Teaching Students with Specific Learning Difficulties Using the Multisensory Approach

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Abstract

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Abstract

The main objective of this thesis was to explore and analyse the use of multisensory material to teach students who face specific learning difficulties (SpLDs) in an elementary school in Finland to increase their learning and participation. To deal with this aim, three research questions were posed:

1) Which materials are useful to teach students who face SpLDs in Finland and what are their epistemic advantages?
2) What are the disadvantages of these materials to teach students who SpLDs in Finland?
3) To what extent did teachers think that multisensory materials increased students' learning and participation in class?

The research design was an ethnographic case study, and the case is implementing a new program: the multisensory teaching approach. A multisensory intervention including materials such as read it, build it, write it worksheets, Chinese mats, and CVC spelling board games was presented for the participants. I designed and used these materials and activities during support lessons to help students with SpLDs keep their focus in class and keep them motivated to overcome the barriers to learning and participation they might face. The participants of this dissertation were 12 school-aged students between 7 and 9 years old who participated in the support lessons when the multisensory materials and activities were implemented. During and after the intervention data was collected. During the intervention, data was collected using observation and diary notes from the students. After the intervention, a semi-structured interview was used to collect data from 4 class teachers to study their perspectives on the multisensory approach. All students and teachers studied or worked in the same school. The context of the study was an elementary school in Vaasa, Finland. The materials were analysed using thematic analysis to identify several themes related to the following dimensions: (1) learning impact (2) social impact and (3) disadvantages of the multisensory material used in the study.

The thematic analysis showed that multisensory activities and materials such as read it, build it, write it worksheets, Chinese mats, and CVC spelling board games are useful to teach students with specific learning difficulties. Additionally, the teachers who participated in this study believed that using different multisensory materials and activities in support lessons and mainstream classrooms for first and second-grade students is beneficial for all and helps them develop their self-esteem and motivation during their classes.

Nowadays as teachers, we know that we need to 'have continuous professional development (CPD) to meet students' needs. The implications of this thesis can inform future policy and practice in inclusive education in Finland and underline the importance of considering the role of inclusive teaching in the broader context of Finnish education.

Keywords: Barriers to Learning and Social Participation, Specific Learning Difficulties, Accommodations, Finland, Multisensory Teaching Approach.

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Abbreviations used.

SpLDs: Specific Learning Difficulties
ADHD: Attention Deficit and Hyperactivity Disorder
CPD: Continuous Professional Development
BLP: Barriers to Learning and Participation
RTI: Response to Intervention

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Appendix A: Semi-structured interview guide

Introduction

In today's varied and welcoming educational environment, recognising students with specific learning difficulties (SpLDs) has become pivotal in creating inclusive and effective learning environments. As educators, we must do more than teach; our job also encompasses recognising, accepting, and accommodating each student's individual needs in our class. Teachers require expertise and empathy to teach students with SpLDs as it is a dynamic and multifaceted aspect of education. Worldwide, various research about specific learning difficulties and teaching students with them has been conducted. Thus today, we can find information about teaching to students with ADHD, dyslexia, dyspraxia, and autism.

Despite this, there is still a lack of research. Aalto (2021) conducted research regarding assessing teaching materials for learners with dyslexia in Finnish schools. He states that textbooks and teaching materials lack exercises and adequate information to teach students with SpLDs. Furthermore, he highlights that the teacher's book does not mention "methods such as the multisensory approach or adding visual cues, which research has found to be beneficial for dyslexic learners" (Aalto, 2021, p.48). Schools are the places where students go to learn, create relationships, and acquire knowledge, and skills which will be useful for their further development.

Educators need to possess the knowledge skills and materials necessary to teach students with SpLDs. All schools and teachers can work in more inclusive ways which will enable students to develop their full potential. However, most school curricula have a one-size-fits-all approach that does not consider students' wants or needs. Furthermore, Sundek and Encinas (2019, p. 1) state that "despite the high extent of information about dyslexia… there is still no adequate protocol to identify signs of it". This is one of the biggest challenges for teachers to help students meet their needs in our classrooms. Furthermore, research conducted in Finland by Aalto (2021, p. 48) states that "a vast majority of the ready-made exercises in

analysed workbooks required reading or writing, and only a few incorporated a kinaesthetic element in them."

In the Finnish context, there have been changes made to the educational system in recent years as the National Core Curriculum for Basic Education promotes the "equal opportunity and equal access philosophy of Finnish education has also come to mean the inclusion of pupils and students with special educational needs in mainstream schools and classrooms whenever possible" (Valtonen, 2021). The Core Curriculum for Basic Education presents a flexible support system for many students who need extra help at school for as long as they need. Valtonen (2021) remarks that "the Finnish education system tries to offer equal access to education for those with special educational needs… [and] in the case of dyslexia, this should mean finding ways to learn despite the difficulties in reading, writing, and phonological awareness". Despite this, Aalto (2021) explains in his research that the workbooks used to teach English in upper-secondary schools lack exercises for dyslexic learners and the teachers' manuals have insufficient instructions on how to modify the exercises or how to differentiate their teaching to suit the needs of learners with SpLDs better. This is why I decided to create multisensory materials for students who have SpLDs to give them extra support during their lessons.

Every student possesses a distinctive set of strengths, challenges, and learning styles. SpLDs, such as dyslexia, ADHD, dyscalculia, and dysgraphia, introduce a rich tapestry of diversities in our classrooms. In my opinion, as educators, it is crucial to appreciate these differences not as obstacles but as opportunities for growth, adaptation, and innovation. For this reason, in this research, it is important to define concepts such as barriers to learning and social participation, specific learning difficulties (SpLDs), responsive pedagogy, universal design, and the Multisensory Approach to help the reader contextualise the study and understand its significance in inclusive teaching.

Kormos (2017) states that the term Specific Learning Differences or Difficulties (SpLDs) is used from both a legal and educational perspective. SpLDs are difficulties with one or more certain parts of learning (Kent County Council, 2024) and refer to a disability. SpLDs is the term used in this research to refer to certain difficulties that students face during their studies. According to the American Psychiatric Association (APA, 2022), Specific Learning Difficulties are neurodevelopmental disorders with a biological origin which include genetic, epigenetic, and environmental factors, which affect the brain's ability to perceive verbal and non-verbal processes.

However, when referring to students with difficulties or any kind of disability, there is a tendency to focus on the difficulties or the activities they cannot perform. Instead, teachers and society should focus on the strengths that these students have to address the barriers to learning and participation in our communities. Learners with SpLDs have been surrounded with challenges their entire lives, and they have had to develop skills to enable them to conduct certain activities. As a result, they have developed strengths such as persistence, resiliency, self-determination, creativity, and specialised talents as coping strategies.

The following research project had the purpose of exploring and analysing the use of multisensory materials and accommodations used to teach students with SpLDs in mainstream classrooms in Finland to improve their learning skills and increase their social participation. Previously, I have noticed that many English language teaching programmes in Mexico do not include courses for inclusive education and, for my bachelor's thesis, I made a case study about teaching English as a Foreign Language to a student with dyslexia in which I found that many pre and in-service teachers lacked the knowledge of teaching English as a Foreign Language to students who face Barriers to Learning and Participation (BLP) (Arriaga Ricardez, 2022). Due to this, I explored the use of the multisensory approach to help students with barriers to improve their learning skills in Finland. In the following section, I describe the aim and research

questions of this thesis.

Aim and Research Questions

According to the International Dyslexia Association (2017), dyslexia is a common Specific Learning Difference (SpLD) that affects approximately 5-10% of the school-aged population. These students might face many difficulties such as reading, spelling, writing, and pronunciation which are important skills for learning. In Finland, Aalto (2021) mentions that "a vast majority of the ready-made exercises in analysed workbooks [for English language teaching] required reading or writing, and only a few incorporated a kinaesthetic element in them" (p. 48). As such, the purpose of this thesis is to explore and analyse the use of multisensory material to teach students who face SpLDs in elementary education by introducing the Orton-Gillingham Multisensory Method and accommodations to help students overcome barriers to learning and participation. Consequently, this research aims to explore and analyse the use of the multisensory approach to teach students who face specific learning difficulties in basic education in Finland and to answer the following research questions:

Research Questions

RQ1: Which materials are useful to teach students who face Specific Learning Difficulties (SpLDs) in Finland and what are their epistemic advantages?

RQ2: What are the disadvantages of using these materials to teach students who face Specific Learning Difficulties (SpLDs) in Finland?

RQ3: To what extent did teachers think the intervention increased students' learning and participation in class?

Outline of the thesis

In the first chapter, the literature review is presented. Terms such as barriers to learning and participation, specific learning difficulties (SpLDs), inclusive education, universal design, and the multisensory approach will be defined. Subsequently, in the second chapter, the methodology is described. An explanation of qualitative ethnographic research and the data collection instruments, observation diary and interview, are defined and described as well as the data collection method. It is mentioned a description of the participants, research context, and selection criteria. In addition, the data processing and method of analysis is introduced with the ethical considerations. Furthermore, the third section is dedicated to reporting the findings from this research. Finally, in the fourth section, you will find the connection of the results to previous research, and theory, as well as the reflection done in this study and the preliminary conclusions.

The next section describes the key terms, concepts, and objectives, as well as the background to prepare the audience for the following study.

1.   Literature Review

In today's diverse and inclusive educational landscape, educators need to possess the knowledge and skills necessary to teach students with specific learning difficulties (SpLDs). Educators need to According to Kormos and Smith (2012), students with SpLDs are those who struggle to develop literacy-related abilities, numeracy, motor coordination, sustained attention, and social interaction. Students with learning difficulties such as attention deficit disorder (ADHD), dyslexia, dyscalculia, dyspraxia, and autism spectrum disorder (ASD) require specialised instruction and support in our classrooms. By understanding and addressing these difficulties effectively, educators can create an inclusive learning environment that maximises the potential of every student.

Each student has a unique set of strengths, challenges, and learning styles. In our classrooms, specific learning difficulties create a varied and joyful experience of diversity. Teachers must view these distinctions as opportunities for development, adaptation, and innovation rather than obstacles to overcome. As stated above, this research aims to explore and analyse the use of the multisensory approach to teach students with specific learning difficulties. I believe this research would be of importance in the education sector as quality education and reduced inequalities are part of the Sustainable Development Goals set forth by UNESCO.

This literature review lays the groundwork for discussing approaches, techniques, and frameworks that might enable teachers to foster an inclusive classroom where all students, regardless of their learning difficulties, can thrive and reach their full potential. In this section, terms such as barriers to learning and social participation will be defined to make the purpose of this thesis clearer to the reader.

1.1 Theoretical framework

The main theoretical root of this study is inclusive education which will be elaborated **on** in the following sections:

1.1.1. Inclusive Education

In the lead of contemporary pedagogical paradigms, inclusive education advocates for the fair and equal access, participation, and success of all learners in a variety of educational environments. UNICEF (2017) defines inclusive education as 'an education system that includes **all** students, and welcomes and supports them to learn, whoever they are and whatever their abilities or requirements'. This term has its roots in the idea of valuing and celebrating diversity. Inclusive education seeks to establish environments in which every individual, regardless of their background, abilities, or differences, feels appreciated, supported, and empowered to reach their full potential. This means that the curriculum, instruction, school facilities, play areas, transportation, resources, and restrooms are suitable for all students at all levels (UNICEF, 2017). Furthermore, inclusive education means that all students learn together and attend the same schools.

Figure 1

The importance of inclusive education (retrieved from UNICEF, 2017).

Hence, according to UNESCO (2017), we can state the importance of inclusive education into three cases: educational, social, and economic. In Figure 1 we can observe these

three different cases. In the educational case, inclusive education improves learning for all children as it promotes various educational methods and approaches which benefit different learning styles. Additionally, from a social perspective, inclusive education 'promotes understanding, reduces prejudice and strengthens social integration [and participation]' (UNESCO, 2017, p. 2). Furthermore, in the economic case, it guarantees that students with barriers to learning and participation are prepared to work and make social and economic contributions to society. Overall inclusive education promotes diversity and equity, fosters social cohesion, maximizes learning outcomes, prepares students for life in a diverse society, and promotes positive attitudes and behaviours in schools.

UNESCO (2017) considers that the requirement to make inclusive education happen we need to end discrimination and end excluding children with disabilities. To achieve this, they suggest that we must give access to primary and secondary education with an adequate number of inclusive and accessible schools, including pupils with disabilities caught in crisis, practical support, or adaptations for students (reasonable accommodation), individual education plans for children with disabilities, and provide services for specific impairments. Consequently, we need teachers adequately trained to work in inclusive schools.

Inclusive education encourages the notion that all students, including those with specific learning difficulties, should have access to high-quality education. Therefore, the Universal Design for teaching and the multisensory approach offer a variety of adaptable and flexible instructional strategies that suit different learning styles making them consistent with inclusive education. Overall, to create a more just, equitable, and inclusive society where every individual can reach their full potential and contribute meaningfully to their communities, we need to implement inclusive education. A teaching and learning approach that is sensitive to the needs, backgrounds, and individual experiences of students or groups is known as responsive pedagogy. This term is explained in the following section.

1.1.2. Inclusive education for students with SpLDs

Universal inclusion, participation, and achievement of all students, including those pupils who face specific learning difficulties (SpLDs) are made possible through inclusive education. Students with SpLDs tend to be discriminated against to a greater extent than their peers in all social, economic, and cultural contexts. In terms of teaching students with SpLDs, it is crucial to understand that the nature of learning difficulties, such as dyslexia, dysgraphia, and dyscalculia, do not help learners as they impair reading, handwriting, fine motor, and math skills. In addition, the inclusive treatment towards students with SpLDs is conditioned by the model we decide to address their needs: the religious, medical or social model (Kavkler et al., 2015).

The **religious model** is the oldest model of disability in which it associates the challenges with disabilities as an opportunity from God for character development (Retief & Letšosa, 2018). Even if it is not as common as it formerly was, this paradigm still shapes how people with disabilities are seen in some countries and cultures. The **medical model** focuses on disability as a disease. According to Retief & Letšosa (2018), in this model, disability is viewed as an individualized medical issue and is a malfunction in a body system. The intervention's objectives are to cure, improve their physical condition as much as possible, and facilitate recovery for the patients or learners. It is expected of people with disabilities to take advantage of the range of services available to them. The third model and the most common nowadays is known as **the social model**. This model views disability as a socially produced phenomenon. The social model holds that society is what renders people disabled, hence any meaningful solution must focus on changing society rather than helping each person adjust and receive rehabilitation (Retief & Letšosa, 2018). To have quality education for all, we should follow the social model which states that in our society we have barriers to students' learning and participation that we need to overcome.

To offer quality education we need to find proper methodologies and approaches to teaching students with and without SpLDs in mainstream classrooms. The great challenge for teachers of students with SpLDs includes finding effective methods and techniques to teach them in a mainstream classroom. Crombie (1999) suggest the use of multisensory instruction to teach students with SpLDs such as dyslexia because grammar, syntax, and language phonology are taught using a curriculum that emphasizes the use of various senses such as hearing, seeing, speaking, and writing the language. Furthermore, Crombie (1999) emphasizes that proper instruction has a significant impact on students. Although all students may have challenges in school, careful monitoring will guarantee that these barriers are minimized. These can be achieved by following the principles of the Universal Design for Learning (UDL) and the Multisensory Approach. In the following section, I define the term Universal Design for Learning and explain the Finnish support system for students.

1.2. Key Concepts and Debates

1.2.1. Barriers to Learning and Participation

Today, inclusive education is a requisite to achieve high-quality education systems. In addition, the 2030 Agenda for Sustainable Development (United Nations, 2015) has as its fourth goal quality education which makes it a matter of importance for every individual. Furthermore, social inclusion and participation are considered crucial to enhancing well-being and mental health. Teachers and stakeholders need to keep addressing inclusive equitable and quality education for all. UNESCO (as cited by the European Agency for Special Needs and Inclusive Education, 2023) describes participation as a continuous process that allows children to voice their opinions and actively participate in decision-making on issues that affect them at different levels, requiring information exchange and respectful dialogue between children, adolescents, and adults. Moreover, participation is defined as cooperating with others in shared learning

experiences and learning together (Booth & Ainscow, 2002). Therefore, to provide quality education and to understand this study, we need to define the term Barriers to Learning and Participation.

Barriers to Learning and Participation is an alternative term used instead of special educational needs (Booth & Ainscow, 2002). These barriers affect personal and social development by limiting individuals' access to education. They reroute the focus from the difficulties that students face to sources of difficulty such as the curricula, teaching, and learning approaches (Booth & Ainscow, 2002). This term directs the attention towards possible improvements that can be made in education. Throughout the years, there have been different models to address disability. Using the concept of barriers to learning and participation to address the difficulties that learners encounter in education is based on the social model which is considered a socially constructed phenomenon (Booth & Ainscow, 2002).

Fostering inclusivity means reducing exclusion. To achieve this, we need to ensure that students have equal access to learning and participation in education. Sánchez et al., (2019) argue that these are the barriers present in the school context:

- Lack of positive attitudes from teachers to incorporate students with specific educational needs.
- Lack of positive expectations from teachers towards the abilities of all students.
- Lack of teacher training to respond to the educational needs of students.
- The absence of adequate structures for the educational needs of students.

Minimising barriers to learning and participation involves preparing and organising resources within the school and its communities. Booth & Ainscow (2002) suggest three dimensions to reduce these barriers in their index for inclusion: creating an inclusive culture, producing inclusive policies, and evolving inclusive practices.

In the following section, I defined the term specific learning difficulties and explained

terms such as dyslexia and ADHD.

1.2.2. Specific Learning Difficulties (SpLDs)

Most students with specific learning difficulties (SpLDs) might face barriers to learning and social participation in their daily lives. The importance of addressing SpLDs in education is impossible to be overstated. By recognizing these differences or difficulties, we create an inclusive learning environment that fulfils the wants and needs of all students. For this reason, in this research, it is important to address concepts such as SpLDs, dyslexia, ADHD, inclusion, and accommodations to help the reader contextualise the study and understand its significance in language teaching.

As it was mentioned before, Kormos (2017) suggests the term Specific Learning Differences or Difficulties (SpLDs) to be used from both a legal and educational perspective. SpLDs are defined as difficulties with one or more specific areas of learning (Kent County Council, 2024) and they refer to a disability. According to the American Psychiatric Association (APA, 2022), SpLDs are neurodevelopmental disorders with a biological origin that include genetic, epigenetic, and environmental factors affecting the brain's ability to perceive verbal and non-verbal processes. In addition, they state that one key characteristic of students who face a SpLD is the ongoing challenges related to acquiring academic skills, including spelling, reading words correctly and fluently, developing reading comprehension, understanding written expression, and difficulties with mathematical reasoning.

Kormos (2017) affirms that the manner we describe, and label disabilities reflects our attitudes towards them and shapes our relationships and behaviours towards students who have disabilities. In this thesis, I use the social model which is the most common model nowadays. This model is defined in section 1.3.2. Inclusive education for students with SpLDs. SpLDs is the term used in this thesis to refer to the difficulties that students face during their studies.

SpLDs can significantly impact academic performance and self-esteem, making it essential to provide appropriate support and interventions.

Moreover, when talking about students with SpLDs, we tend to highlight their challenges or what activities they have difficulty performing. However, it is equally important to emphasize the strengths that they possess to address the barriers to learning and participation in our communities. Learners with SpLDs have been surrounded by challenges their entire lives, and they have had to develop skills to enable them to conduct certain activities. As a result, they have developed strengths such as persistence, resiliency, self-determination, creativity, and specialized talents as coping strategies.

Kormos and Smith (2012) state that students with dyslexia, dyspraxia, dyscalculia, ADHD, and Asperger's syndrome are under the umbrella of SpLDs. In Table 1, I will define these terms according to the DSM-5 Manual (2022). It is important to mention that according to the APA (2022, p. 51) in the DSM-5 Manual 'individuals with a well-established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder.'

Table 1

Definition of Specific Learning Difficulties (After Kormos and Smith, 2012).

SpLD	Definition
Dyslexia	A pattern of learning difficulties characterized by problems with accurate or fluent word recognition, poor decoding, and poor spelling abilities.
Dyscalculia	Difficulties in processing numerical information, learning arithmetic facts, and performing accurate or fluent calculations.
Dyspraxia	Difficulties manifested as clumsiness, slowness, and inaccuracy of performance of motor skills.

Attention-Deficit/Hyperactivity Disorder	A persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, as characterized by inattention and/or hyperactivity and impulsivity.
Asperger's Syndrome (autism spectrum disorder)	Persistent deficits in social communication and social interaction across multiple contexts.

Moreover, Kormos and Smith (2012, p.42) mention that SpLDs are "not restricted to one single module of cognitive processing" and that it is important to "not forget that they rarely appear alone". Hence, students with SpLDs deserve teachers prepared to meet their needs and classrooms without barriers to learning and participation. To achieve this, teachers must be provided with opportunities for continuous professional development. Teachers' continuous professional development in inclusive education for teaching students with SpLDs is of utmost importance for several reasons. In the following section, I define the term inclusive education and explain its importance.

1.2.2. Responsive Pedagogy

Responsive pedagogy is an important term in today's educational world. This term can be defined as "the intention of the teacher to make learners believe in their competence and ability to complete assignments and meet challenges, to strengthen students' self-efficacy, and to increase their overall self-concept" (Smith et al., 2016, p. 1). Thus, it places a strong emphasis on adaptability, inclusion, and student-centeredness to foster encouraging learning environments where all students feel appreciated, included, and equipped for success. A crucial part of responsive pedagogy is the explicit intent of educators to help learners believe in their competence and ability to complete tasks and meet challenges to strengthen students' self-efficacy to improve their self-esteem (Smith et al., 2016). We must take care of students' self-concept as their social development, academic success, and general well-being are all greatly

influenced by their sense of self-worth. It also plays a significant role in their motivation and engagement, academic achievement, resilience, and coping skills.

'Responsive pedagogy is hypothesized to impact achievements positively' (Smith et al., 2016, p. 1). The Finnish National Core Curriculum enhances responsive pedagogy as it focuses on life skills such as personal growth, cultural identity and internalization, and media skills and communication. Finnish schools are expected to prepare students of today for tomorrow's society (Smith et al., 2016). The key principles of responsive pedagogy are cultural responsiveness, differentiation, building relationships, collaborative learning, reflection and feedback, inquiry and critical thinking, and flexibility and adaptability. It is important that as teachers we present a safe and supportive environment to reduce students' levels of anxiety and build strong relationships in our classrooms (Hargraves, 2019).

In the Finnish context, the National Core Curriculum (2016) focuses on life skills such as growth as a person, cultural identity, and internationalization, which are suitable for a responsive pedagogy model. This highlights the importance of having a curriculum that follows responsive pedagogy. Fostering students' self-esteem is crucial to establishing encouraging and empowering learning environments that allow every student to thrive intellectually, socially, and emotionally even if they face barriers to learning and participation. Responsive teaching emphasizes the value of students' past experiences and knowledge for academic purposes (Heikkola et al., 2022). By making the students and their caregivers' cultures and needs visible in the classroom, teachers strengthen relationships between home and school. Schools, teachers, and stakeholders must cultivate a culture of positivity, resilience and achievement that benefits the entire school community by placing a high priority on students' self-esteem.

1.2.3. Universal Design for Learning

Universal Design for Learning is a design of friendly environments for as many people as

possible, without the need to adapt it in any way. Its goal is non-discrimination towards any person, regardless of disabilities or characteristics. Different studies have found that teachers' attitudes influence the preparation to develop good practices and use effective methods in the classroom. These attitudes might be influenced by personal factors, such as experience and knowledge. In addition, if schools are organized on inclusive principles, the least restrictive environment might fail to supply the best settings and conditions for the participation and learning of all students (Scepanovic, 2016). Universal Design for learning is a set of principles for curriculum development that give all individuals equal opportunities to learn and it provides a basis for creating instructional goals, methods, materials, and assessments that work for everyone, but not a single solution which fits all but rather flexible approaches that can be customized for individual needs (Scepanovic, 2016, p. 123). The Finnish National Core Curriculum and its systems of support follow the same principles as the Universal Design for Learning. Figure 2 describes the three-tier support model in Finland.

Figure 2

Three-tier support model in Finland (Yada, 2020)
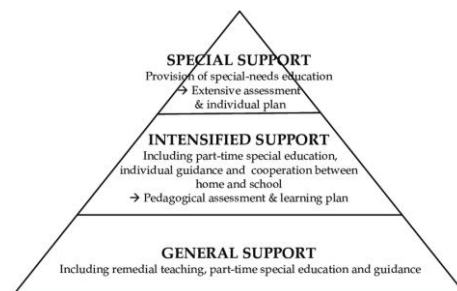
According to the Statistics of Finland (2022), 23.6% of all students in the comprehensive school system received intensified or special support in 2022. The Finnish government aims to ensure equal education for all learners, and it seems that their educational system has been successful. However, some challenges remain. Though the law and national core curriculum intend to promote inclusive education, the way to organize it differs among

municipalities and schools as each of them has its own curriculum (Sahlberg, 2021). Schools and municipalities should follow the principles of Universal Design for Learning when creating or adapting their curricula as this optimizes teaching and learning regardless of each student's individual differences, aptitudes, or learning styles. "Universal Design may be the best preposition to use in schools to satisfy the needs of all students and to respond to their [needs,] interests, talents, and abilities" (Scepanovic, 2016, p. 123).

An approach that meets the principles of the Universal Design for Learning and the aims of the Finnish National Core Curriculum is the Multisensory teaching approach. In the following section, I define this approach and give a brief background of it.

1.2.4. Response to Intervention (RTI)

Response to Intervention (RTI) uses a tiered system to offer progressively more intensive intervention levels according to each student's needs. Hughes and Dexter (2011, p.4) define this framework as a "multitiered approach to help struggling learners". It is also defined as a set of resources that schools implement to provide high-quality education to students with specific learning difficulties SpLDs (The University of Kansas, 2018). By using the RTI schools can offer early intervention for students who have behavioural or academic difficulties (Hughes & Dexter, 2011).

RTI is designed to enhance instructional quality, give students access to academic opportunities, and assist in the identification of SpLDs as well as other learning and behavioural problems (The University of Kansas, 2018). According to Hughes and Dexter (2011), the RTI model contains three major components: universal screening, teaching with evidence-based practices and curriculum, and monitoring. In addition, after following the three previous steps, a decision is made regarding the sufficient progress in the following tiers.

Universal screening is used to understand how each student performs on academic

tasks. Teachers provide an inquiry that evaluates students' comprehension of key concepts and abilities. This is the first step to identifying students with SpLDs. Once completed, teachers have a clear understanding of which students are succeeding and which are struggling, giving educators a starting point. Teachers might feel more confident by using **evidence-based practices and curricula** as they have previously been shown to work with students. This also removes the possibility of insufficient progress because of inappropriate instruction. During the **monitoring** stage, teachers reassess students' progress. They use a similar manner to the initial screening, to determine whether students are benefitting from the material being taught to them, and to identify students who are progressing at a slower pace or having difficulties and need the construction of effective intervention programs. Within an RTI framework, the multisensory approach can be incorporated as a targeted intervention to address the unique learning requirements of students with specific learning difficulties (SpLDs).

1.2.5. Bloom's Taxonomy

To evaluate this intervention, I used Bloom's Taxonomy as a reference point. This taxonomy was created by Benjamin Bloom in 1956 when he was chair of the committee of educators that created the taxonomy. Bloom's Taxonomy is the hierarchical model used for the classification of educational learning objectives into levels of complexity. Woolfolk (1998) states that the objective of Bloom's Taxonomy is to develop a classification system for educational objectives. The taxonomy divides the learning objectives into three: cognitive, affective, and psychomotor domains.

The **cognitive domain** or knowledge-based was published in 1956 and initially divided into six categories: knowledge, comprehension, application, analysis, evaluation, and synthesis (Krathwohl, 2002). These were revised in 2001 and the levels had slightly different names and order: remember, understand, apply, analyse, evaluate, and create (rather than synthesis). In

Table 2, I present the levels of the cognitive domain in Bloom's taxonomy, their description, and the intersection with the categorising verbs.

Table 2

Structure of the Cognitive Domain in Bloom's Taxonomy (based on Krathwohl, 2002).

Level	Description	Categorising verbs
Remember	Retrieving relevant knowledge from long-term memory.	Recognising, recalling, repeating
Understand	Determining the meaning of instructional messages.	Interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining
Apply	Carrying out or using a procedure in a particular situation.	Executing, implementing
Analyse	Breaking material into its constituent parts and detecting how the parts relate to one another and an overall structure or purpose.	Differentiating, organising, attributing
Evaluate	Making judgments based on criteria and standards.	Checking, criticising
Create	Putting elements together to form a novel, coherent whole or make an original product.	Generating, planning, producing

The **affective domain** or emotion-based focuses on the skills in the affective domain. This domain describes the way people react emotionally and their ability to feel other living things' pain and joy. The affective domain is divided into five levels: receiving, responding, valuing, organising, and characterising (Shabatura, 2022). In Table 3, I explain the five levels of the affective domain in Bloom's taxonomy and the intersection with the categorising verbs.

Table 3

Structure of the Affective Domain in Bloom's Taxonomy (based on Shabatura, 2022).

Level	Description	Categorising verbs
Receiving	Awareness, willingness to hear, selected attention.	Asks, chooses, describes, follows, gives, holds, identifies.
Responding	Active participation from the learners. Students attend and react to a particular phenomenon.	Answers, assists, aids, discusses, greets, helps, labels.
Valuing	The worth or value a person attaches to a particular object, phenomenon, or behaviour.	Completes, demonstrates, differentiates, explains, follows.
Organising	Organises values into priorities by contrasting different values, resolving conflicts between them, and creating a unique value system.	Arranges, combines, compares, completes, defends, explains, formulates.
Characterising	Has a values system that controls their behaviour.	Acts, discriminates, displays, influences, listens.

The third domain is the **psychomotor domain** or action-based and it focuses on the skills that describe the ability to physically manipulate a tool or instrument like the use of a pencil or scissors. Bloom and his colleagues never created subcategories, however, Simpson (1966) proposed a taxonomy of seven levels: perception, set, guided response, mechanism, complex overt response, adaptation, and origination. In this research, I focused on the first two domains, cognitive and affective, as the research objective is to analyse students with SpLDs' response to the multisensory approach to reduce barriers to learning and participation.

1.3. Empirical background

In this section, I will review the multisensory approach and the empirical research done based on this approach.

1.3.1. Multisensory Teaching Approach

The multisensory teaching approach, also known as the Orton-Gillingham approach, utilizes the Universal Design for Learning. Influenced by the kinaesthetic method by Grace Fernald and Hellen Keller, this approach was invented by Dr. Samuel Torrey Orton in the mid-1920s in Iowa (International Dyslexia Association, 2000). This method is a dynamic and inclusive method that engages multiple senses to enhance the learning experience. Dr Orton (as cited in the International Dyslexia Association, 2000) stated that students with Specific Learning Difficulties (SpLDs) such as dyslexia frequently struggle with processing visual or auditory input. These students might have weak phonemic awareness, and difficulty rhyming words, blending sounds, or segmenting words into sounds.

Newman (2019) points out a challenge that students with SpLDs face which is the limitation of one-sensory teaching which normally relies on visual or auditory input only. The multisensory approach focuses on the use of two or more senses in lessons which helps students with SpLDs transfer the information from their short-term memory to their long-term memory. Using visual, auditory, and kinaesthetic-tactile pathways simultaneously to improve memory and written language acquisition is known as multisensory learning (Hatch, 2021). Furthermore, this approach aims to use two or more sensory modalities, such as visual, auditory, kinaesthetic, and tactile, to promote deeper understanding and retention of information. Newman (2019) defines multisensory teaching as an approach that involves as many senses as possible – seeing, saying, hearing, and doing – to increase memory and recall, therefore utilizing students' full range of cognitive capacities.

Hatch (2021) mentions that educators who use this approach help students by combining movement with speech and reading to help them memorize different concepts in the classroom. Furthermore, engaging multiple senses during learning can strengthen memory recall as they provide additional reinforcement, making it easier for students to recall

information later. The Multisensory approach allows students with SpLDs to transfer verbal information to long-term memory (Kormos & Smith, 2012). This means that the Multisensory teaching approach does not only help students with SpLDs but also all the other students to improve their learning. Further, it is important to recall that using several senses increases brain connection and associations, which facilitates information retrieval later (Newman, 2019). Multisensory teaching can involve materials and activities that are easy for teachers to prepare to optimize teachers' time. This research study proposes the use of the Multisensory teaching approach to help students acquire new vocabulary, comprehend grammatical rules, and develop strategies which can be helpful to communicate and learn effectively by employing the Universal Design for Learning, which may not only help students with SpLDs but also all learners in general (Romero, 2020).

Summary

The literature review of this study focuses on various aspects related to teaching students with specific learning difficulties (SpLDs) in Finland. It discusses barriers to learning and social participation, as well as the definition and types of SpLDs. The review discusses inclusive education, responsive pedagogy, and inclusive education for students with SpLDs. It also highlights the importance of universal design for learning (UDL) and the multisensory approach which are useful for teaching students with SpLDs in Finland. Furthermore, it also defines the concept of response to intervention (RTI) framework to provide high-quality education to meet students' needs.

Overall, the literature review provides an overview of teaching students with SpLDs in Finnish schools, barriers to learning and social participation, and suggestions on how teachers can support students with SpLDs. Considering the available data, I conclude that teachers must be provided with continuous professional development (CPD), adequate resources, and

planning times to be able to support students with SpLDs in their mainstream classrooms. Nevertheless, because the Finnish educational system offers high-quality training and comprehensive support, and the majority of teachers have a positive attitude towards teaching students with SpLDs, they may be able to handle these challenges while still having room for growth.

However, there is still a research gap in understanding the challenges and support for teaching students with SpLDs in Finland, particularly in the English line. Hence, this qualitative study aims to explore and analyse the use of the multisensory approach to teach students who face SpLDs in elementary education in Finland. The findings of this study can contribute to the existing literature on teaching students with SpLDs and provide insights for policy and practice to better support English teachers in their teaching of multilingual students in Finland.

2. Methodology

In the following chapter, I define and describe the methodological design of this thesis. Furthermore, I describe the context in which this study was conducted, the participants, the didactic materials and activities used, and the data collection instruments I employed to respond to my research questions. This chapter aims to explain and justify the importance of the Multisensory approach as a useful strategy for teaching students with SpLDs. To understand the use of the multisensory approach to teach students with SpLDs and teachers' perceptions towards using the Multisensory approach, this research aims to answer the following questions:

RQ1: Which materials are useful to teach students who face Specific Learning Difficulties (SpLDs) in Finland and what are their epistemic advantages?

RQ2: What are the disadvantages of using these materials to teach students who face Specific Learning Difficulties (SpLDs) in Finland?

RQ3: To what extent did teachers think that the intervention increases students' learning and participation in class?

The questions guide the research design, methodology, and methods employed. To address these questions, I observed classes, assisted, and taught in the support lessons, and interviewed four class teachers.

2.1 Research Approach and Design

2.1.1. Research Approach

This thesis followed a qualitative approach that "consists of a set of interpretative, material practices that make the world visible" (Denzin & Lincoln, 2011, p. 13) and its main purpose is to describe, explain, explore, and understand a problematic. This research follows a qualitative

approach because I wanted to focus on students' and teachers' experiences and perspectives on the use of the multisensory approach to teaching students with specific learning difficulties (SpLDs). According to Creswell (2012, p. 14), a qualitative study looks at a phenomenon in the context of actual life to identify something unique which is why this was the ideal research method for this thesis. This thesis was conducted in a Finnish elementary school where I followed four classes during their daily routines and made interventions during the support lessons to analyse students' unique experiences. Creswell & Poth (2017) highlight that qualitative research collects detailed views of participants, analyses, and codes the data for description and themes, and interprets the meaning of the information which were the data collection and analysis procedures executed in this research.

In addition, this thesis was conducted using a qualitative approach because it is about an understudied socio-educational problem, the use of the multisensory approach to teach students with SpLDs in Finland.

2.1.2. Research Design and Strategy

Ethnographic research was chosen as the research strategy because it is an experimental research design that collects data by extended immersion and close observation (McCombes, 2021). From different types of ethnography, I used the ethnographic case study. Creswell (2012, p. 617) highlights that

> a case study is a variation of an ethnography in that the researcher provides an in-depth exploration of a bounded system (e.g., activity, event, process, or individuals) based on extensive data collection… The case may be a single individual, several individuals separately or in a group, a program, events, or activities (e.g., a teacher, several teachers, or the implementation of a new program).

In this research, I implemented a new program (multisensory materials) as a case study.

During this research, I was teaching and assisting in support lessons at a Finnish school for more than three months and I tested multisensory materials and activities with students who face SpLDs. Ethnography is deeply rooted in anthropology, sociology, and cultural studies. Mills and Morton (2013) highlight that ethnographic research can have the power to generate and produce knowledge in education. It is systematic research of individuals and societies in their natural environments to understand the complexities of social life from an insider's viewpoint. This is why this thesis follows ethnographic research as it is a type of research where the researcher observes and interacts with the target population and the researcher plays an important role in obtaining useful information (Sharma & Sarkar, 2019).

To obtain firsthand knowledge and understanding in ethnographic research, the researchers locate themselves fully in the community to gain firsthand experiences and insights. According to Sharma & Sarkar (2019), the data is obtained through observations, open-ended interactions, interviews, or questionnaires. In this thesis, I used observations and interviews to answer the research questions. Furthermore, Sharmaa and Sarkar (2019) highlight that intensive observation helps to get 'first-hand information' for the researcher and in-depth details. Rich, contextually based narratives that provide profound insights into social processes are the result of ethnographic research. These findings are very helpful in planning interventions, formulating policy, and improving understanding.

The combination of interviews, the researcher's observation diary, and my personal experience as a teacher complemented each other in several ways. On the first hand, the researcher's observation diary provided rich and contextual data on the use, advantages, disadvantages, and pedagogical value of the multisensory materials and activities during the support lessons. On the other hand, the interviews provided insights into teachers' perceptions,

beliefs, and experiences related to teaching students with specific learning difficulties (SpLDs) using the multisensory approach and the strategies they implement. By using both data collection instruments, the study aims to triangulate and validate the findings by providing a more comprehensive and nuanced understanding of the research topic. In the following section, I described the research methods including the field of study, participants, data collection instruments and procedures, and data analysis and interpretation.

2.3. Research Methods

2.3.1 Field of the Study

The context of this study was Vaasa, Finland. The data collection occurred at an elementary school due to such a school being one of the places I was interested in gathering information from and which I could access more effectively. Most of the information was gathered in first and second-grade classes. From November 2023 to February 2024, I was a teaching assistant in this institution as I was granted an internship for international students by the Talent Boost. During this internship period, I was assigned to assist teachers and students in the school during their classes, school breaks, lunch times, and extracurricular activities such as homework club, support lessons, and the Spanish club.

This elementary school is an international school that has two lines: English and bilingual line. In the bilingual line, the students are taught in English and Finnish simultaneously. In this line, the first two grades have lessons taught 80% in English and 20% in Finnish. Teaching occurs in the system of one teacher, one language. This means that one teacher teaches only in English, and another teaches only in Finnish. When students reach sixth grade, the number of lessons taught in English reduces to 40% and the number of lessons taught

in Finnish increases to 60% (City of Vaasa, 2023). The English line has 60 to 80% of lessons taught in English and students are not required to have previous knowledge of Finnish. As stated before, in this line the students are taught more in English than on the bilingual line.

In each class, there are approximately 15 to 20 students. Approximately half of the student population is international or comes from an international background. This means that new students are integrated into the school continuously and for some of them this might be their first time learning in English and Finnish. Two of the students in this study are still adapting to the teaching methods and the system that this school has. To support new students, those who might face a Specific Learning Difference (SpLD), and those who need extra support, a support lesson is held once a week for every grade. Second graders have their support lesson on Mondays and first graders have theirs on Wednesdays. In addition, the class teacher assigns support lessons for her students during her free hours. For instance, one of the second-grade groups has an extra support lesson on Monday mornings for two students who struggle with reading and writing.

2.3.2. Research Procedure

During my internship period, I had the opportunity to create multisensory materials, analyse, and reflect on their pedagogical value for these students. At the beginning of the internship at the international school, I had conversations with the teachers who participated in the study in which they mentioned the different needs of each student. In addition, I followed them during their lessons to reflect on which materials could be useful for students who faced SpLDs. The class teachers of these students allowed me to interview them at the end of the internship period to know to what extent they thought that the intervention increased students' learning and participation in class.

The mentor teacher of the support group mentioned that the support lessons first started as a reading support class for first and second-grade students. However, nowadays, students with different learning needs in different subjects have joined these lessons. These students need different materials and more teachers to pay attention to their specific needs. These students also need support with mathematics, spelling, and organizing their homework notebooks and materials.

I started this research by observing the mainstream classes and the support lessons. As an assistant teacher at this school, I was required to have active participation during the school day and assist students and teachers during the lessons, school breaks, and lunchtime. During November and December, I was mainly located in a first and second-grade class and during January, I mainly assisted in a third-grade class. However, during the support lessons, both groups from the English line share this lesson according to their grade.

First-grade students follow the school's material for reading and writing and an English math book that follows the Finnish National Core Curriculum called 'Kymppi'. Second-grade students follow the 'Jolly Phonics book, the teacher's custom-made worksheets, and the 'Kymppi 2' book. In each class, there are approximately fifteen to twenty students regularly. First and second-grade students follow a similar routine during their English classes. On Mondays, they are assigned a reading task which is their daily homework. On Tuesdays, they are given four to six words or phrases to practice for their spelling test on Fridays. In Maths class, they have three classes in which students complete two to three book chapters a week and they have two of these classes in English and one in Finnish.

After a week of observing first and second-grade classes, I started creating and adapting multisensory materials for the students in the support lessons. I noticed that due to a lack of materials, time, and resources to create new ones, students have traditional and passive lessons in their mainstream classrooms. According to the literature, this is not beneficial for students

with SpLDs. The materials and activities were made based on the multisensory approach. Most of the materials were inspired by YouTube, Pinterest, and Twinkl. A couple of the materials were made based on ideas and suggestions the support lesson mentor provided. These materials were used with first and second-grade students in the support lesson to help them improve their reading, spelling, and math skills. I implemented the multisensory approach in 20 support lessons of 45 minutes each for three months with first and second-grade students. The activities and materials created for this study are described in Table 4.

Table 4

Multisensory Materials Implemented in this Study.

Topic	Material
Multiplication tables	Scissors Paper
Tricky words (spelling)	Read it, build it, write it worksheet. Dice
Phonics	Chinese mats
Spelling and reading	CVC spelling board game
Spelling -ou, -ow sounds	Paper, paint, cotton buds
Tricky words	Colours, paper
Shapes	Popsicle sticks, shapes.
Even and odd numbers	Number cards
Money	Shopping lists, price lists, products flashcards, markers, fake money
Division	Dolls, counters
Half and twice as many	Bead-chain
Shapes	Popsicle sticks, shapes
Tricky words (spelling)	Pop-it, paper, pencils

During the support lessons with the first graders, the mentor teacher started by

reviewing the sounds of the week (for example s, c, b, d). After this, she divided the group into small activities to do station work. I worked with a group of two to four students and implemented the multisensory activities and materials. In the case of the second graders, we started by checking students reading skills by telling them to read out loud the weekly text they were assigned for homework. Afterwards, students were divided into small groups and practised reading, spelling, or Maths using the multisensory materials. Figure 3 shows four multisensory activities implemented in this study.

Figure 3

Multisensory Activities and Materials

After the interventions, I interviewed the class teachers of the students who participated in this study. I created semi-structured interviews to know to what extent teachers thought the intervention increased students' learning and participation in class.

In the following section, I describe the participants of this study.

2.3.3. Data

2.3.3.1. The source of data: participants of this study

Data was collected from both students and teachers. First, 12 students with SpLD participated in the study. The selection of the study participants was done partly based on convenience sampling. Convenience sampling is the process of selecting participants who have at least one common characteristic with the larger population for a study (Godwill, 2015). For the intervention part of this study, my samples were the support lessons for students in the English line of the international school. Students' SpLDs are described in Table 5. These students participated in interventions where I used multisensory materials to explain or revise information.

Table 5

Description of the students' participants during the multisensory lessons

Student	Grade	Specific learning difficulties
S1	1°	Hearing impairment
S2	1°	Attention Deficit
S3	1°	Reading difficulty
S4	1°	Reading and spelling difficulty
S5	1°	Reading and spelling difficulty
S6	2°	Attention Deficit
S7	2°	Reading, spelling difficulty and math support
S8	2°	Reading, spelling difficulty and math support
S9	2°	Reading and spelling difficulty
S10	2°	Reading and spelling difficulty
S11	2°	Reading difficulty and math support
S12	2°	Reading difficulty

For the interviews, I recruited the four class teachers of the students who participated

in the interventions. All of them work on the English line of the international school. Among the four participants, two of them speak Finnish as their first language and the other two have international backgrounds with different mother tongues. The class teachers who participated in the interviews and the grades that they teach are described in Table 6.

Table 6

Description of the teachers participating in the interviews.

Teacher	Grade Teaching
T1	1° grade
T2	1° grade
T3	2° grade
T4	2° grade and mentor of the support lessons

In this research, my target population to participate were teachers who work in the English line and teach students with SpLDs. These four teachers were first and second-grade class teachers from the English line in an international school in Finland. They collaborate to meet students' needs and communicate constantly with the mentor of the support lessons to evaluate students' progress.

2.3.3.2. Data Collection Instruments

In ethnographic research, one of the most popular methods for collecting data are interviews and observation diaries. Therefore, the data collection instruments chosen for this research were a researcher's diary of the interventions done and four interviews with the teacher participants.

2.3.3.2.1. Research Diary and Observation

Engin (2011) states that a research diary has been used as a tool for reflection in learning about teaching. In addition, she considers this data collection instrument an opportunity for continuous professional development (CPD) as it permits teachers to externalise their knowledge. I wrote a researcher's diary during and after every intervention with the pupils. Figure 4 is an extract from the researcher's diary.

Figure 4

Research diary used during and after lessons.

Day	Topic	Material used	Advantages & disadvantages		Pedagogical value
			+	−	
06.11.23	Multiplication tables	Scissors Paper	Ss reviewed the multiplication tables and cut the paper every time they said a number.	The numbers are counted one (addition) and are not being multiplied.	Ss focus easier while cutting and counting. Ss feel less stressed as they're not focusing only on counting.
09.11.23	Money	Shopping lists Price lists Printed products Markers Fake money	Ss understand the use of money and how to do written and mental calculations. Ss get to support each other by working in pairs.	It's time-consuming	Ss were motivated during this activity and, even if it was time-consuming, they worked efficiently on their books afterwards.

This diary is structured in a table that has six entries: date, topic, the material used, advantages, disadvantages, and pedagogical value of the material used during the intervention (refer to Appendix A to find the research diary). These entries allowed me to maintain a record of the materials and the experiences during these lessons and to reflect on the advantages, disadvantages, and pedagogical value that these could have on students' learning. The purpose of the researcher diary was to explore what materials are useful to teach students who face Specific Learning Difficulties (SpLDs) in Finland and to explore what are the advantages and disadvantages of the usage of these materials to teach students who face Specific Learning Difficulties (SpLDs) in Finland.

During the support lessons, students actively participated in the multisensory activities. In every session, there were six to nine students with SpLDs. By observing and taking notes on the observation diary, I was able to notice the advantages and disadvantages these materials had for these students and teachers. During the observations, I also noticed that, because the support lessons were after school, students felt unmotivated, bored, and tired to execute the activities the teachers told them to perform. At the end of the interventions, I was able to notice that students improved their learning and participation skills. This was achieved by keeping students motivated and reducing boredom from these lessons which are usually after school activities. In the next section, I will explain the relevance of interviews in this thesis and why they were used as data collection instruments.

2.3.3.2.2. Interview

I used a semi-structured interview. The interviews were conducted with the class teachers of the students involved in the study. Cohen et al. (2017) state that interviews are a flexible tool for data collection that enables multi-sensory channels to be used such as verbal, non-verbal, sight, and speech. Furthermore, Longhurst (2003) states that a semi-structured interview is a conversation in which the interviewer asks questions to elicit information from the interviewee. As mentioned before, four teachers participated in semi-structured interviews. The purpose of these interviews was to know to what extent teachers think that the intervention increases students learning and participation in class. The interviews were guided by a set of open-ended questions and were audio-recorded and noted with the consent of the participants.

The combination of the researcher's diary and interviews complemented each other in several ways. The researcher's diary provided rich and contextual data about the use of the multisensory approach, its advantages and disadvantages, and the pedagogical value that multisensory materials and activities provide to the lessons. Interviews provided insights into the attitudes, perceptions, and experiences of the class teachers of using the multisensory

approach to teach students with SpLDs and their peers. Using both data collection instruments, this study intends to triangulate and validate the results offering a more thorough and nuanced understanding of the research problem.

2.3.4. Data analysis and interpretation

The data was analysed by doing a thematic analysis. According to Caulfield (2019), thematic analysis is a qualitative method that is normally applied to texts, such as interviews, to examine information to find recurring trends in people's views, opinions, knowledge, or values. As it was mentioned before, for this thesis, I collected data through an observation diary and semi-structured interviews. These were done to analyse the advantages and disadvantages of the use of the multisensory approach and teachers' perceptions about teaching using the multisensory approach.

Braun and Clarke (2008) highlight that this method is useful for identifying, analysing, and presenting data-related patterns. In addition, they state that thematic analysis is known for being a flexible and useful method that can offer a rich and detailed explanation of the data. Delve (2022) defines thematic analysis as "a data analysis that involves delving through a data set, identifying patterns, systematically coding, deriving themes, and creating a narrative". Braun and Clarke (2008) mention an outline guide to thematic analysis done through six phases of analysis. These phases are defined briefly in Table 7.

Table 7

Six Phases of Thematic Analysis (After Braun and Clarke, 2008).

Phase	Description of the process
1. Familiarisation	Transcribing data, reading, re-reading the data, and noting down preliminary ideas.
2. Coding	Highlighting interesting sections of the text and creating labels across the entire data set, collecting data relevant to each code.

3. Generating themes	Identifying patterns and gathering all data relevant to each potential theme.
4. Reviewing themes	Checking if the themes work and are accurate representations of the data and generating a thematic map of the analysis.
5. Defining and naming themes	Defining what each theme means and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Writing	Selecting extract examples, final analysis of these extracts, writing the analysis of the data concerning the research questions and literature, and producing a report of the analysis.

This data analysis approach places a strong emphasis on the value of inductive coding and iterative data analysis to find and enhance themes that capture the substance of the data. This is why this research was done by using an inductive approach as it allows the data to determine the themes used during the analysis. Before the data analysis, I transcribed each interview including the grade they teach and the date of the interview. After that, I coded the transcripts and the researcher diary, emphasized the repeated content mentioned by the participants, and constructed categories. I reviewed the categories, named the themes and linked them to the previously mentioned research aims and research questions.

This research hypothesised that the multisensory approach is useful for teaching students with specific learning difficulties (SpLDs) to overcome their barriers to learning and participation. Therefore, after transcribing the data, reading, and noting down my preliminary ideas I found the following codes: remember, repeat, copy, identify, categorize, understand, apply, act out, lack of time, lack of knowledge, and lack of resources. As a result, I created the following themes which are illustrated in Table 8.

During the analysis, codes were assigned to various behaviours, actions, or events that were observed. Thus, during the analysis of the interview data, codes were assigned to different responses made by the participants. These codes were then used to identify common themes

that emerged from both types of data. Since I collected more data from the interventions than the interviews, I used the codes from the interviews as supplementary to the codes from the interventions and placed them wherever they resonated with the same themes. These themes helped me find what materials are useful to teach students who face SpLDs, identify what are the advantages and disadvantages of these materials, and the teachers' perception towards the intervention done during the support lessons.

Table 8

Codes and Themes Generated

Codes	Themes
Remember	Learning Impact
Repeat	
Copy	
Practice	
Identify	
Understand	
Categorize	
Apply	
Act out	
Ask	Social Impact
Choose	
Describe	
Follow	
Answer	
Assist	
Discuss	
Help	
Overstimulation	Disadvantages
Lack of time	
Lack of knowledge	
Lack of resources	

Finally, several steps were taken to increase the trustworthiness of this qualitative research. First, information was gathered from two different sources, such as interventions done with the students and interviews with their class teacher to execute the data triangulation. Second, to assure dependability, the researcher regularly reviewed her preconceptions and

prejudices throughout the research process. Thirdly, to improve transferability, this thesis covered the study's limitations and implications. Overall, the researcher attempted to increase the trustworthiness of the study by employing a variety of strategies to guarantee the accuracy, consistency, and credibility of the findings.

2.4 Ethical Considerations

It is important to note that ethical considerations, such as informed consent, privacy, and protection of participants, must be carefully addressed throughout the study. This study is consistent with the principles concerning Human Research Ethics of the Declaration of Helsinki (World Medical Association, 2013). Additionally, it follows the responsible conduct of research The Finnish Advisory Board on Research Integrity (2012).

In this study, I observed and analysed the use of multisensory materials during support lessons at an international school in Finland. A research diary and pictures of the materials were taken during these lessons. Students were sent a consent form that was signed by their parents or guardians. This consent form was first revised by the principal and teachers from the school. These consent forms were retrieved by the researcher before the study was conducted. In addition, parents and guardians were informed about the purpose of this study and it was mentioned to them that they could withdraw their consent at any time.

Furthermore, interviews were held with teachers to retrieve information about the students' performance and motivation after the intervention. The research was explained to the teacher participants and a consent form was provided before it started and before they answered the interviews making all participants aware of their participation in this study. Moreover, the methods applied for data acquisition conform to scientific criteria and are ethically sustainable.

3. Findings

The findings of this research revealed key insights into the materials and challenges experienced by teachers in the English line of an international school in Finland. Through data analysis of the researcher's diary and interviews, recurring themes emerged, defining the current state of inclusive education in international schools in Finland. This section aims to present the main findings of this research, including the challenges faced by English teachers in teaching students with specific learning difficulties (SpLDs), the strategies employed by teachers, and the usefulness of the multisensory approach in their daily routines.

In this section, I explain the data analysis procedure using thematic analysis. Based on the data I collected, I found that multisensory materials and activities are useful for teaching students with SpLDs, as well as the challenges that teachers face while implementing these materials in their classes. To answer my three research questions, I divided the collected data into six parts during the data analysis. Then, I identified various themes for each part through the researcher's diary and interviews conducted in this study. These are the themes: (1) learning impact, (2) social impact and (3) disadvantages. Under each theme, several specific sub-themes explain the topic further (see Table 7). To answer research questions 1 and 2, I organized the values based on different epistemic levels of Bloom's Taxonomy's cognitive and affective domains.

Given that I was interested in exploring and analysing the use of the multisensory approach to teach students who face SpLDs in basic education in Finland and teachers' perspectives towards the intervention done in this study, I based my analysis on the following questions:

3.1 Which materials are useful to teach students who face Specific Learning Difficulties (SpLDs) in Finland and what are their epistemic

advantages?

This research question can be answered by employing the theoretical framework, consulting the researcher's diary and the interviews conducted with the class teachers of the students with SpLDs. Throughout the process of conducting this thesis, I realised that the multisensory teaching approach is a method created to help students with specific learning difficulties (SpLDs) such as dyslexia and attention deficit disorder. The multisensory approach was created to help students process and retain information by using more than one sense at a time to transfer information from short-term memory to long-term memory.

Twenty sessions were held in the support lessons using multisensory materials and activities which were designed for first and second-grade students. The purpose of these interventions was to explore and analyse if they were useful or not for reinforcing reading, writing, and maths skills to students with SpLDs. As a researcher, I not only provided the twenty 45-minute in-situ interventions, but I also observed students' social participation in their mainstream classroom, where teachers have a more traditional approach.

Based on the materials and activities used and the notes made in the researcher's diary, I can state that an advantage that the multisensory approach provides is that it eliminates boredom in the classroom. These activities and materials are engaging, and students take an active role in the learning process. To describe the materials and their epistemic advantages, I divided the materials into the level of Bloom's Taxonomy cognitive and affective domains that they met.

3.1.1 Materials that Meet the Knowledge Level

The Knowledge Level in Bloom's Taxonomy is the base. Woolfolk (1998) states that knowledge is the ability to identify or recall words, facts, fundamental ideas, or responses without necessarily knowing their definitions. The materials made for this study were for first

and second-grade students and their main objective was to help students remember, repeat, and identify concepts, hence most of the materials and activities done during the intervention fit into this level. These materials are described in Table 9.

Table 9

Materials that Meet the Knowledge Level

Topic	Material	Description of the material	Categorising verbs according to the Taxonomy
Multiplication tables	Scissors Paper	Students cut the paper while they were reviewing the multiplication tables.	Remember, repeat.
Tricky words (spelling)	Read it, build it, write it worksheet. Dice	Students had a list of words and according to the number they got in the dice, they read, built, and wrote the word in a worksheet. Students built the words using their hands.	Remember, repeat, practice.
Phonics	Chinese mats	Students practised the spelling of tricky words using Chinese mats and paint brushes with water to write them.	Remember, repeat, practice.
Spelling and reading	CVC spelling board game	Students practised spelling, reading, and blending sounds with a CVC spelling board game like Snakes and Ladders.	Remember, repeat, practice.
Spelling -ou, -ow sounds	Paper, paint, cotton buds	Students practised spelling words with -ou, and -ow sounds by writing them on paper using cotton buds with paint.	Remember, repeat, practice.
Tricky words	Colours, paper	Students repeated and practised tricky words by writing them many times using different colours until they looked like rainbow words.	Remember, repeat, practice.
Shapes	Popsicle sticks, shapes.	Students formed different geometrical shapes using	Remember, repeat, identify.

		popsicle sticks and identified the properties of each shape.	
Even and odd numbers	Number cards	Students were given different numbers and they sat if they had an odd number and stood up if they had an even number.	Remember, repeat, practice.

The materials explained in Table 8, meet the categorizing verbs from the Knowledge Level of Bloom's Taxonomy. They helped students recall, remember, repeat, and practice concepts they struggled with. In addition, they meet the Receiving and Responding Levels from the affective domain as students asked, described, followed, answered, discussed, and helped during the activities. This can also be seen when T3 mentioned in the interviews that students who attended the support lessons had made a big progress, they seemed braver and more integrated with their classmates (see Appendix C).

> T3: I could see a big progress in those students that they… they all made a big step forward, they all got more brave and integrated students because that was a big thing… not only that they didn't understand but it was the big emotional part.

In addition, T2 mentioned that the students were feeling more confident in her class and concentrating better while performing activities in which they would struggle before the intervention.

> T2: the student from my class that has been struggling most with reading, he's got a lot more confident and he's not nervous to read, [he knows] that he can take his time and he's not like 'oh, I haven't said it like this' but he… has confidence that it might take him a little bit longer, but he can still read.

According to what teachers mentioned in the interviews and what is stated in the researcher's diary, we can that these materials are usable to help students remember the information presented in the lessons. In addition, they reduce stress in students which helps them feel more confident and assertive when performing the activities they struggled with. In the following

section, I will present the materials that meet the Understanding Level according to Bloom's

Taxonomy.

3.1.2 Materials that Meet the Understanding Level

The Understanding Level is the second category in Bloom's Taxonomy. According to Bloom's

Taxonomy, understanding involves arranging, condensing, translating, describing, and

summarizing information to show that one has a grasp of facts and concepts (Woolfolk, 1998).

The objectives of the materials that meet this level were mostly to help students understand

and categorize information. These materials are described in Table 10.

Table 10

Materials that Meet the Understanding Level

Topic	Material	Description of the material	Categorising verbs according to the Taxonomy
Money	Shopping lists, price lists, products flashcards, markers, fake money	Students acted out the use of money and how to do written and mental calculations. Students recognised the products and price of what they were buying. Students calculated the money they had and gave change for the products they sold. Students got support from each other by working in pairs.	Interpret, exemplify, classify, explain.
Division	Dolls, counters	Students used dolls and counters to visualise divisions and practice them.	Interpret, exemplify.
Half and twice as many	Bead-chain	Students recognised the concept of half and twice as many using bead chains on their desks.	Interpret, exemplify.

Shapes	Popsicle sticks, shapes	Students learnt different types of polygons and how to reduce and increase their size.	Interpret, exemplify, classify, compare, explain.
Tricky words (spelling)	Pop-it, paper, pencils	Students had a tangible representation of the phonemes in a tricky word by touching the pop-it and remembering the spelling as they built the word.	Interpret.

I noticed that these materials helped students understand the concepts taught or reviewed by keeping them motivated. T4 also stated that her students felt more motivated as these materials and activities were different from the ones used in their mainstream classroom. This also helped to reduce boredom and kept students active during the interventions.

T4: I would say that they're more motivated… for many of the students to [attend] support lessons are also hard because school is exhausting for them because they struggle, so if they have a task that is multisensory, that they get to use… sort of a different approach to learning, it motivates them.

Presenting information and making students practice using the multisensory approach, motivates them to try new activities and feel confident about their skills. In addition, it helps students to not feel scared of making mistakes as it is a fun way to learn without them feeling they are being assessed all the time.

3.1.3 Materials that Meet the Applying Level

The third category in Bloom's Taxonomy was the Applying Level. Applying in Bloom's Taxonomy refers to using learned skills to solve issues in new contexts and this involves applying learnt information, facts, methods, and rules (Woolfolk, 1998). The materials made to meet this level had the objectives of applying and acting out new concepts and developing students' social skills. Just one activity and materials met this level and that was. This activity is described in Table 11.

Table 11

Materials that Meet the Applying Level

Topic	Material	Description of the material	Categorising verbs according to the Taxonomy
Money	Shopping lists, price lists, products flashcards, markers, fake money	Students acted out the use of money and how to do written and mental calculations. Students recognised the products and price of what they were buying. Students calculated the money they had and gave change for the products they sold. Students got support from each other by working in pairs.	Executing, implementing,

Stimulating students with materials and activities that involve using most of their senses helps them gain a deeper understanding and makes them able to apply this knowledge in their daily lives outside of school. The activity that met the Applying Level is proof of this. This activity helped students learn the content expected from the math lessons and develop their social skills by working in teams and interacting with others in the classroom. Evidence of this is in Figure 5.

Figure 5

Extract of Appendix A

09.11.23	Money	Shopping lists Price lists Printed products Markers Fake money	Ss understand the use of money and how to do written and mental calculations. Ss get to support each other by working in pairs.	It's time-consuming	Ss were motivated during this activity and, even if it was time-consuming, they worked efficiently on their books afterwards.

Furthermore, T1 mentioned that for young students is necessary to have different

types of input to motivate them and help them recall what is taught in class. Hence, she agreed that the multisensory approach is beneficial for all the students in her class.

> T1: I consider it has been 100% beneficial for the kids… kids [at] this age need to get input from as many senses as possible so that the information goes in as smoothly as possible. Furthermore, the fact that the tasks and games are fun, makes learning significant and that they don't forget about it.

I can conclude that multisensory materials and activities have many benefits for students with and without SpLDs. As was mentioned previously, students with SpLDs might struggle to retain information in their working memory, which is the case for most of the students who took part in this research. I was able to observe the mainstream classes that these students attend. I noticed that they struggled with remembering instructions and focusing on the tasks assigned because they seemed bored or distracted when they were exposed to a great deal of information at the same time, as is the case when they had more than one activity on the same page of the printed book. These students also forget how to pronounce and spell the new words introduced and the new topics presented during the Math lessons even if they achieved to complete the previous tasks correctly.

However, activities such as role-playing shopping with different materials engaged students' attention and increased their social participation while practising addition and subtraction. During this activity, students acted out as vendors and customers by using fake money and how to do written and mental calculations. In addition, students supported each other by working in pairs and developing their social skills. In the following section, I will discuss the second research question about the disadvantages of using multisensory materials to teach students who face SpLDs in Finland.

3.2 What are the disadvantages of using these materials to teach students who face Specific Learning Difficulties (SpLDs) in Finland?

Three themes were identified in line with this research question:

3.2.1. Pedagogical challenge: Distraction

Using multisensory materials and activities in teaching students with specific learning difficulties (SpLDs) can offer both advantages and disadvantages. When analysing the data, I focused on the themes and codes mentioned in Table 7. I found that most of the time, students benefit from these materials. These materials eliminate boredom from the support lessons and motivate students. However, they can distract students if they are overstimulating and increase teachers' workload significantly. This happened during the 'tricky word' activity, where students used a "pop-it" fidget toy, as some of the students did not understand the task in the beginning and decided to start playing with the material (see Appendix A). However, teachers can adapt these activities and make them adequate for students' level and age to meet their needs more effectively.

3.2.2. Practical challenge: Time and academic orientation of school curricula

Furthermore, teachers who participated in this study acknowledge and understand that students with SpLDs need accommodations and extra support from them and the schools. However, they also mentioned that schools are normally more academic oriented which means that students and teachers do not have time to explore and implement multisensory materials. In addition, they mentioned that they do not have enough time and materials to implement these materials and activities in their classrooms.

> T2: I think the school is just more academic orientated, so it would be nice to work more the multisensory approach… but mostly we don't have time, we don't have all materials that we would like to have [and] they're expensive.

3.3.3. Teacher knowledge and experience of multisensory approach

However, it is also interesting to note that another factor that can influence the use of

this approach is the lack of teachers' knowledge of different approaches and already-made materials. T3 mentioned that she would like to read and learn more about methods such as the Montessori and Multisensory Approach, however, she highlighted those methodologies are not common in Finland.

T3: I would like to read [and] to use more Montessori for example, but that's something that is not used in Finland very much.

T4 and T1 mentioned the lack of time and resources as disadvantages they face when trying to implement the multisensory approach in their classrooms. In addition, they mentioned that they would need more teachers or teacher assistants to implement the multisensory approach in small groups.

T4: But it comes also down to how to organise the lesson, it would maybe work best if you have a smaller group [or] maybe station work.

T1: They are useful for sure, however, there is not always time to sit down with them and use them.

Overall, the multisensory approach has more advantages than disadvantages for students with SpLDs. It is an approach that should be implemented in support lessons and mainstream classrooms if possible. For this to be achieved, teachers need the assistance of stakeholders and policymakers by creating more professional development opportunities and giving them resources to meet students with SpLDs' needs.

3.3 To what extent did teachers think the intervention increased students' learning and participation in class?

After the intervention, I held four interviews with the class teachers of the students who participated in this study. The purpose of these interviews was to know to what extent teachers thought that the intervention increased students' learning and participation in class. These four

teachers agreed that the intervention had an impact on students' social participation as they seemed to be more active in the lessons and felt encouraged to participate during the classes. To analyse teachers' perceptions, I used the themes mentioned in Table 7. As such, two themes were found in line with the third research question:

3.3.1. Emotional nature of the multisensory materials

In line with emotional education, the four teachers who participated in this study agreed that students benefit from multisensory materials and activities as they enable students to explore using their different senses more than just listening or seeing. They also stated that these materials make learning fun and more motivating to go to school every day.

> T3: Yes, all the time because I mean they are children, they like to touch things, it's very important for them to explore things with their different senses not only with the visual sense. Yeah, it's very important so that they learn quicker, they learn deeper, it's more fun, it's more motivating to come to school every day.

> T2 highlighted that her students felt more confident after the interventions, and it made

learning fun for them. She mentioned that using different senses can leave a "bigger imprint" and help students remember concepts and concentrate better.

3.3.2. Scaffolding nature of the materials

The teachers mentioned that the multisensory materials were a meaningful source for scaffolding the instruction because they helped students improve their learning.

T4 stated that her students are improving slowly, however, she could notice more progress in the first graders. This is because the level of difficulty of the tasks that students are meant to execute is lower than that of second-grade students. T4 mentioned that the first-grade students have improved their reading during the support lessons.

> T4: I would say that they are all improving slowly. I would say we see faster progress with the first graders because again there the… level of their reading is… is easier and they have actually been practising… whereas the second graders, I don't see quick

improvement.

Furthermore, T1 stated that it would have been beneficial to have a longer intervention with students to notice greater progress. Nevertheless, she believed that this intervention was still beneficial for her students.

T1: It's hard to tell a difference in such a short amount of time, it would be much more significant if you would have continued for a longer period. However, I consider it has been 100% beneficial for the kids.

Overall, teachers thought that this intervention helped students increase their students' learning and participation in class. They mentioned that their students felt more encouraged and less stressed while and after performing these activities. The mentor teacher of the support lessons mentioned that students felt less bored and more motivated during this lesson when they used multisensory materials.

Finally, there is currently a great lack of materials to teach students with SpLDs in English in Finland. This thesis explored the use of multisensory materials to help students with SpLDs to help them improve their learning and social skills. This research was ethnographic to understand an understudied social phenomenon. As a teacher, I have become aware that students with SpLDs are often ignored, marginalised, excluded and often not provided with the support that they need to be able to reach their full potential. In the following chapter, I shall present the conclusions of this study.

4. Conclusion

Throughout the years, teachers have looked for the best way to improve the teaching-learning process, putting new methods, strategies, and theories into practice in their continuous professional development (CPD). It seems to me that teachers should constantly try to be updated in their teaching practice, looking for current information to enrich their practice. However, it is not always as simple as it sounds because educational institutions might lack resources to offer teachers CPD and adequate resources to differentiate their lessons for every student's needs. Students with SpLDs might face many difficulties, such as reading, spelling, writing, and pronouncing words, which are important skills in the school environment.

In the international school in Finland, where this research took place, teachers have not been provided with materials to teach students how to read and write in English, Maths, Science, and other subjects. However, the teachers and principal had created materials and bought materials from the U.K. and the U.S.A. and adapted them to the Finnish National Core Curriculum. In addition, they do not have a special education specialist to assist English-speaking students. This makes teaching students with SpLDs a bigger challenge as teachers need to adapt and prepare materials from scratch.

Based on the data I collected, I found that first and second-grade students benefit from multisensory materials and activities. Multisensory materials offer interactive input that helps information to be transferred from their short-term memory to their long-term memory. However, it implicates a big workload for teachers, the need for resources, and continuous professional development. To sum up, it is important to recall the results encountered by answering the three research questions.

The first research question was about **which materials are useful to teach students who face specific learning difficulties (SpLDs) in Finland and what are their epistemic advantages**. During this research study, I designed multisensory materials and activities to

observe if they were useful in teaching students with SpLDs. I was able to observe that multisensory materials such as read it, build it, write it worksheets, Chinese mats, and CVC spelling board games helped the students who participated in this study to retain information and reduce anxiety and boredom while learning.

Secondly, I answered **what are the disadvantages of using these materials to teach students who face SpLDs in Finland**. This research showed that students who face SpLDs and their peers can benefit from the use of new methods and approaches in the mainstream classroom such as the multisensory approach. However, a disadvantage for students is that multisensory materials can be overstimulating and distract them from the main purpose of the activity. In addition, I encountered a couple of disadvantages that impact teachers trying to implement this approach. Thus, due to the lack of already-made multisensory materials, teachers will need to spend most of their time creating and adapting materials according to their students' needs which might not be feasible.

Thirdly, I responded to the question of to **what extent teachers think the intervention increased students' learning and participation in class**. During the interviews, teachers mentioned that the intervention was short and most of them could not be sure the intervention had an impact on their students. However, they mentioned that they have noticed their students are more confident, brave, actively participating in class, and motivated. One of the teachers also mentioned that she noticed that her students could recall concepts more easily after using the multisensory approach.

These findings offer significant insights into the challenges associated with teaching students with SpLDs and offer implications for educational policy and practice. In the following section, I shall present the discussion, implications for the future, and limitations.

5. Discussion and Implications

5.1 Discussion

This research aimed to explore the use of multisensory materials and activities to teach students who face specific learning difficulties (SpLDs) in Finland by implementing them in support lessons at a Finnish international elementary school. We need to consider that there is a lack of information and materials to teach students with SpLDs in English in Finland. Teaching students with SpLDs in English is an underreported topic in Finnish contexts. This makes teachers labour harder as they need to spend most of their time creating materials. In addition, most of the materials are made in Finnish or Swedish, which is why each international school must create materials for almost every subject.

Acknowledging SpLDs in our community and being aware that approximately 10% of our students might have them helps us as teachers to be aware that providing a variety of materials and activities to our students may help all students improve their learning achievements and reduce barriers to learning and social participation. Internationally, authors such as Kormos & Smith (2012) suggest the Multisensory approach to teaching students with SpLDs. In addition, the Universal Design for Learning (UDL) seven principles are adhered to the multisensory teaching approach, making it easier to integrate all children in our classrooms – particularly those with SpLDs. This approach is based on a set of instructional principles that are comparable to the general characteristics of good practices in teaching, meaning that it does not call for distinct teaching strategies from those commonly employed in a mainstream classroom.

Therefore, 12 students, who attended these support lessons tried different multisensory materials and activities and 4 class teachers of these students were interviewed. The result of the thematic analysis of the interviews and the researcher's diary showed that the multisensory approach is beneficial to teaching students with and without SpLDs. However, these also have

their disadvantages.

Firstly, I discuss the advantages. It has been highlighted that those students with SpLDs face challenges by being taught by a one-sensory teaching such as listening or observing (Newman, 2019). The multisensory approach provides at least two senses at a time. Using this approach, helps students transfer information from their short-term memory to their long-term memory. This can be seen in the activities and materials implemented in this research such as the "read it, build it, write it" worksheet where students practised the spelling of tricky words and "vocabulary jumping" where students recalled words they were introduced. In addition, the teachers who participated in the interviews mentioned that these interventions helped students reduce stress and boredom in the classroom.

Secondly, this approach presents a few disadvantages for students and teachers. These activities might be overstimulating for some students. An example of this was when the students had a "tricky word" activity, and they used a pop-it fidget toy. Some of the younger pupils (first graders) got distracted and started to play instead of doing the activity. However, I believe teachers can try to adapt these activities and make them adequate for students' level and age.

Furthermore, there seem to be more disadvantages for teachers than for students. As this school does not have a special education teacher to assist students and teachers in English-taught subjects, teachers must create a special curriculum and materials for students with SpLDs by themselves. Furthermore, I noticed that creating these activities is time-consuming. Therefore, the teachers who participated in this study agreed that these materials and activities were time-consuming for them. In this school, teachers must prepare materials for their classes as there is a lack of materials that follow the Finnish National Core Curriculum in English. Consequently, teachers need to spend a great part of their time creating materials for their mainstream classrooms and they do not have enough time to create multisensory materials.

Moreover, there are not enough teachers and teacher assistants in the schools to implement these activities. In addition, they tend to work better in station work or smaller groups, such as the support lesson, than in mainstream classrooms. Overall, the teachers who participated in this study acknowledge and understand the needs of students with SpLDs in their classrooms and are willing to have continuous professional development to improve their teaching for all their students. Nevertheless, schools seem to be more academically oriented which does not help them implement methodologies such as the Montessori and Multisensory Approaches.

The challenges faced by Finnish teachers in teaching students with SpLDs in English may increase the decline of the Finnish educational system. Insufficient support for teachers makes them struggle to meet the needs of students with SpLDs, which will impair students' performance in the classroom and cause the educational system to deteriorate even more. Therefore, to improve the quality of education in Finland, policymakers and educational stakeholders must address the difficulties faced by Finnish teachers in teaching students in English and give them the assistance they need. This can be achieved by providing teachers with more professional development opportunities, making sure that teacher education programs equip educators to instruct students with SpLDs, and giving schools more resources and assistance to support students with SpLDs. By addressing these challenges and helping educators, Finland may endeavour to raise the standard of education and guarantee that all students, including the ones with SpLDs, have equal opportunities for academic achievement.

In my opinion, one of the most vital qualities a person can possess is empathy, which is crucial for our social interactions. However, not everyone possesses it or can communicate it in day-to-day interactions. In our educational system, it is critical to support the development of this value in our students, teachers, and staff since education also involves building relationships and addressing socio-affective issues. During my pre-service education and my

whole life, I held relationships with classmates, students, and family members who face barriers to learning and social participation such as low vision, hearing impairment, autism, and dyslexia. This has made me a more emphatic person and developed my curiosity towards teaching students with specific learning difficulties.

5.2 Implications

This study has several implications for teachers, policymakers, and teacher education programs. The results from this study tell that multisensory activities and materials help students retain information, reduce anxiety, and boredom while learning. Taking this into account, teachers should be aware of the challenges that students with specific learning difficulties face and should adopt appropriate strategies to support their learning. These strategies could include scaffolding, differentiated instruction, and the use of students' strengths as a resource in the classroom.

In addition, we can highlight that these materials and activities benefit students with and without SpLDs. However, there are disadvantages that do not allow teachers to carry out these such as lack of time and resources. Policymakers should consider the challenges teachers face when teaching students with SpLDs when designing education policies and programs. They should ensure that resources are allocated to support students with SpLDs and that teachers are adequately trained to work with these students.

Furthermore, the teachers that participated in this study agreed that the intervention was beneficial for their students. Hence, teacher education programs should provide pre-service and in-service teacher training on how to effectively teach students with SpLDs. This training should include both theory and practice and should include topics such as SpLDs, Universal Design for Learning and the use of the multisensory approach.

The findings of this study fill the gap in the existing literature on the topic and

contribute to the understanding of the challenges that teachers face in teaching students who face specific learning difficulties (SpLDs) and the strategies that they employ to tackle these challenges. This study highlights the importance of acknowledging students' SpLDs and the implementation of new methods and approaches. These findings support previous research that emphasises the benefits of the use of the multisensory approach in the classroom (Kormos & Smith, 2012). This study highlights the need for teachers to use multiple teaching methods and resources to cater to the needs of diverse learners. I recommend applying the findings of this research to support lessons in different contexts to explore the usefulness of the multisensory approach with students with and without SpLDs. Furthermore, I consider that it is of great importance to observe the class beforehand to adapt the materials according to students' needs more successfully.

This thesis has allowed me to develop my knowledge, awareness, and skills (KAS) towards inclusive practices. As a result of conducting this research study, I hope to write an academic article and present it at a conference to share the results with other teachers. It is hoped that the results of this thesis will be useful to provide support for individuals in similar situations. As I mentioned before, I believe it is necessary to provide continuous professional development opportunities for pre-service and in-service teachers to develop their knowledge, awareness and skills and become more inclusive educators.

5.3 Limitations

In this section, I shall discuss the limitations I encountered throughout this thesis. Many factors influenced my findings. This thesis is qualitative research with a small amount of data and an analysis made based on teachers' and researcher's perspectives on using multisensory materials and activities to teach students with specific learning difficulties (SpLDs), therefore, there are some limitations.

Firstly, this study could be quantitative research to know what students' progress is after using the multisensory approach in the support lessons by applying quizzes to the students before and after the intervention. Second, the participants in this study were selected through convenience sampling, which may have led to biased samples that are not representative of all the students with SpLDs in Finland. This may restrict the findings' generalisability to different populations and circumstances.

Secondly, the study focused exclusively on teachers' and researcher's perspectives and did not include the perspective of stakeholders and policymakers. This could restrict the findings' thoroughness and accuracy as well as their possible practical applications. Lastly, the results are context-dependent and might not be transferable to other settings or contexts, just like in any qualitative study. As such, care should be taken when applying this study's findings to other settings or demographics.

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Appendices
Appendix A: Semi-structured interview guide

Master's Degree Programme in Teaching and Learning
Faculty of Education and Welfare Studies
Åbo Akademi University

Interview to teachers
Date:
Interviewer: Fernanda Arriaga Ricardez
Objectives of the interview: to know teachers' previous knowledge about the Multisensory Approach and what teachers think the intervention increased students learning and participation in class.
Interviewee: _____
Guide:

My name is Fernanda Arriaga, I am 24 years old, and I am from Mexico. I am writing my master's thesis on Teaching Students with Specific Learning Differences using the Multisensory Approach in Finland. The following research has the purpose of exploring the use of multisensory materials and accommodations used to teach students with specific learning differences (SpLDs) In Finnish schools.

The following interview aims to know the students' struggles in different lessons and your opinion about the impact that the multisensory materials and accommodations had on your students. I remind you that the interviews will be maintained confidential and will only be used for this research. You can ask any question you have. It is important that you understand that participation in this study is voluntary and that you are aware that you have the right to refuse to participate and the right to withdraw from the study permanently or for a temporary period at any time and without giving a reason. Do you agree? Is it fine if I record?

1. Can you share your experiences working with students who face specific learning differences?
2. How do you create an inclusive and supportive environment for students with specific learning differences?
3. What subject or during what activities do these students struggle with?
4. How do you assess the academic progress of students with specific learning differences in your class?
5. Are there specific benchmarks or indicators you use to measure progress in students with specific learning differences?
6. With the purpose of helping students meet their needs and wants, have you made accommodations in your classroom or applied a strategy? If yes, what?
7. How do you address the social and emotional progress of students with learning differences?
8. Have you ever heard about the Multisensory Approach? If yes, can you tell me what do you know about it?
9. Have you ever experienced this approach before my intervention? In which capacity?
10. During the support lessons I have been using multisensory materials and doing multisensory activities with first and second grade students. Have you noticed any difference in students learning and participation since November?
11. What changes have you noticed since November?
12. How do you think these students can be supported better using the multisensory approach?
13. Do you think multisensory materials and activities (they involve two or more senses) are useful in a mainstream classroom? Why?

Thank you for sharing your experiences and perceptions with me.