary, and the informant could withdraw at any time he/she wanted. I sent the interviewee's consent and information forms by mail and received the signed versions.

### **Confidentiality**

The informants have the right that the information they give must be processed confidentially and their identities must be kept anonymous by the researcher. (Kvale & Brinkmann, 2015; Thagaard, 2018). In my study, I informed my interviewees about their rights and processed their information and identities confidentially. The sound records and Nvivo codings will be totally deleted after the thesis is approved.

### **Consequences of participating in study**

Thagaard (2018) states that the research and the interviews should be conducted in a way to avoid any negative consequences for the participants. My informants were very open, honest, and informative. I have done and will do my best to show my respect for their rights, integrity, and freedom, and to inhibit any negative consequences for them.

## 4 FINDINGS

The purpose of the study is to increase knowledge of how pedagogues/special pedagogues are approaching and helping students with "specific learning disabilities" to cope with stress and avoid emotional problems. In order to be able to reach the goal, four qualitative interviews were conducted by following the guidelines and milestones written in Part 3-Methodology.

The questionnaire form in Appendix 2 was delivered to the interviewees in advance to give them the time they needed to go through the questions and to think about their responses.

Four interviewees were pedagogues/special pedagogues who are working closely with children who have dyslexia and/or dyscalculia. I took into consideration the backgrounds, studies, and current workloads of the interviewees and concluded that the selection of the interviewees was good enough to collect the data and analyze it.

In this part of the thesis, the findings of the interviews will be presented. Since the interviews were conducted in Norwegian and I was writing my thesis in English, I couldn't write direct statements from the interviewees. I tried to stick to their original sentences and translated them accordingly. However, I didn't use direct citations in my text because it was still my translation. Additionally, I named my informants as the first, second, third, and fourth interviewees and referred to the same informant when I used them in my text.

### 4.1 Observable and distinctive stress at secondary school

In contrast to the other three interviewees, the first interviewee stated that there is no observable distinction between students with and without dyslexia or dyscalculia. He/she emphasized that personality determines how a person is. He/she doesn't see any special characteristics of students with SLD. He/she thinks that there is no relation between having dyslexia and/or dyscalculia and having emotional challenges. He/she commented that these students see that they are different from others and they need to study more and longer than others. They can be upset a little bit, but not more than that.

The other three interviewees observed that these students have more stress and emotional challenges, which they think arise from dyslexia and/or dyscalculia. And these three interviewees argued that students with dyslexia or dyscalculia have distinctive characteristics which can be observed.

The second interviewee elaborated on his/her observations from primary school to secondary school, because he/she has been working as a special pedagogue in a combined school. He/she has observed that students with dyslexia or dyscalculia have less distinctive behaviors in primary school than in secondary school. Since reading and mathematics are intertwined in many subjects in school, these students experience a lack of success. Therefore, they become stressed. According to his/her observations, especially after 4 or 5 grades, these students start to show anger and frustration.

He/she stated his/her observations that;

- Students with dyslexia or dyscalculia start to realize more their difficulties and their differences as they go to higher grades.
- They have difficulties related to reading and mathematics. They can experience emotional challenges because of their lack of mastery.
- In particular, students going to secondary school think that their difficulties are decreasing their status in the classroom.
- If a student only with dyslexia is good at mathematics, then this gives him/her a positive status and increases his/her self-concept. Because the students think that mathematics is more linked to the status of being a good student.

The third interviewee commented that these students become frustrated when they realize their inability to overcome their difficulties. Some of them show introvert and the others show extrovert behaviors. He/she experienced that this may end up with being bullied or bullying others. He/she observed a high level of stress resulting in a lack of concentration. He/she mentioned the other indicators as;

- Their fluctuating humor in relationships with other students,
- Their attitudes show feelings in regard to being misunderstood and becoming easily angry.
- Their difficulties expressing themselves,
- Performing extrovert behaviors towards other classmates or doing physical damage to the equipment in the classroom.

The fourth interviewee said from experience that distinctive behaviors are more observable, especially at secondary school. He/she highlighted that if these students with SLD have skills and/or social activities such as football or music, then they show higher self-efficacy. In

secondary school, they begin to realize their difficulties and to see that they can not cope with the assignments as well as others. Then they may start thinking that they are different. They may even think they are stupid. Afterwards, they may not become open to getting help, because they want to show their friends that they are not different, and they don't need to get extra help. This was highlighted as the biggest challenge for the teachers working closely with students having dyslexia and/or dyscalculia.

I have seen that three interviewees commented in accordance with academic studies. They made observations that students with SLD have some distinctive characteristics. These students also have distinctive emotional stress, and this stress is more observable at secondary school. It was very interesting to me to hear from one of the interviewees that these students don't have any distinctive characteristics or stress. All four interviewees commented that the teachers in their schools mind the psychological wellbeing of the students. One of them highlighted that the teachers are trying to help these students, but they don't have sufficient knowledge and skills.

#### 4.2 They ignore the issue and try to escape

I tried to figure out how focusing on stress management can help to prevent emotional stress and promote good mental health for these students, and what the special pedagogues/pedagogues' observations are about what kind of stress handling strategies these students are using.

The first interviewee repeated his/her statement that these students don't experience any extra emotional stress due to dyslexia and/or dyscalculia. He/she seems to his/her special pedagogue position as a mentor to show these students how to succeed despite dyslexia and/or dyscalculia. He/she said that dyslexic students may have a little bit more stress, but the easiest way to decrease the stress is to learn digital tools and audio books at early ages. Since they have the right to use more time on the exams, this also helps them to ease their stress.

The other three interviewees reiterated themselves that these students experience extra stress due to dyslexia and/or dyscalculia, and they argued that stress-handling strategies may help these students to cope with the stress.

The second interviewee stated that these students must cope with something very difficult for them. Even though they practice much more, they get little progress in return. Since reading is a cognitive and complicated process, it becomes a highly demanding situation for dyslexic

students to be in. Dyscalculic students can not remember certain mathematical rules. This causes high-level stress for them. Hence, it is important to focus on mental stress handling.

He/she stated that these students use mostly maladaptive strategies. Some of them try to control their feelings by using too much humor. As a survival strategy, the others postpone their problems which they would not like to face. These students close themselves and limit their social interactions, as well. Then it becomes more difficult for them to get out of this situation. He/she observed anger and sadness in these students. He/she said again that the common strategy among these students is avoidance to cope with the challenges. He/she also highlighted that it is very important for these students to learn and to use digital tools in early grades.

According to the third interviewee, if the special pedagogues/pedagogues guide these students by showing care and attention, they can manage to cope with their emotional challenges. He/she stated that students prefer to choose the easiest strategy to cope with stress. Since they are immature and inexperienced, they generally select strategies impulsively. He/she observed that they ignore the problems. Some of them show introvert and the others have extrovert behaviors.

The fourth interviewee has a special focus on growth mindset theory and has a deep knowledge and enthusiasm for using that theory in school. He/she said that they have a workshop every month with their colleagues at the school in order to discuss how to use this theory. He/she observed some positive behaviors and increased success of the students. He/she thinks that this approach helps to reduce escaping and avoiding behavior and to increase students' concentration. According to him/her, some of the students are open and solution-oriented and ask for help. Some others give up and ignore the problem by trying to hide their stress. Since they want their friends to think that they can manage without help, they strongly deny getting extra assistance, especially outside of the classroom. The special pedagogues/pedagogues try to help them in the classroom. He/she stated that in order to make the in-classroom assistance process more efficient, it is vital to use digital tools which help students to feel safe and included in the class.

I have seen that students with SLD prefer to choose mostly survival stress coping strategies such as escape and avoidance. These are short-term solutions but appropriate for their ages.



### 4.3 Effect of motivation

The importance of motivation was emphasized by all interviewees and how motivation influences the students' stress handling in a positive way.

The first interviewee stated that the motivation is connected to the interest of the students in the subject and their sympathy for their teachers. He/she highlighted that inner motivation is more important. "If the students reject getting help, then it becomes difficult for him/her to reach them.

The second interviewee emphasized the importance of motivation. He/she also said that special pedagogues/pedagogues should determine reachable and gradual goals for each student. As the students reach their goals step by step and see their progress, their motivation increases while their stress decreases.

According to the third interviewee, the thing which motivates these students is the appropriate goal settlement and structure of differentiated education. He/she mentioned that these students feel safe if they know the structure of differentiated education. But also, sometimes they need the flexibility to be in the classroom. The well-managed balance between structured education and flexibility increases their motivation and decreases their stress.

The last interviewee stated that if students have inner motivation and a desire to get help, they have less stress. The inner motivation is dependent on the support of the parents. He/she compared two of his/her students with different behaviors from their parents. He/she observed that his/her students with supportive parents have stronger motivation and higher self-efficacy. His/her second student without supportive parents feels helpless and has low motivation and higher stress.

### 4.4 Lower self-efficacy

I think it is very important how these students perceive themselves and view their difficulties. Another important aspect is how the previous unsuccessful coping experiences and the students' expectations of mastery are related to their own self-efficacy. I wanted to find the answer to the question: "What needs to be done in order to increase their inner motivation and their self-efficacy, so that they can believe that they can learn and improve themselves?"

The first interviewee doesn't think that these students with SLD do perceive themselves differently than others and have lower self-efficacy. He/she said that while the students read a

hundred words per minute on average, the dyslectic students read fifty words. Dyslexic students perceive themselves as slow readers and writers who need more time. He/she evaluates that the context of their written texts is as good as their classmates.

He/she stated that these students have been told throughout primary school that they will see improvements and their difficulties will disappear over time. As they experience the same challenges at secondary school, their expectations are not met, and they struggle even more to understand. This could be a turning point for some of them and they give up. However, for some others, this realization triggers their motivation to believe harder and harder to succeed. He/she observed that boys are worse at believing in themselves than girls who are better at working towards their goals.

He/she repeated that these students can write very good texts in terms of content. In order to increase their inner motivation, he/she asks permission to read their texts aloud in class. While other students can not see the writing mistakes, they express their applause. He/she has observed many students` improving their writing by using this method. Encouraging these students by saying "you can do it" is not sufficient. The teacher should know their students very well and promote their strong skills. Digital tools will also help these students to increase their self-efficacy.

The second interviewee said that, since the school is an educational environment full of assignments and tasks related to reading, writing, and mathematics which the students need to fulfill, students with SLD always face the same challenges repeatedly. That makes them feel different than the others. He/she often observed that these students think about themselves: "I am a bad student. I don't have the capacity to do more. " He/she concluded that these students have lower self-efficacy due to their difficulties.

He/she thinks that it is important that they have good experience from the start. Previous bad experiences affect them negatively. His/her methodology is to give examples of successful people who have SLD, such as Erna Solberg and older students from the same school. In this way, they see their difficulties only as a handicap which can be managed. They start to view themselves just like, for example, people using glasses with visual problems. This creates inner motivation and increases self-efficacy. He/she suggested that special education needs to focus more on the approach that everybody can learn something and develop themselves.

The third interviewee stated that many students with SLD feel that they don't manage well both academically and socially. They may feel themselves dummy and helpless. Since they struggle

to read and write, they find it very difficult to succeed at school. Most of the time, they become frustrated, they have no desire to cope with the situation and they eventually give up. These negative experiences may end up with truancy and school dropouts. That is why it is vital to convince these students to believe in themselves to succeed and to obtain self-efficacy. The appropriate digital tools are necessary to be used in this process.

He/she stated that bad experiences have a heavy bearing on these students. According to him/her, the most important thing to creating inner motivation and better self-efficacy is having authoritative adults around them. These authoritative adults must establish good relationships, give them a well-structured and differentiated education, and show them clearly that they care about them. In this manner, they feel more secure at school and become more motivated to complete their tasks.

The last interviewee observed that bad experiences have bad effects on these students, but they are doing well if they feel their current teachers are caring for them. He/she mentioned an eighth-grade dyslexic student who had a bad presentation experience in fifth grade. The student has been performing his/her presentations only to his/her teachers since then. His/her teacher agreed with him/her that he/she would do the first presentation only to the teacher and the second one would be presented in class.

He/she also stated that it is crucial to point out certain celebrities who have similar difficulties, for example, Erna Solberg. The teachers have to say, "They have done well, and you can also do that". Secondly, it is important to use a growing mindset and get these students to believe that they can succeed. Thirdly, the strong sides of these students should be appraised to give them a self-concept. For example, "you are very good at football". Finally, the points of the tasks must be clarified to these teenagers by explaining the relationship to daily life. In order to be able to do that, teachers need to know the interests of the students and connect their interests to the tasks.

I can infer from the interviews that my informants in general observed low self-efficacy in the students with SLD. I haven't seen any gender differences in low self-efficacy in my literature review, but one of my interviewees noted that boys were observed more with lower self-efficacy than girls. I think this point may require more research and attention.

#### 4.5 Effect of getting a diagnosis

Under this topic, I tried to figure out what kind of differences the interviewees have observed with these students after their learning difficulties are diagnosed officially.

All interviewees observed a similar reaction to the students with SLD after the learning difficulties were diagnosed officially. They think that the students get an explanation for their difficulties and this diagnosis is a relief for them. It has mostly a positive effect on these students.

Two interviewees added that the diagnosis entitles these students to have more rights in their exams, such as using digital tools and extra time. An interviewee highlighted that the diagnosis in the tenth grade was too late. Diagnosis must be done as much as possible in early grades to be able to give correct help to these students.

#### 4.6 Teacher-student relations: to feel safe, respected, and empathy

All four informants highlighted that the first requirement of a good teacher-student relationship is to make the student feel safe. If the student feels safe, then the special pedagogues/pedagogues can support and help him to choose the appropriate coping strategies, increase motivation and self-efficacy.

The first interviewee stated that it is important to believe in students. They may have low self-concept because of their difficulties. To show respect to them is vital. We have to give them the message; "it is totally normal to fail, and you can learn from your mistakes".

The second interviewee commented that these students experience many different challenges. Special pedagogues/pedagogues should try to talk to them, to learn how they think and experience, in order to find a good solution together. He/she stated that we have to talk about all the possibilities and all the good things they can do. He/she also emphasized the importance of empathy for a good relationship.

The third interviewee said that the special pedagogue/pedagogue needs to care for the students and show confidence in them. Teachers need to provide these students with an environment offering differentiated education and utilizing digital tools effectively.

The fourth interviewee thought that the special pedagogues/pedagogues had to help these students to choose good coping strategies. The students should know and have the confidence that they can reach their teachers and talk to them whenever they need.

#### 4.7 Peer-to-peer relations: inclusive and acceptable

All four informants emphasized that students with SLD are being affected by their relationships with their peers. They all highlighted that inclusion and acceptance are the key features of a positive relationship.

The first interviewee, working both as a class teacher and a special pedagogue, observed that all students care and help the students with SLD and integrate them as much as possible. And this is very important for students with SLD.

The second interviewee thought that the determiner of how the peer relationship would affect them was the perception of the students with SLD. If they haven't already accepted their difficulties, they have negative behaviors which end up in bad peer relationships. If the school environment is oriented towards accepting and embracing students with SLD, then it becomes easier for them to acknowledge themselves, to have good deeds, and to have peer relationships.

The third interviewee stated that these students should be included and accepted by their peers, and they need to feel that their peers like and care about them. This helps them to become more cooperative, positive, and willing to have relationships with their peers and to learn. Otherwise, they experience the opposite, the vicious cycle of negative behaviors, bad relationships, and so on.

The fourth interviewee mentioned his/her five dyslectic students. His/her students feel very comfortable and like studying together. However, they can not complete the group assignments/tasks as they are supposed to be because there is a lack of contributors from different perspectives. These students should be included in the other groups by giving them adaptive tasks which they can manage. If they receive group tasks and can not complete them, then the other group members don't want to work with them again.

#### 4.8 A supportive learning environment and school culture

All the special pedagogues/pedagogues I interviewed thought that a good learning environment and a good school culture are very important for students with SLD. They mentioned that this had considerable effects on these students with their coping strategies and motivation.

The first interviewee talked about their school strategy, which is focused on including, rather than offering a segregated learning environment. For example, the teachers are introducing the program "into words" to all students at the beginning of the school year. The program has

become a common tool rather than a specific tool designated for dyslectic students. Then, they give a detailed course to the dyslectic students because they may need more. So, these students don't react to the fact that this program is special for them. In this manner, they are trying to prevent any gap between the dyslectic students and their peers.

In his/her school culture, all students are important. However, students with SLD have some rights, for example, such as extra time in exams etc.

The second interviewee defined a good learning environment as below:

- It is an open environment.
- It is normal to be different.
- All the students are equally good.
- All the students have beliefs in others.
- All the students accept others as they are.
- It is OK to make mistakes and be incapable of doing things.
- Everybody can gain something worthwhile from the same subject.
- All the students feel safe.
- All the students can become themselves with their challenges and strengths.

School culture is important but must be inclusive. Rather than expecting high performance from students with SLD, the school culture should encourage these students to become themselves and improve their characteristics.

The third interviewee stated that a good learning environment should promote the opportunities for students with SLD to get them socially and academically included. The academic support must be in the classroom as much as possible rather than offering individual courses in a separate room. They should participate in group assignments with their peers. From the social support perspective, they need to spend time with their peers. So, they also feel socially accepted by their peers.

The third interviewee thought that the relationships between adults and students form the school culture. How adults and students talk, behave, and collaborate with each other are the determiners of the school culture. Since the teachers are the role-models for these students, they replicate the deeds of the teachers.

The fourth interviewee commented that in a good learning environment, students with SLD feel acknowledged, appraised, and supported. They need to know that they are receiving the help

they are entitled to. According to him/her, Norwegian schools are very concerned about helping these students with their difficulties, their achievements and progress, both academically and socially. However, he/she can not say that all teachers know very well how to assist these students. Schools should focus on improving the qualifications of teachers. He/she also added that the in-class support must be elaborated with adaptive individual assignments/tasks.

I had the impression that a positive and inclusive learning environment and school culture could help these students to feel safe, cared for, and appraised.

#### 4.9 School and parents' collaboration

All the interviewees had similar opinions about the effect of school and parents' collaboration. They thought that good cooperation helped the students with SLD to have better mental health.

The first interviewee talked about informing parents regarding the testing process. This makes parents feel safer and more collaborative because they know that their children are being taken care of.

The second interviewee said that school and parents' collaboration is important for all students, but should be considered more for students with SLD. These students may not talk to their parents about the difficulties they experienced at school. It is important that the teachers and the parents are in contact and collaborate with each other.

The third interviewee highlighted the importance of mutual and supportive cooperation between parents and school. He/she thinks that this has a positive effect on the mental well-being and learning activities of these students. This cooperation allows parents to learn how their children are treated at school. Meanwhile, the school learns more about the needs and challenges of their students. Hence, this helps to create a common understanding of the situation of the student with SLD. He/she thinks that good collaboration has a positive effect on the academic and social lives of these students. They become more willing to work, collaborate, and have good relationships with their friends.

The fourth interviewee argued that the collaboration between the school and parents is the most important thing to help students with SLD.

## 5 DISCUSSION

I have the following three research questions:

1. How are specific learning disabilities (SLD) and emotional stress connected to each other?
2. What kind of stress-handling strategies do the students have?
3. How can individual and environmental factors help to promote the wellbeing and learning achievement of students?

In order to be able to find answers to my research questions, I discussed my findings in terms of the theoretical framework.

### 5.1 Observed characteristics and emotional stress of students with SLD

Even though Bru (2008) argued that students with SLD will carry these difficulties as an identity throughout their whole lives, I have seen in my interviews that my focus group-the students at secondary school-have a tendency to deny their difficulties and get additional external assistance. Since my focus group are teenagers and they are seeking and establishing their identities mostly at these ages, this could be a factor for their rejection.

Frank (2014) defined the characteristics of students with SLD in general as low skills in study organizations, academic underachievement, behavioral problems, social deficits, low self-esteem, and oppositional attitude. All of these characteristics have been observed by my interviewees in their students with SLD. These students may have some or all of these characteristics. They mostly highlighted the low self-esteem arising from academic underachievement. These self-esteem characteristics were also discussed by many academicians, such as Skaalvik and Skaalvik (2018), Riddick, Farmer & Sterling (1997), Gjessing and Karlsen (1989), and Dahle, Knivsberg and Andreassen (2011).

Hien and Lundberg (2017) stated that students with dyslexia are as bright as their counterparts but have word coding problems. The coding difficulty forces these students to study more than their friends. However, they can compose good quality texts in contexts with some typo errors. The quality of texts was highlighted, especially by two of my interviewees, several times at different questions. And all of my interviewees commented that these students work very hard, sometimes twice as hard as the other students. This causes stress and exhaustion for the students with SLD. These students think that this is not fair and tend to have oppositional attitudes.



One of the informants stated that students with dyscalculia have lower self-esteem than students with only dyslexia. This is because she thinks that achievement in mathematics gives a higher status among students. I can conclude that this observation complies with the research of Aro et al. (2019) which shows that adults with dyscalculia have more anti-depressant usage and a higher unemployment rate than dyslexics. In my study, I would like to discuss more about students with dyscalculia. However, since dyscalculia is known less than dyslexia and there are not many pedagogues specializing in this subject, I couldn't do that as much as I aimed. From the limited findings in my interviews, I can argue that students with dyscalculia may also have challenges getting the assistance they need.

Frank (2014) claimed that SLD is not only an academic problem but also an emotional and social challenge which may have profound negative effects on individuals, such as high-level stress. Three of four interviewees observed high-level stress as one of the main characteristics of these students.

The characteristics of the students may be subject to change due to many internal and external factors. All four interviewees highlighted that early diagnosis may help these students to relieve, to decrease the level of stress, and may be less vulnerable to the above-mentioned characteristics. This argument was also argued by Frank (2014), as the late diagnosis may result in more severe emotional stress, behavioral and emotional problems.

I found two research in Norway studying the dyslexic students about the internalized psychological difficulties, but none in dyscalculia from the same perspective. The studies of Dahle, Knivsberg, and Andreassen (2011) and "Barn I Bergen" (Heiervang & Torsheim, 2008) found out the positive correlation between dyslexia and emotional challenges by working closely with these students. In my thesis, since I talked only with special pedagogues/pedagogues, not with the students, I could not verify this correlation in my findings. However, three of my four interviewees observed especially sadness and frustration in their students with SLD.

Additionally, two of the interviewees highlighted that these students may give up because of their negative emotions and feelings, which were defined as "learned helpless" by Seligman (1992). The "learned helpless" situation is the outcome of repeated failures in the past and may be the cause of giving up. Students with SLD may fall into this situation because they may think that they can not see the positive results of their hard work. One of the interviewees strongly argued that this situation happens mostly to students without the necessary support from their

parents. Therefore, these students have to get support, assistance, and help to be able to overcome this situation.

## 5.2 Stress and stress handling strategies

When I asked the interviewees to define the stress of the students with SLD, the first responses were the same: "It varies from the students to the students". This is absolutely explained in Lazarus's theory as a "transactional-relational approach to stress and emotions". According to the theory, stress is experienced by individuals if personal and social resources can not meet the demands. The perception of stress stimulates the reaction. Therefore, individual differences and how the individual perceives stress determine his/her response. From this perspective, as interviewees stated, stress is observed differently by students with SLD. Their reactions are dependent on their personal attributes, skills, and the support, assistance, and the help they get from the environment.

By taking the Lazarus theory (2006) into consideration, the appraisal is the most important source of variations in stress activation. The primary appraisal of students with SLD should include an evaluation of their difficulties. And the secondary appraisal should focus on the actions they will take to cope with their challenges. The appraisal of their difficulties determines their stress behavior and their coping strategy. The stress on these students can be reduced by changing the perception of the stressors. For example, Erna Solberg was given as an example by half of the interviewees to change the perception of their students. They wanted their students to think that having dyslexia is as normal as wearing eyeglasses and they could be successful like others. Therefore, these students need to be supported to select the appropriate stress-handling strategies.

Folkman and Lazarus (1988) suggested eight coping strategies. I listed these strategies by adding the observations of the interviewee. The interviewees might not mention directly the name of the strategy. I tried to interpret their observations to the related coping strategies.

Two of the interviewees referred to the confrontative coping strategy by saying their observations about the extrovert behaviors of some of their students. He/she said that he/she observed some of the students show introvert and some others do extrovert behaviors to handle the stress they have. Extrovert behaviors may include confrontative reactions to teachers, peers, and even to school equipment.

Two interviewees had different observations about the introvert behaviors, closing themselves and limiting their social interactions are the main observations on the students with SLD. This can be referred to as a distancing strategy, according to my literature review.

I concluded the observations of another two of the interviewees as a self-controlling strategy. The students try to control their stress and reactions. Some students try to hide their stress. They reject external help, so they think that they show their friends that they are strong enough to manage themselves. Some other students try to control their feelings by using too much humor. Seeking social support is another strategy mentioned by one of the interviewees. He/she highlighted that some students are seeking social support by being open, solution-oriented and asking for help.

I couldn't find any direct observations which I could refer to the accepting responsibility strategy. However, when I review the answers to other questions, I see that this strategy is used by some of the students. Two of the interviewees mentioned that some students with SLD are willing to accept their responsibilities and cooperate with their teachers to face their difficulties.

Escape-avoidance is the most mentioned strategy stated by the interviewees. Three interviewees commented on this strategy by observing mostly ignorance of the problem and avoidance of coping with the challenges.

None of the interviewees mentioned or referred to any observations about the planful problem-solving and positive reappraisal strategies.

My main inference from these observations related to the handling strategies is that the students with SLD are using mostly maladaptive stress-coping strategies. These strategies can be called short-term survival solutions which may not help in the long-term. The planful problem-solving can be considered as a long-term strategy which necessitates good planning, support and assistance from special pedagogues. The positive reappraisal strategy is considered for older adults to handle their difficulties. Therefore, it is not an appropriate strategy for students at secondary school.

### 5.3 Motivation and self-efficacy (growth mindset)

All four interviewees confirmed that motivation is important, as Lazarus (2006) claims that motivation affects directly stress and emotions. Lazarus (2006) argues that, in addition to motivation, goal setting also helps individuals to cope with stress. However, unreachable goals

can create potential stress and unpleasant emotions. Reeve (2009) segregates goals into two; performance and mastery goals. Performance goals may create a competitive environment among students willing to do better than others. However, mastery goals should be set appropriately for individuals' improvement.

All four interviewees commented that students with SLD need reachable and appropriate goals. The level of goals should be increased due to the improvement of the students. They emphasized that their students should never be afraid of making mistakes. The school and teachers should create this environment for students with SLD to be able to motivate them to learn new things. Honoring these students in the class for their achievements may help to create this environment.

The under-achievements of students with SLD in the past may have made them fear and anxious about making mistakes. I have seen in the theory and interviews that special pedagogues/pedagogues should use mastery goal setting for these students. So, they can have gradual, reachable goals and experience their achievements. This will increase their motivation and help them to have good emotions. A special note that, as two interviewees highlighted, boys need more attention than girls while setting goals and following the steps to achieve them.

Three of four interviewees said very confidently that students with SLD have lower self-efficacy due to their repeated difficulties and bad experiences. There are many ongoing tasks and assignments these students should focus on, but they can not manage some of them. Reading and mathematics could be the nightmares these students need to face on a daily basis. These students may think that they are different, even dummies, and helpless. This may worsen their belief in their own success. Bandura (1989) defines self-efficacy as the belief of an individual in his/her ability to achieve. And Lazarus (2006) argued that good perception of the environment is crucial to choosing the appropriate coping strategy. Compliant with the theory, our interviewees highlighted that when students with SLD lose their belief in themselves and start having bad self-perceptions, they can not handle their difficulties and stress. This may end up with even more severe consequences, such as truancy and school drop-out.

The self-efficacy theory suggests that students at the same academic level may perform differently due to their level of self-efficacy. Therefore, it is vital that the self-efficacy of students with SLD be increased at schools. These students need to believe in themselves to be able to manage. Their strong sides or skills should be encouraged by positive feedback and appraisals in class among their peers.

As Santi, Hawkins, and Christensen (2018) claim, it is very important to have a growing mindset to promote self-efficacy. One of the interviewees also stated that his/her school has been using a growth mindset approach to help students with SLD in order to establish their self-efficacy. He/she said that he/she has observed positive differences in these students after implementing a growth mindset approach.

To me, growing a mindset is a systematic approach that schools can implement. If the school doesn't follow this mindset as a whole, there are also different ways special pedagogues/pedagogues can follow to increase self-efficacy. The bottom-line here is to make the students believe in themselves through positive feedback and conversations. For example,

- Using the mastery goal-setting approach as explained before.
- Explaining repeatedly that everyone may have bad experiences in the past, so these students will understand that it is not only them who are making mistakes and stop them from comparing themselves with their peers.
- Giving positive feedback, especially on their strong sides and skills. This will increase their motivation to work more on their weak areas and skills.
- Giving good and known examples of figures with similar difficulties from real life, so that they will know that they can also manage.

## 5.4 School environment

It is a known fact that school is important for all students where they need to feel safe and belong to that environment. Since students with SLD may perceive themselves differently than their peers and they have extra difficulties, especially in reading, writing and mathematics, it is becoming more vital for them to feel safe at school and belong to the class and school. At this point, the school environment comes into prominence. I will discuss this from two perspectives: school culture and structure.

### 5.4.1 School culture (inclusion and collaboration)

Midthassel, Bru, Ertesvåg, and Roland (2011) claim that an inclusive and accepting social culture offering recognition, respect, belonging, security, and empathy is necessary to support all individuals with positive mental development. Goodley and Rapley (2001) argue that it is crucial to establish an appropriate school environment for students with SLD to help them to overcome the social and psychological effects of the conditions arising from their difficulties and to develop self-esteem.

All interviewees commented on the importance of a positive, inclusive, and supportive school culture with different suggestions and implementations, such as giving "in-to-words" courses to all students, keeping the students in the classroom as much as possible, being role-models as adults, and creating an open, equal, respectful, accepting, and safe environment.

Another aspect of the school culture is the collaboration between all stakeholders. In particular, collaboration among the teachers and with the parents play key roles for the students with SLD. Parents could be seen as external stakeholders, but actually, parents should be considered as the biggest resources of the school. The parents know definitively the difficulties of their children since birth with all historical and evolutive details. Theoretically, one or both of the parents may have genetically the same difficulties and experiences. The school should utilize this knowledge, care, and experience of the parents most in order to be able to determine their actions and plans. In my interviews, I have received similar comments from all the interviewees that cooperation with parents is very important. One of them highlighted that collaboration would help create a common understanding of the difficulties and the required support/help. Another interviewee stated that parents-school cooperation is the most important part of the support process.

To me, the above-mentioned culture applies to all students. However, before anything else, the school culture must be inclusive and collaborative, especially for students with SLD. Because I think these students need to feel safe and belong to the school to be able to cope with their difficulties and negative emotions.

#### 5.4.2 School structure (using digital tools, differentiated education)

All students are required to read and learn mathematics at school. According to Lazarus theory, these reading, math etc, are the demands on the students with SLD which creates stress on them. These students need to be equipped with the necessary resources to be able to meet the demands. These resources can be internal or external, assisting, and supportive. Therefore, the school structure must provide these students with the necessary resources as much as possible. In this context, digital tools and differentiated education were mentioned most by the interviewees.

I observed very strongly the importance of the digital tools from my interviews. All interviewees think that digital tools are necessary and helpful for the students with SLD and create differences in a positive manner. They mentioned that using digital tools such as In-to-words, Geogebra, calculator can contribute to the welfare of these students. Digital tools help

to keep these students physically in classroom and to do the same and similar tasks and assignments like their peers (Karlsen, 2020). Being physically in classroom also adds value to their social acceptance and inclusion by the classmates. My focus group at secondary school (teenagers) view that it is really important to stay in classroom with their friends and to do the same or similar tasks/assignments together with them. Taking into consideration of this perception, they need to use digital tools effectively as supportive and encouraging resources. Digital tools are promoting independent learning for these students which I think can help to increase their self-esteem. Digital tools shall not to be considered as quick fix, but they can work as a compensatory method.

During my interviews, all special pedagogues/pedagogues emphasized that official diagnosis of the dyslexia and/or dyscalculia help these students to relieve.

While Cassidy (1999) underlines the importance of structuring a positive environment at school, Santi, Hawkins, and Christensen (2018) suggest differentiated instruction, especially for students with SLD. This approach will provide these students with the environment in which they can actively engage and increase their learning, social functioning, and psychological well-being. Differentiated education should be designed and planned individually due to the needs of the students. Differentiated education was emphasized by all interviewees. Two interviewees highlighted that this process necessitates knowing the students very well with their strong and weak sides and skills. This will be a good starting point for an individualized plan and both strong and weak sides/skills should be taken into consideration. As Santi, Hawkins, and Christensen (2018) suggest, two interviewees said that the strengths of students with SLD should be put forward to make them believe in themselves. This will encourage them to overcome their difficulties and become successful.

According to my experience, the need for differentiated education at primary school is less than at secondary school. This applies to secondary versus high school, as well. As students are growing, their needs for help are becoming diverse. Therefore, I think it is becoming more important to provide differentiated education at higher grades.

The interviewees mentioned some implementations performed by themselves or by their schools. I asked especially if their schools are dyslexia-friendly schools. None of them said "yes".

My research, my master study period and working experience at Norwegian schools showed me that there is a high-level awareness of dyslexia in Norway. There are many academic studies about dyslexia and schools are more aware and equipped with this matter. As mentioned in Part 2 section 2.4.1.4, there is a term "dyslexia friendly school" and it has been widely accepted in Norway over recent years. The dyslexia friendly school includes dyscalculia and specific language impairment, as well. However, I still think that dyscalculia and specific language impairment don't have the necessary high-level attention, yet. I suggest that the term be more inclusive and general. It could be an "SLD friendly school". I would like to highlight once more the importance of transforming all secondary schools into "SLD friendly schools". I strongly believe that this will help students with SLD not only at secondary school, but also throughout their whole life.

## 5.5 Relations

Ryan and Deci (2000) claim that supportive interpersonal relations have one of the key roles for students to be academically successful. Supportive relations may meet the basic mental needs for social relatedness and students may have comfortable connections with their teachers and peers, behave properly, cope with their stress, and focus on their education. As Denault (2018) highlights, students with SLD are more vulnerable to being isolated and bullied. They need more supportive relationships to feel safe, comfortable, and happy. I would like to discuss this subject from teacher to student and peer to peer perspectives.

### 5.5.1 Teacher-student relations

All the interviewees emphasized the importance of teacher-student relationships. The key point here is the dialogue between the teacher and students with SLD. (Macintyre & Deponio, 2003). They didn't mean a simple conversation on a regular basis. This means that the dialogue with these students must be open-minded, include respect, empathy, and have a positive approach. These students at secondary school are mature enough to express their feelings, thoughts, fears, and concerns. That is why teachers can have such conversations and learn about their feelings and thoughts while showing respect, empathy, and their belief in them. These students need to trust their teachers. They also need to know that their teachers are always reachable and will do their best to help them. A good relationship can increase students' self-esteem (Harter, 1999) and that is very important for dyslectic and dyscalculic students.



One of the interviewees argued that he/she has observed that the teachers at his/her school are willing to help students with SLD, but most of them don't have the necessary qualifications and don't know how to help them. To me, this point is more severe for students with dyscalculia, because there are not so many special pedagogues/pedagogues specializing in dyscalculia. Another point is that, as mentioned in school culture section 5.4.2, it is becoming more and more important to be an "SLD friendly school". I believe that the "SLD friendly school" approach will provide the teachers and the school staff first of all with the awareness, and then with the qualifications in time.

### 5.5.2 Peer-peer relations

All interviewees commented that peer to peer relationships are very important and supportive relationships can be a strong resource for the academic achievements of students with SLD (Wentzel, 1998; Ryan & Deci, 2000). If peer-peer relations become negative, then bad experiences are observed, such as bullying, isolation, or extrovert behaviors. If the students with SLD accept their difficulties and learn to live with them, then their peers reflect this positiveness in a supportive and good manner. If the school environment and the teachers are inclusive of students with SLD, then their peers will become more considerate and supportive. So, this is a two-way approach which needs to be considered by the school and the teachers.

One of the interviewees observed that if students with SLD work with their peers on a group assignment and can not complete their parts, then their peers may react in a negative manner. Therefore, these students are more comfortable working in groups with their peers who have same or similar difficulties. At this point, I think, as the differentiated education approach suggests, adaptive tasks/assignments should be given to these students for group work, as well. Then these students can work in groups with all of their peers by working on adaptive tasks/assignments. Their positive contributions to group assignments will provide both self-esteem for the students with SLD and positive reactions from their peers. In this way, they can feel more secure and involved in classroom activities (Wentzel, 1998).

## 5.6 Strength and weaknesses of the study and further research

I had interviews with four special pedagogues/pedagogues who have comprehensive knowledge and experience with dyslexic and/or dyscalculic students. They provided me with a lot of valuable observations and thoughts. I searched many different resources and used both Norwegian and international studies to equip myself with the knowledge I needed. I think I

reflected my research well enough in my literature review and discussion parts. The size of my sample can be considered small. However, within the limited time and the constraints of the Covid-19 epidemic, it was the best I could do. Additionally, I am comfortable with the sample size because, according to Creswell (2013), the study group in phenomenological research should include min 3 and max 15 people.

Studying students with special learning difficulties is a very broad and comprehensive area which has many perspectives and stakeholders. I studied it only from the special pedagogues/pedagogues' perspective with a limited sample size. Therefore, I can say that my study covers only a small part of the area and can give some contributions from one perspective. Further studies can be conducted by increasing the sample size and/or by studying the subject area from all students', parents', or schools' perspective. Or the emotional stress of dyslectic and dyscalculic students can be compared with data which is directly taken from these students. The differences between students with SLD in a dyslexia-friendly school and non-dyslexia-friendly schools may also be a good research area. In addition to that, my studies could be utilized as a part of a wider academic study in the SLD area.

## 6 CONCLUSION

The goal and main research question of my thesis was how special pedagogues/pedagogues are approaching and helping students with «specific learning disabilities» to cope with stress and avoid emotional problems. Three research questions were selected in accordance with the goal of the study. The literature was reviewed, and related theories were explained. Four interviews were conducted with special pedagogues/pedagogues. The findings were presented and discussed in accordance with the theories. In this part, I will conclude my study by discussing briefly to what extent these three research questions were answered and if I reached the goal of my thesis.

### 6.1 How are specific learning disabilities and emotional stress connected to each other?

My study showed that students with SLD have distinctive characteristics and behaviors observed by special pedagogues/pedagogues. Three out of four informants I interviewed agreed that these distinctive characteristics and behaviors are connected to their special difficulties and create emotional stress for these students. The emotional stress was observed differently student by student. And this outcome is totally aligned with the theories. However, the interesting part of my research is that one of the informants disagreed with this outcome. Even though he/she replied to the direct questions that he/she didn't observe any stress on these students due to their difficulties, after reviewing the whole interview, I saw that he/she also accepted some stress on these students. Therefore, as academically supported by many studies, I can argue that there is a direct connection between having dyscalculia and/or dyslexia and emotional stress.

### 6.2 What kind of stress handling strategies do the students have?

The special pedagogues/pedagogues mentioned different strategies used by students with SLD in their statements. Some of them named the strategy directly, but most of the time, they explained the behaviors and reactions. And I referred to these indirect arguments to name the strategy by using the related theories. These handling strategies are:

- ❖ Escape-avoidance (most observed strategy)
- ❖ Confrontative coping
- ❖ Distancing
- ❖ Self-controlling
- ❖ Seeking social support

#### ❖ Accepting responsibility

I can conclude that the strategies used by students with SLD are mostly maladaptive stress-coping strategies, which I can consider as short-term survival solutions which may not help in the long-term.

I can argue that the planned problem-solving strategy should be used more as a long-term solution and approach by students. However, this strategy necessitates good planning, support and assistance from the school, family, and teachers. Therefore, I suggest that special pedagogues/pedagogues should focus on more of these kinds of long-term strategies to help and assist students with SLD.

### 6.3 How can individual and environmental factors help to promote the wellbeing and learning achievement of students with SLD?

As individual factors, self-efficacy and motivation are deeply studied in my research. I found out that the self-efficacy of students with SLD is lower than their peers. These students need more motivation to increase their belief in themselves and to be successful. The growth mindset approach is one of the solutions which can be used to increase the self-efficacy and motivation of these students.

Two main environmental factors were comprehensively discussed in my thesis:

- ❖ Relations (student-student, student-teacher)
- ❖ The inclusive and collaborative school culture and the structured school environment.

There was a consensus among my informants that the relationships were very important. Students with SLD need more supportive relationships to feel safe and comfortable, to manage their difficulties and to become more successful. These students are going to secondary school and are mature enough to have open-minded, respectful, and mature relationships. This should always be kept in mind by teachers, parents, and administrative entities. Another important aspect is peer-to-peer relations. Positive peers (the students with SLD) and positive peers (their friends) are the fundamentals of a good relationship. A two-way approach needs to be considered by the school and the teachers. While the school/teachers are working to assist and improve the students with SLD, they also need to become role-models for all students to be inclusive, supportive, and positive.

The importance of a positive, inclusive, and supportive school culture was emphasized very strongly in my study. From this perspective, collaboration among the teachers and with the parents came into prominence. Parents should be considered as the biggest resource by the school to plan and execute the support and assistance strategy for students with SLD.

The school structure must provide these students with the necessary resources they need to cope with their difficulties. One of the most important outcomes of my studies is the use of digital tools. Digital tools should not be considered as a quick fix but as a compensatory method. Digital tools help to keep students physically in the classroom and doing the same/similar tasks/assignments. This would contribute a lot to their social acceptance and inclusion by their classmates. Additionally, the importance of differentiated education was also highlighted as another significant outcome of my study.

As Lazarus theory claims, my study also showed that individual and environmental factors are very important and can help a lot to promote the well-being and learning achievement of students. I suggest that secondary schools should become, on a wider spectrum, SLD-friendly schools to be able to help, assist and support all students with SLD.

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## 8 APPENDICES

### 8.1 Appendix 1: Mail from NSD

#### Melding

07.01.2021 09:07

Behandlingen av personopplysninger er vurdert av NSD. Vurderingen er:

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 07.01.21, samt i meldingsdialogen mellom innmelder og NSD. Behandlingen kan starte.

#### TAUSHETSPLIKT

Vi minner om at pedagoger har taushetsplikt, og det er viktig at intervjuene gjennomføres slik at det ikke samles inn opplysninger som kan identifisere enkeltelever eller avsløre taushetsbelagt informasjon. Vi anbefaler at du er spesielt oppmerksom på at ikke bare navn, men også identifiserende bakgrunnsopplysninger må utelates, som for eksempel alder, kjønn, navn på skole, diagnoser og eventuelle spesielle hendelser. Vi forutsetter også at dere er forsiktig ved å bruke eksempler under intervjuene. Du og læreren har et felles ansvar for det ikke kommer frem taushetsbelagte opplysninger under intervjuet. Vi anbefaler at du minner læreren om taushetsplikten før intervjuet startet.

#### DEL PROSJEKTET MED PROSJEKTANSVARLIG

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

#### MELD VESENTLIGE ENDRINGER

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

nsd.no/personverntjenester/fylle-ut-meldeskjema-for-personopplysninger/melde-endringer-i-meldeskjema

Du må vente på svar fra NSD før endringen gjennomføres.

## TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 01.12.21.

## LOVLIG GRUNNLAG

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

## PERSONVERNPRINSIPPER

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

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

## DE REGISTRERTES RETTIGHETER

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

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

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

## FØLG DIN INSTITUSJONS RETNINGSLINJER

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

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

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

## OPPFØLGING AV PROSJEKTET

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

Lykke til med prosjektet!

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



## 8.2 Appendix 2: Interview guide

### **Before the interview**

The researcher gives information about

- What the thesis is about
- The goal of the thesis
- Anonymity of the research, voluntary participation and the right to withdraw from participation whenever wanted

### **The background of the interviewees**

- Which background do you have? (pedagogue or special pedagogue)?
- Which subject are you teaching?
- How long and what kind of experience do you have with students who have special learning difficulties (dyslexia and dyscalculia)?

### **Special learning difficulties and emotional problems**

- Can you describe the characteristics of students with special learning difficulties, dyslexia and/or dyscalculia in relation to the others?
- How do you evaluate the physiological wellbeing of students with SLD? (social and emotional evaluation) Which emotional challenges have you observed? Can you mention some of the reasons?
- Have you experienced that the pedagogues/special pedagogues care about the physiological wellbeing of these students and their special difficulties? If your reply is “yes”, in which way?

### **Coping**

*According to Lazarus (2006), coping is about cognitive and behavioral efforts to deal with physiological stress, and this shows how someone manages stressful living conditions.*

- What do you think about how focusing on stress management can help to prevent emotional stress and promote good mental health for these students?
- What is your opinion about how these students deal with stressful situations? What kind of stress-handling strategies do they use?
- What do you think about how motivation can affect the stress coping of these students?

## **Individual Factors**

- What is your opinion about how these students perceive themselves? How does students' understanding of their own specific learning difficulties affect their self-perception?
- What do you think about how their previous unsuccessful coping experiences and the students' expectations of mastery are related to their own self-efficacy?
- In what way can having a diagnosis make any difference to students' self-efficacy in relation to social and academic mastery?
- While working with these students, what needs to be done to increase their inner motivation and their self-efficacy to believe that they can learn and improve themselves?

## **Environmental Factors**

- What do you think about how special pedagogues/pedagogues can support and help students with SLD to choose the appropriate coping strategies, increase motivation and self-efficacy?
- What is your opinion about how a good learning environment for students with SLD should be?
- Can you tell us about your perceptions in relation to the importance of student-student relationships for students with SLD?
- What do you think about the meaning of school culture, and its effects on these students with their coping strategies and motivation?
- What is your opinion about the effect of school and parents' collaboration on students with SLD having better mental health?